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GOVERNMENT SPENDING AND BUDGET DEFICITS INDUSTRIAL ECONOMIES

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ABSTRACT

In this paper, we try to interpret several important trends in the size of governments and government deficits in the OECD economies : the rapid increase in the public spending to GDP ratio in the 1970s; the sharp rise in budget deficits and in debt-GNP ratios after 1973; and the early signs of a slowdown or reversal in the rise of the spending ratios in the 1980s. We show that the rise in size of the government was importantly associated with the slowdown in output growth after 1973, as well as with the gradual adjustment of spending ratios to long-run values. These long-run values appear to depend on the political and institutional characteristics of the various economies (the ideological orientation of the government, the degree of wage indexation, and the average number of parties in the governing coalitions). As for budget deficits, we argue that much can be explained by normal cyclical factors (the slowdown in growth and the rise in unemployment after 1973), but that in addition, the size of the budget deficits has been related to political as well as economic characteristics of the countries. Deficit reduction requires political consensus, at least among the parties belonging to the governing coalition. We note that such consensus is harder to achieve in multi-party coalition governments and that the failure to reach a consensus on budget cutting can help to explain why countries with multi-party coalition governments have experienced particularly large increases in the debt-GNP ratio.

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1. Introduction

This paper takes a broad look at the trends in government spending, taxation, and budget deficits in the OECD countries since the mid-1960s. It is directed at some important puzzles in the political economy of the industrial countries. The first puzzle is evident in Table 1. Throughout the past half century, there has been a steady increase in the share of government spending, G, in total national product, Y. What is notable, however, is the sharp rate of increase in G/Y beginning in the mid-1960s. During the period 1973-82 (which we focus on for reasons discussed below), the share of government experienced its most rapid jump for any subperiod during the past fifty years. After 1982, government spending as a share of GNP has stabilized, or in some countries, has even fallen.

Our first question, then, is how to account for the sharp rise in the share of government after the mid-1960s; the very rapid increase between 1973 and 1982; and the halt to a rising government share during the most recent years. Our analysis is necessarily broad-brushed and provisional, but it does point to some of the important underlying trend factors as well as cyclical factors behind the rise in the government share.

The second puzzle that we exam is the behavior of government budget deficits and the public debt. Up until 1973, government deficits were sufficiently low in most countries to lead to a

falling ratio of net public debt to GNP, which we denote as D/Y, and which is illustrated in Table 2. [1] This is in line with Robert Barro's prediction of a falling debt-GNP ratio during periods of peacetime.[2] But after 1973, the trend is reversed: almost every OECD economy experiences a significant rise in the debt-GNP ratio in the years 1973-86.

Part of the explanation for the rising debt ratio is simply the effect of the cyclical downturn in the OECD economies after 1973. But we suggest that a richer pattern is also evident, linking the size of the budget deficits to the political structure of the government. Weak and divided governments (as evidenced by the expected tenure in office, and by the number of political parties that share power in the governing coalition) have been less effective in reducing the budget deficit than have stable and majority-party governments.

One of our main themes is that the year 1973 marked a watershed for the OECD economies. That year was the end, at least for the next fifteen years, of the high and noninflationary growth enjoyed by the industrial world in the 1950s and 1960s.

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[1] Throughout the paper, D will represent the net debt of the public sector (liabilities minus financial assets), as calculated by the OECD. These data are not published and were obtained directly from the OECD.

[2] Robert Barro has shown that the same phenomenon is true over a span of roughly 200 years in both the U.S. and the U.K. In both cases, the public debt to GNP ratio usually fell during peacetime, and jumped during war time. Barro has argued that this pattern reflects the application of optimal tax smoothing by the fiscal authorities. For details for the U.S., see Barro (1979), and for the U.K., see Barro (1987).

Almost every industrialized country experienced a significant slowdown in average growth after 1973, together with a rise in unemployment rates and higher inflation. The high inflation began to abate in the early 1980s, but the slowdown in growth, and the higher unemployment in Europe, has proved to be more persistent. The reasons for the growth slowdown and rise in unemployment are still a matter of debate, but it seems clear that adverse supply shocks have played a significant role. All of the OECD economies experienced a steep decline in total factor productivity growth beginning in the early 1970s, and almost all suffered a terms-of-trade deterioration following the oil shocks of 1973 and 1979.[3]

These supply shocks posed a multi-faceted adjustment problem of profound economic and political consequence in the industrial countries. After 1973 real incomes in the aggregate could not grow as fast as they did before 1973. In a smoothly working economic and political system, this fact would prompt two important adjustments: (1) a slower growth in real wages, in order to preserve full employment; and (2) a slower increase in real government spending, in order to maintain a desirable balance between expenditures on private goods and public goods.

Actual adjustments were far from smooth. We now know from extensive analysis that real wages did not smoothly adjust to maintain a balance between labor costs and the marginal productivity of labor at full employment. For many reasons, the

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[3]See Bruno and Sachs (1985) for a detailed discussion of these points.

most important of which are linked to the superior power of insiders versus outsiders in the wage-setting process, real wages failed to decelerate in line with the slowdown in marginal labor productivity at full employment. Political systems faced problems after 1973 that are analogous to those of labor relations systems. Slower growth in GNP failed to produce slower growth in public sector spending, leading to a sharp increase in the ratio of public spending to GNP in almost all of the industrial economies, as we noted in Table 1.[4]

That rise in spending not only contributed to the rising public debts seen in Table 2, but also to an "overshooting" of G/Y above planned values, and probably above the values consistent with long-run political equilibrium.[5] It appears that the unanticipated jump in G/Y during the 1970s helps to account for the widespread retrenchment of the public sector in the 1980s. For the first time in decades, the ratio of public spending to GNP has been dropping in many OECD economies in the past three years, probably as a result of the previous overshooting. The decline, which is shown in Table 1, is very slight in many countries, but it is still notable when compared with the previous upward trend

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[4] If, as is normally supposed, public-sector goods are luxury goods (with an income elasticity greater than 1.0), then we should expect that the percent rate of growth in public spending would have decreased by even more than the slowdown in GNP.

[5] We discuss this concept below at somewhat greater length. In a world of competing political parties, with different ideologies and tastes with respect to government services, it is of course not straightforward to define a specific political equilibrium level of G/Y.

of the ratio. As Daniel Cohen has argued, the rise of conservative governments in the major industrial countries might be construed as an endogenous response of the voters to the overhang of an excessively large public sector by the end of the 1970s.[6]

Our main point in this paper is that the varying economic and political institutions of the OECD economies help to account for the differences in patterns of public-sector spending and deficits, just as differing labor-market institutions help to account for the differing patterns of unemployment. We examine four aspects of the public-sector adjustment process. The first is what we call the "target" size of G/Y. How do we account for the differences across countries in the long-term choice of government spending? We show that the "long-run" size of government is related to: (1) the average political orientation of the government (on a right-to-left scaling); (2) and the extent to which special interest groups are organized to protect their real incomes through government transfer programs.

The second aspect we examine is the extent to which cyclical factors account for the jump in G/Y after 1973. We use a simple econometric model to decompose the rise in G/Y according to several factors, including the slowdown in growth, the rise in unemployment, and the difference between actual G/Y and the "long-

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[6] See Cohen (1988) . Note that in 1985-86, every one of the G-7 governments was headed by a right-of-center political party. (France of course was divided, with a right-of-center prime minister and a Socialist president).

run" target level of G/Y .

A third aspect of public finance that we examine is the extent to which the bulge in the spending-to-GNP ratio has been financed by a higher tax-to-GNP ratio or by a higher budget deficit. Our assumption here is that the extent of deficit financing depends on the prevailing political institutions. We suggest that the large deficits that have been observed in the 1970s and 1980s are the result of political weakness, where weakness is signified by governments with a short tenure in office and a dispersion of political power across many coalition partners.

A fourth aspect of public finance that we examine is the linkages of the exchange rate regime and fiscal policy. The emergence of the EMS in 1979 contributed to a drop of inflation in several countries, such as Belgium, Ireland, and Italy, and thus to a loss of seignorage (i.e. inflation tax) revenues. We want to check whether this loss of seignorage was accompanied by a more rapid increase in public debt, as would be the case if policymakers treated seignorage and bond issues as alternative ways to finance a budget deficit. A cut in seignorage (in line with the requirements of a fixed exchange rate regime) might then cause a substitution away from inflation financing towards greater bond financing, rather than towards higher taxes or lower spending. We show some evidence that indeed, the shift from seignorage financing was towards greater bond financing.

Our analysis below is necessarily provisional: our sample of

countries is small, and we are mainly examining one prolonged historical episode during 1973-88. There are also special cases that we have a hard time explaining (e.g. the remarkable growth of public spending in Sweden in the 1970s), and cases that fall outside of our basic paradigm of a public sector hit by adverse supply shocks (e.g. Norway, where the government enjoyed a windfall following the OPEC price shocks of the 1970s). Also it is likely that the "iron laws" of politics are even more provisional than the notoriously unstable "iron laws" of economics.

The next section of the paper reviews the main trends of fiscal policy in the OECD economies in the 1970s and 1980s. The main point is to stress the unusual discontinuity in the behavior of government spending and budget deficits after 1973. Section 3 offers a comparative analysis of the fiscal adjustments to the slowdown in growth after 1973, relying both on econometric evidence and institutional analysis. We also investigate the possible role of the EMS in fostering a faster or slower accumulation of public debt in the member countries. In Section 4, we discuss the evidence on the future growth of the public sector. Section 5 offers some conclusions and thoughts about further analysis.

2. Recent Patterns of Fiscal Adjustment in the OECD

2.1 The Growth of Government Expenditures

In the past quarter century there has been an extraordinary

increase in the share of government spending in total national income throughout the industrial world. The tendency for budgetary expenditures to grow more rapidly than national income has long been noted, at least since Wagner (1877) formulated his famous "law" of a rising share of government. What is notable about the past twenty five years has been the extraordinary rate at which this increase has taken place. We saw in Table 1 that the increase was generally modest between 1950 and 1965, higher on average between 1965 and 1973, most rapid during 1973 and 1982, and slow or negative after 1982. Clearly, the great rise in expenditure shares during 1973-82 is not simply the result of high economic growth coupled with a high income elasticity of government spending: the increase in expenditure share during this period is greater than in earlier periods despite the fact that income growth was significantly lower.

In 1965, the size of the general government sector as a share of GNP was rather similar in most OECD countries (25 percent on average, and 31 percent for the European OECD countries). In only two countries, France and Netherlands, was the ratio of expenditures to GDP over one third. By 1985, the ratio in all of the OECD countries was above one third, and the average had risen to 41.0 percent (51 percent for the European OECD countries). As seen in Table 3, the countries with the largest size of the government in 1985 were Italy, Netherlands, Sweden, Ireland, Denmark, Belgium, each with a share in excess of 50 percent of

GNP [7]. A middle group of countries (with a ratio between 40 percent and 50 percent) included Germany, France, UK, Austria, Norway, Canada, Greece, Spain and Portugal; while the countries with the smallest size of the government (below 40 percent of GDP) were the U.S., Japan and Finland.

Before we attempt to explain the reasons for the rapid growth of government spending, especially during the 1970s, we should first describe with somewhat more care the areas in which the spending increase has taken place, as we do in Table 4. If we divide current expenditures among final consumption of goods and services, current transfers (of which social security benefits are the main component), interest payments on debt, and subsidies, we see that the fastest growing categories of spending are not expenditures on final goods and services, but rather transfer payments of a redistributive character, and interest payments on the accumulating public debt.[8] In every country except Finland, the rise in the share transfer payments plus subsidies in GDP exceeds the rise in final consumption expenditure. This point is important when we go on to explain the cross-country differences in the behavior of overall spending and budget deficits.

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[7]Five of which are EMS countries.

[8]Final consumption of goods and services includes the wages and salaries of public employees, defense, and expenditures on public administration. Current transfers include three principal components: social security benefits, social assistance grants and unfunded employee pension and welfare payments. Social security benefits are the largest component in all the countries. However, in many countries (US, Germany, UK, Finland, Austria, Ireland, Canada) the other two items represent more than a third of the total share of current transfers.

Table 5 shows the structure of expenditures in the OECD economies as of 1985. After the rapid growth of transfer programs during the previous fifteen years, the spending on transfer programs was, on average, about equal in magnitude to the spending on final goods and services. Social security benefits are the largest component of current transfers in all the countries. Social security benefits have been one of the fastest growing components of expenditures in all the OECD countries. Their growth is only partly linked to demographic factors since in many countries social security benefits (such as invalidity and disability pensions, sickness benefits, early retirement pension, unemployment compensation systems, family and maternity benefits) represent a not-so-hidden form of welfare transfers and payments, as has been described by Emerson (1986, pp. 35-36):

> A... group of countries have expanded the disability programmes massively into programmes of long-term unemployment compensation for elderly workers with difficulties in getting suitable jobs... Another way to give perspective to the expansion of disability pensions beyond the initial programme objectives is to express the number of beneficiaries as a percentage of the number of old age pensioners... In Italy was 43 % in 1978..., but in the Mezzogiorno the figure was 250%, and in the Enna district of Sicily it was 669% . In the South of Italy the programme has clearly become a regional one for assuring permanent income maintenance of a high level for the unemployed.

It is interesting to note that the countries with the largest social security benefits are also, with the partial exception of France and Netherlands, are also the countries where the share of benefits financed by direct contributions is the lowest. In Italy, Belgium, Japan, Finland, Austria, Ireland the social

security agencies run structural deficits and general taxation is used to fund the large and increasing benefits [9]. These data hint at the political economy of the expansion of social security in these countries: social security recipients have pushed hard for an increase in real expenditures in part because they are not the direct contributors to the social security system.

The last major component of government expenditures shown Table 5 are the interest payments on the public debt. The data presented are nominal interest payment as a share of GDP, unadjusted for the effects of inflation. The analysis of their relevance in affecting the changes in the public debt of the OECD countries will have to be postponed until we explicitly consider the corrections for inflation in a later section.

In addition to the above categories of current expenditures one should consider capital expenditures or government investment. This is a relatively small item in most of the OECD countries, ranging between a high of 5.6 percent of GDP in Italy in 1985 and a low of 0.2 percent for the U.S.[10]. As a share of GDP, investment expenditures have generally been falling since 1970: in period of restrictive fiscal policies and fiscal consolidation capital expenditures were the first to be reduced often drastically) given

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[9] In these six countries over 20% of the social security agencies revenues comes from transfers from the central government.

[10] These data on capital expenditures include the net fixed capital formation, i.e. they exclude the consumption of fixed capital. As with the other categories, there may be a problem of strict comparability in definitions for making comparisons across countries.

that they were the least rigid component of expenditures. Therefore, while in 1970 more than half of the countries considered had capital expenditures of 5 percent of GDP or above, in 1985 only two countries (Italy and Japan) did so.

In summary, it is not only the size of government that has changed in the past fifteen years, growing markedly as a share of GNP, but also the role of government that has changed as well. As the OECD (1985) has noted, "the structure of government expenditures has thus shifted away from the provision of more traditional collective goods (defense, public administration and economic services) towards those associated with the growth of the Welfare State (education, health, and income maintenance)." (p.16)

2.2 Cyclical Factors in the Share of Government Spending in Income

The sudden deceleration of GNP growth after the 1973 oil price shock was not matched by a comparable reduction in government spending, resulting in a burst in the ratio of expenditures to GDP. In the two years between 1973 and 1975 the ratio of total outlays of the government as a share of GDP rose from 33.0 percent to 38.0 percent for the overall OECD area (see table 3) . This increase in two years equalled 75 percent of the total increase of the ratio between 1970 and 1985. In the same two years the increase in government revenues as a percent of GNP lagged far behind the increase in spending (revenues rose from 32.2 percent of GDP to 33.1 percent, (tax revenues as a percent of

GNP are shown in Table 6). As a consequence, the general government financial balances in the OECD economies worsened rapidly, moving from a surplus of 0.1 percent of GDP in 1973 to a deficit of 0.5 percent in 1974 and to a deficit of -3.8 percent in 1975 (the government financial balances year to year are shown in Table 7).

The 1976-1979 years can be characterized overall as a period of fiscal consolidation. In this period the ratio of expenditures to GDP stabilized (rising slightly from 38.0 percent to 38.1 percent of GDP for the OECD as a whole) while tax revenues increase by 2 percent of GDP (from 33.1 percent to 35.1 percent). As a consequence the average negative financial balances are cut by 2 percent of GDP as well (from -3.8 percent in 1976 to -1.8 percent in 1979). These OECD averages, however, conceal a wide variance of country-specific experiences.

The stabilization in the G/Y ratio during the 1976-79 period comes to an end following the second oil shock. In the years from 1979 to 1982, this expenditure ratio rose from 38.1 percent of GDP to 41.7 percent of GDP (corresponding to 45 percent of the total increase in the ratio between 1970 and 1985). Once again, the increase in revenues was much smaller than in expenditures, so that the overall deficit in the public-sector financial balance more than doubles, from 1.8 percent of GDP in 1979 to 4.0 percent in 1982.

The years from 1983 to 1986 are a second period of fiscal consolidation for most countries, characterized by a small

contraction of the expenditure ratio and an increase of the revenue ratio for most, but not all of the OECD countries. Many economies reduced their budget deficits as a percent of GNP, but in some other countries (e.g. Belgium, Italy, and Ireland), the deficits remained very high, and the debt-GNP ratios rose to astounding levels (around 100 percent of GNP).

Section 3. A Comparative Analysis of Budgetary Expenditures and Public Debt after 1973

In this section we address two questions on a comparative basis. First, why did some countries experience a steep rise in the ratio of government expenditures to GNP, while others experienced only a modest increase? Second, why did some governments finance the increase in the expenditure ratio with higher taxes, while others resorted to higher public sector borrowing? And in this last regard, how should we understand the particular cases of Belgium, Ireland, and Italy, where the debt has reached historically unprecedented levels?

Our analysis of the first question is necessarily circumscribed by the fact that political scientists and economists still lack a widely accepted general theory of the growth of government. There is a plethora of theoretical models and explanations of the growth of the government size, but a corresponding empirical failure of these models to explain cross-

country difference in the size and growth of government.[11] Lybeck (1988) discusses 12 different theories about the growth of government, but he points out that empirical studies have so far failed to give strong support to any of the theoretical model presented in the literature and have rejected many of them [12]. At the same time, a vast literature of country case studies of the growth of government has provided interesting insights into the decision-making process of government actors and the relationship of the government to different social and economic groups, but these individual case studies have not been designed to yield an explanation of cross-country differences in government size[13].

3.1 A model of government expenditures

Even though we cannot rely on a general theory of the growth of government, we can rely on some basic ideas about the underlying trend determinants of G/Y, as well as the cyclical factors that affect G/Y. In our econometric work, we separate three factors in the rise of G/Y: (1) a long-run "target" level $(G/Y)^T$, determined by political and institutional factors, to which we assume G/Y is moving in the long run; (2) cyclical

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[11]Numerous good surveys of the theories on the growth of the government size are available in the literature. Among them, see Tarschys (1975), Peacock (1979), Larkey, Stolp and Winer (1981), Mueller (1987) and Lybeck (1988).

[12]Recent empirical studies comparing cross-country differences include Schmidt (1982, 1983), OECD (1985), Cameron (1978), Ram (1987), Lybeck (1986) and the volume by Lybeck and Henrekson (1988).

[13]For an excellent recent collection of individual country studies of the growth of the government in 11 OECD countries, see Lybeck and Henrekson (1988).

influences on G/Y, mainly the growth slowdowns following the two oil shocks; and (3) and a partial adjustment mechanism, in which G/Y grows as a function of the gap between $(G/Y)^T$ and G/Y. The basic equation for G/Y is specified as follows.

For purposes of econometric work, we focus on the non-interest portion of current government expenditures. Thus, we do not attempt to model investment spending by the government, nor to account for the interest burden of the pre-existing government debt.

Let $g = \ln (G/Y)$, and let g^T be the target level of the ln (G/Y). In the absence of cyclical shocks we would write the change in g as:

$$(1) \quad g_t - g_{t-1} = a*(g^T_{t-1} - g_{t-1})$$

Note that we allow for the target level of g to change over time, though in practice we will specify g^T to be a constant (some alternative specifications, with a time-varying g^T did not find empirical support). We modify (1) for two reasons. First, the level of government spending G is often set before actual Y is observed, so that G/Y may vary because of unexpected movements in Y. Second, various forms of expenditures (such as unemployment insurance) change automatically when the unemployment rate U changes, so that changes in g_t will be a function of changes in the unemployment rate.

We introduce the possibility of expectational errors in Y by

rewriting (1) as:

$$(2) \quad \ln (G_t) = b*\ln Y^e_t + (1-b)*\ln Y_t + g_{t-1} + a*(g^T_{t-1} - g_{t-1})$$

or, re-writing,

$$(2') \quad g_t - g_{t-1} = - b*\ln(Y^e_t/Y_t) + a*(g^T_{t-1} - g_{t-1})$$

Notice that (2') differs from (1) in allowing an unexpected slowdown in growth, which leaves Y_t less than Y^e_t, to cause a rise in g_t. If $b = 0$, then actual government spending responds only to actual output, so that an unanticipated slowdown in growth would have no effect on g_t.

To get an estimate of Y^e_t we could rely on an optimal linear forecast of Y_t from a time-series model of GNP. We choose to do something much simpler, which was to specify that expected growth in GNP is simply a weighted average of the growth of the past three years: $\ln (Y^e_t/Y_{t-1}) = (1/3) * \ln(Y_{t-1}/Y_{t-4})$.[14] Then, the expectational error is equal to actual growth in output minus the

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[14] Of course, with some care it would be possible to improve on this by estimating a time-series model for Y_t for each of the countries. We had problems with this alternative method, including: the vast amount of data and estimations that would be required for the thirteen countries in our sample; and our doubts that policymakers understood the effects of the post-'73 supply shocks on the dynamics of output, so that any time-series model that was estimated over the entire post-'73 period would contain much more information than was held by the policymakers. One alternative would be to estimate rolling time-series models, in which forecasts for time t use data only up till t-1. This would be a plausible way to proceed in a single country study.

average growth of the past three years. Letting $y = \ln(Y)$, we have:

$$(3) \quad y^e_t - y_t = (y_t - y_{t-1}) - (1/3)*(y_{t-1} - y_{t-4})$$

We call the expectational error $x_t = (y_t - y^e_t)$. Thus, whenever growth in year t is less than the average of growth in the preceding three years, we expect cet. par. a rise in g_t. Finally, we allow for unemployment-related expenditures by adding the change in unemployment as an explanatory variable in (2'). Substituting for x_t, and adding the unemployment term, we get:

$$(4) \quad g_t - g_{t-1} = - b*x_t + a*(g^T_{t-1} - g_{t-1}) + d*(U_t - U_{t-1})$$

Equation (4) becomes the main equation for estimation.

Our strategy in estimation is as follows. In the first stage, we estimate (4) on a cross-section, time-series of data for thirteen OECD economies. After some preliminary experimentation, we decided to allow g^T to be a distinct constant for each country i. Then, (4) becomes:

$$(4') \quad g_{it} - g_{it-1} = - b*x_{it} + a*(g^T_i - g_{it-1}) + d*(U_{it} - U_{it-1})$$

We estimate (4') by adding a dummy variable for each of the countries, D_i, and entering g_{it-1} freely in the regression. The coefficient on g_{it-1} is then a, and the coefficient on each of

the country dummy variables is simply $a * g^T_i$. Thus, we can recover an estimate of gT_i for each country by dividing the estimated coefficient on the dummy variable for the country by the estimated coefficient on g_{it-1}. We thereby recovery a vector of target g^T_i's for the thirteen countries. We then try to account for differences in the estimated g^T_i's according to various long-run political characteristics of the countries.

The basic equation (4') is estimated for the years 1972 to 1985, for thirteen countries, with the results as follows (t-statistics in parentheses):

(5) $\hat{a}$ = 0.09 (5.41) R^2 = 0.65

$\hat{b}$ = 0.87 (10.8) s.e. = 0.023

$\hat{d}$ = 0.68 (3.19)

Thus each of the coefficients is highly significant with the expected sign, and the equation explains 65 percent of the variance in the year-to-year growth of the share of government spending. The standard error on the growth rate of g_t is 2.3 percent.

We experimented with a couple of amendments to the basic dynamic equation. One important hypothesis is that the change in government spending responds directly to the size of the deficit, lagged one period: a higher deficit leads to a slowdown in spending, as the government attempts to close the budget

deficit.[15] To implement a test of this hypothesis, we must adopt a meaningful measure of the budget deficit. We choose to measure the deficit as the year-to-year change in the net-debt to GNP ratio, that is, $(D/Y)_t - (D/Y)_{t-1}$ (this variable is then entered with a one-year lag in the time-series, cross-section regression). This measure, shown in Table 8, avoids the problem inherent in the usual measures of the deficit of counting all nominal interest payments as part of the deficit, even though only the real interest payments reflect a true expenditure on current account (the inflation component of the nominal interest payments, equal to the inflation rate multiplied by the stock of public debt, measures the amortization of the real value of the public debt due to inflation). It turns out, however, that the coefficient on the change in net debt (lagged one period), was statistically insignificant in all versions of the model that we estimated, suggesting that there is no strong effect of lagged deficits on the rate of growth of government spending.

Another emendation to the basic model is to allow for the

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[15] Some observers have suspected that President Reagan has operated according to this theory. By cutting taxes, the story goes, he has generated a budget deficit with the goal of forcing down the rate of government spending. The argument has been put vigorously by Senator Daniel Patrick Moynihan as follows:

The president genuinely wanted to reduce the size of the federal government. He genuinely thought it was riddled with "waste, fraud and abuse", with things that needn't or shouldn't be done. He was astute enough to know that there are constituencies for such activities, and he thought it pointless to try to argue them out of existence one by one. He would instead <u>create a fiscal crisis in which, willy-nilly, they would be driven out of existence</u>. (emphasis added). p.154. Moynihan (1988).

possibility of a change in response of g_t to U_t in comparing the pre-1980 period and the post-1980 period. There is widespread circumstantial evidence (e.g. the descriptions of government policies in the OECD Economic Outlook during the past decade) that after the first oil shock, several governments undertook Keynesian-style stabilization policies, deliberately raising g_t in response to the rise in U_t, while after the second oil shock, there was much less attraction to such countercyclical policies.[16] Presumably, policymakers had learned of the difficulty of applying aggregate demand stimulus to a situation in which the rise in U_t was due to supply shocks.

Thus, we emend (4') to allow for a varying response to the change in U_t:

$$(4'') \quad g_{it} - g_{it-1} = - b*x_{it} + a*(g^T_i - g_{it-1}) + d_1*(U_{it} - U_{it-1}) + D8085*d_2*(U_{it} - U_{it-1})$$

Here, D8085 is a dummy variable equal to 0 for 1972-79, and 1 for 1980-85. The hypothesis is that $d_2 < 0$, indicating that after 1979, the response of g_t to a rise in U_t is diminished. Our estimate of (4'') is as follows (numbers in parentheses are t-statistics):

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[16] There are two explanations for the effect of unemployment on the rate of government spending. The first involves automatic unemployment-related expenditures, such as unemployment insurance. The second involves countercyclical policy actions in which g_t is raised in the hope of reducing the rise in the unemployment rate.

(5')	$\hat{a}$ = 0.083	(4.83)	R^2	= 0.65
	$\hat{b}$ = 0.864	(10.80)	s.e.	= 0.022
	$\hat{d}_1$ = 1.029	(3.44)		
	$\hat{d}_2$ = -0.57	(1.63)		

As expected, d_2 is negative, though it is statistically significant only at the 0.11 level. According to the point estimate, the response of g_t to a rise in U_t is less than half as large after 1980 as before 1980, (specifically, .46 = 1.02-0.56 after 1980, compared with 1.02 before 1980). We will take the estimate in (5') as the basic estimate for the rest of our empirical work.

The equation estimates (5) and (5') produce estimates of g^T_i, as we have described. By taking the exponent of those estimates, we can recover for each country an estimated target value of G/Y, the share of government spending in GNP. The estimates of the long-run target of G/Y, and the actual values of G/Y for 1985, are shown in Table 9, using the regression version (5'). We can see immediately that the estimated long-run target values are quite plausible. For most countries, the actual spending levels in 1985 are very close to the estimated target levels. (This is consistent with the fact that G/Y stabilized in many countries by the mid-1980s). Britain, Denmark, Japan, and Sweden, show the largest gap between target and actual G/Y values.

3.2 Determinants of Target Government Spending

By analyzing the vector of $(G/Y)^T$ shown in Table 9, we can gain some idea of the fundamental determinants of government spending across countries. The existing literature suggests two political variables that should be examined: (1) the average share of left-wing representation in the government, with the expectation that left-of-center governments (socialist and social democratic governments) aim for a higher share of government spending in total output; and (2) the extent of dispersion of political power among different political parties in the government. It has been posited [17] that coalition governments may have a bias towards higher levels of government spending relative to majority party governments, as the various constituencies in the government undertake logrolling agreements to secure greater spending for their individual constituencies.

To capture the possible effects of divided versus single party governments, we use an index of power dispersion that was introduced in Roubini and Sachs (1988). The index measures the size of the governing coalition, ranging from 0 (smallest coalition) to 3 (largest coalition):

Index	0	one-party majority parliamentary government; or presidential government, with the same party in the majority in the executive and legislative branch

[17] Lybeck (1988) surveys the theories that link the government size to the role of political parties, interest groups and coalition governments. See also the country case studies collected in the Lybeck and Henrekson (1988) volume. Roubini and Sachs (1988) examine a related but, distinct hypothesis that coalition governments will exhibit a tendency towards excessive budget deficits, especially during periods of economic downturn.

1	coalition parliamentary government with 2 - 3 coalition partners; or presidential government, with different parties in control of the executive and legislative branch
2	coalition parliamentary government with 4 or more coalition partners
3	minority government

Values of the index for each country are given in Table 10.

We also suggest here a third kind of determinant of government spending, based on the idea that the different nations aim for different levels of "real income insurance" for key groups in the society. Since the bulk of spending increases in the past twenty five years has come in the form of increased transfer payments, rather than the more traditional provision of final goods and services, we surmise that the demand for such spending reflects a political demand by key groups for government protection from the erosion of their real incomes in the presence of exogenous shocks. We suggest that the government spending programs are the fiscal counterpart to wage indexation schemes in the private labor market. We hypothesize that economies with widespread wage indexation arrangements are also those economies with large-scale income maintenance programs operating through the budget.

To make this idea concrete, our idea is to use the available evidence on wage indexation across countries as a proxy for the political demands for income transfer programs of the government.

Thus, we select a variable from an earlier study of labor market institutions, an index measuring the extent of wage indexation in the economy, and use it as a proxy for the extent to which the economy is organized to protect the real incomes of the recipients of public sector transfers.[18]

Implicit in this approach is our belief that a widespread use of wage indexation is symptomatic of a particular style of social adjustment to external shocks, a style in which competing interest groups insist on formal claims to a given real income. We know that extensive wage indexation is prevalent in countries with labor markets characterized by a large number of powerful unions, which bargain independently for their wages, and is not very prevalent in countries with weak highly decentralized unions (e.g. the U.S.), or in countries with a corporatist bargaining structure (in which the unions negotiate at the national or regional level).[19] We hypothesize that it is in the same case, of strong

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[18] The use of a preexisting of wage indexation for our proxy of political demands for real income insurance has two advantages. First, it constrains the analyst from "cooking up" a new synthetic measure that is biased towards proving a particular hypothesis. Second, it obviates the need for the very difficult task of directly measuring the extent to which the budgets of the various countries provide for guaranteed real levels of entitlements.

[19] Calmfors and Driffill (1988) have described three basic modes of labor negotiations: highly decentralized (as in the U.S.), with weak and dispersed labor organizations negotiating with individual employers; intermediate (as in Belgium, France, or Italy), where much more powerful, but still decentralized unions negotiate with employers; and corporatist (as in Sweden), where nationwide inclusive unions negotiate with nationwide and inclusive employers confederations. It turns out that widespread wage indexation is only prevalent in the second group of countries. It seems that corporatist economies rely on striking a national "bargain" rather than on a specific wage formula as the

intermediate groups not held together in a corporatist relationship, where there will be the largest political demand for government transfer programs (holding constant other factors, such as political orientation of the government).

Thus, we estimate a cross-section equation linking the estimated target rate of government spending, $(G/Y)^T$, to three variables: (1) the average proportion of left-of-center parties in the parliament, taken from Cameron (1985), denoted $LEFT_i$; (2) the index of political power dispersion within the ruling coalition, denoted POL_i; and (3) an index of the extent of wage indexation, taken from Bruno and Sachs (1985), as a proxy for the demand for income transfer programs of the government, denoted WI_i[20]:

$$(6) \quad (G/Y)^T_i = a + b * LEFT_i + c * POL_i + d * WI_i$$

The values of $(G/Y)^T$, $LEFT_i$, POL_i, and WI_i, are shown in Table 11, and the regression results are shown in Table 12.

We present three regressions, the first with LEFT and POL,

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basis for wage setting, while in the decentralized economies, the labor groups are probably too weak in general to push for real wage protection.

Countries with high indexation according to the Bruno-Sachs index used in this paper are: Australia, Belgium, Denmark, France, Italy, and Netherlands. All of these except Denmark are judged to be "intermediate" on the Calmfors and Driffill classification of labor markets. And of the intermediate cases in Calmfors and Driffill (Germany, Netherlands, Belgium, Australia, France, U.K., and Italy), all but Germany and the U.K. are characterized by high wage indexation.

[20]The indexation variable is the series presented in Table 11.7, column 2, of Bruno and Sachs (1985, p. 238).

the second with LEFT and WI, and the third with all three variables in the regression. In all cases, the LEFT index is highly significant with the expected sign: countries with a higher proportion of left-of-center governments show a larger share of government spending in GNP. In the first regression, the WI index is also significant, suggesting that countries with more formal wage indexation are also countries with a high target level of government spending. In the second regression, POL is also significant, suggesting that controlling for ideological composition, the more parties in the government, the larger is the target share of G in Y. When both POL and WI are entered in third regression, they both retain the expected sign, but lose statistical significance. In fact, WI and POL are positively correlated, since several of the countries characterized by coalition governments are also those characterized by high wage indexation (specifically, Belgium, Denmark, Italy, and the Netherlands) [21] . This correlation may not be coincidental: both the system of proportional representation that produces coalition governments, and the high extent of wage indexation, suggest a division of social and political power among a large number of competing, well-organized interest groups.

3.3 Cyclical Factors in the Growth of G/Y

We have now estimated a basic dynamic equation for G/Y, and

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[21] This multicollinearity between POL and WI is the likely cause of the weakening of the statistical significance of these variables when they are jointly entered in the regression.

have explored the determinants of the long-run target for G/Y. Now, we can take the regression estimates in (5') and explore the implications of the econometric estimates for the effects of the output slowdown and unemployment increase on the path of G/Y in the period 1973-85. According to (5'), the ratio G/Y rises whenever there is a slowdown of growth, or whenever there is a rise in unemployment (though the effect of rising unemployment is estimated to be smaller after 1980 than before). According to (5'), each one percentage point slowdown in output growth in year t raises g_t by 0.86, or raises $(G/Y)_t$ by 0.86 * (G/Y). For G/Y equal to 0.40, the growth slowdown would cause a rise in G/Y of 0.034. Similarly, each rise in U_t by one percentage point raises g_t by 1.03 before 1980, and by 0.46 after 1980; thus, the rise in U_t would raise G/Y (=0.40) by 0.41 before 1980, and by 0.18 after 1980. It follows that the 1973 and 1979 oil shocks, both of which produced a sharp slowdown in growth and an upward spurt in unemployment, led to a significant increase in the G/Y ratio in the OECD economies. Of course, over time, these effects are completely dissipated, as g_t approaches its long-run value g^T_t subject to the partial adjustment mechanism.

One simple way to measure the overall impact of the cyclical shocks of the post-'73 period is to use equation (5') to measure the cumulative effect of the growth slowdown and rise in U on G/Y after 1972. To do this, we consider a counterfactual in which unemployment after 1972 remains fixed at the 1972 level, and growth during 1973-85 is held fixed at the 1970-72 rate. Thus, x_t

$= U_t - U_{t-1} = 0$ for all years 1973-85 in the counterfactual case. We then use (5') to compare the path of G/Y using the actual shocks and the counterfactual path. We find that the post-'73 growth slowdown caused an estimated rise in the 1980 value of G/Y of more than 2 percentage points in five countries: Belgium, Denmark, France, the Netherlands, and the United Kingdom. By 1985, the overall effect of the post-'73 slowdown was less than 2 percentage points in all countries except the Netherlands and Belgium.[22]

Thus, while the growth slowdown and increase in unemployment contributed markedly to the rise in G/Y, especially in the years immediately after the shocks, by 1985 most of the cyclical effects on G/Y were gone. Clearly, it is the underlying trend factors, rather than the cyclical factors, that account for the great bulk of the cumulative increase in G/Y between the years 1973 and 1985.

3.4 The Dynamics of Taxes and Debt

We now estimate a dynamic tax equation that is similar in spirit to the equation for government spending in (4'). The purpose of the equation is to show econometrically that following

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[22] The complete results are as follows. The effects of the actual growth and unemployment paths, relative to the counterfactual, show the following increases in the G/Y ratio due to the shocks, for the years 1980 and 1985 (measured as percentage points of GNP): Austria, 1.14 (in 1980), 1.38 (in 1985); Belgium, 2.77, 3.62; Denmark, 3.18, 0.76; Finland, -0.05, 1.50; France, 2.93, 3.33; Germany, 1.17, 1.35; Italy, -0.21, 1.02; Japan, 0.49, 0.42; Netherlands, 2.55, 2.85; Norway, 0.07, -0.37; Sweden, -0.31, -0.71; United Kingdom, 2.10, 0.42; United States, 1.00, -0.82.

a slowdown in growth or a rise in unemployment, the tax ratio T/Y does not rise rapidly enough to keep the deficit from widening.[23]

We suppose that ln(T/Y), which we will denote ty , follows a partial adjustment mechanism in which the (ln) tax share of income adjusts with a lag to the level of the budget deficit (measured, as before, by the change in the debt-GNP ratio). And as with government spending, we assume that the change in ty is also a function of unexpected changes in growth (for the reasons outlined earlier for government spending) and changes in the unemployment rate. Thus:

$$(7) \quad ty_{it} - ty_{i_{t-1}} = -f*x_{it} + h*(U_{it} - U_{i_{t-1}}) + j*(dby_{i_{t-1}})$$

where $dby_t = (D/Y)_t - (DY)_{t-1}$. We expect that the magnitude of the coefficient f will be much less than the magnitude of the coefficient b in the government spending equation. That is, we expect that taxes will follow actual income much more closely than expected income, while spending will follow expected income more closely than actual income. This is simply because taxes are typically based on actual income, while spending is committed in advance of actual income, based on forecasts of future revenues and income. Similarly, we expect that the coefficient h on the

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[23] Nor should it, under Barro's theory of optimal tax smoothing, if (and this is a big if) the slowdown in growth or the rise in unemployment, is temporary. After the shocks of 1973 and 1979, however, the growth slowdown and the rise in unemployment were not quickly reversed, contrary to many expectations at the time (especially after 1973).

rise in unemployment will be smaller than the comparable coefficient d in the expenditure equation. Indeed, if taxes are set with Keynesian stabilization policies in mind, the coefficient h will be negative (i.e. taxes will be cut when unemployment rises), while the coefficient d is positive (i.e. expenditures are increased when unemployment rises). As before, we also test for a change in the coefficient on the unemployment variable after 1980 .

The estimate of the basic equation in (7) is given below:

(8) $\dot{t}y = 0.44\ (5.10)$ $\quad R_2 = 0.13$

$\dot{u}h = -0.40\ (1.85)$ $\quad$ s.e. = 0.025

$\dot{g}j = 0.12\ (2.15)$

The coefficient values are as expected. The value of -f is negative, but less negative than the value of b in the expenditure equation. Thus, ty rises by less than g with a slowdown in growth, indicating that an unexpected growth slowdown will tend to widen the budget deficit (as G/Y will rise more than T/Y). Also, ty falls with a rise in unemployment, suggesting that governments cut tax rates when unemployment rises. Thus, a rise in unemployment rates will also widen the budget deficit, as G/Y rises while T/Y falls. Finally, we see that indeed tax rates respond positively to lagged deficits (remember that we found no evidence that G/Y responds negatively to lagged deficits). The lagged rise in the D/Y ratio prompts to an increase in the tax

ratio, which in turn acts slowly to reduce the budget deficit. Thus, we should expect that a lagged deficit has a slightly negative effect on the current deficit, cet. par., since on average the lagged deficit prompts a small increase in current tax rates.

We also tested whether the countercyclical tax effect, linking taxes to unemployment, changed after 1980. This would be consistent with our earlier view about the decline of Keynesian policies in the 1980s and the results obtained in equation (5') about the reduced countercyclical effect of unemployment on public spending in the 1980's. When the change in unemployment times a dummy for the 1980-1985 period (as in equation 4'') is added to the basic tax equation (7), the coefficient on this variable turns out to be positive as expected but statistically insignificant. This suggest that the change in the relation between the unemployment rate and the fiscal variables in the 1980s is represented more by the change in the cyclical sensitivity of expenditures (as in (5'')) rather than the one of taxes.

By combining the expenditure and tax equations, we can get a basic equation for the dynamics of the budget deficit. From our earlier results, we know that the change in the budget deficit should: (1) increase with an unanticipated slowdown in growth, $x_t < 0$; (2) increase with a rise in the unemployment rate; and (3) decrease as a function of the lagged deficit (via tax increases).

There is one more important effect on the deficit that has not yet been discussed, and that is the effect of increases in the

real interest rate on the deficit. For a government with a stock of outstanding debt, D/Y, an increase in the real interest rate (say, because of a rise in the world interest rates) should be expected to cause an increase in the deficit in the short term, as spending and taxes will generally not rise one-for-one in response to the interest rate increase.[24] Letting $r_t - n$ be the real interest rate minus the growth rate of the economy, we define an "interest rate shock" variable rs_t as $rs_t = (D/Y)_{t-1} * d(r_t - n)$, and expect that the deficit will be an increasing function of this variable.

Measuring the deficit, as before, as $dby_t = (D/Y)_t - (D/Y)_{t-1}$, we specify the basic deficit equation as follows:

$$(9) \quad dby_{it} - dby_{it-1} = \text{constant} - k * dby_{it-1} + m * x_{it} + n*(U_{it} - U_{it-1}) + p * rs_{it}$$

The estimates for this equation are given below (t-statistics in parentheses):

(10) $\hat{k} = 0.79$ (16.0) $R^2 = 0.63$

$\hat{m} = -0.48$ (6.59) s.e. = 0.021

$\hat{n} = 0.17$ (0.94)

$\hat{p} = 0.75$ (2.86)

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[24] In earlier work, we tried to estimate a direct effect of higher interest charges on the levels of G/Y and T/Y. We found that neither spending nor taxes seemed to respond simultaneously to a rise in interest charges due to an increase in the real interest rate.

All of the variables are as expected, with the correct signs and statistically significant with the exception of the unemployment variable that has the right sign but has weak statistical significance. We also experimented, as before, with a shift term on the effect of $U_t - U_{t-1}$ for the post-1979 period but did not find any structural change in the cyclical effect of unemployment on budget deficits in the 1980s.

In an earlier study, Roubini and Sachs (1988), we suggested that the deficit equation in (10) can be improved by including the variable POL_i, which measures the extent of political power dispersion among the parties of the government. We suggested reasons why parliamentary multi-party coalition governments (e.g. in Belgium and Italy) will have a hard time closing budget deficits after adverse shocks, arguing mainly that the individual parties in the coalition will each veto spending cuts or tax increases that would impinge on their narrow constituencies, thereby frustrating the attempts of the executive branch to implement deficit reduction measures. To test this idea, we add the POL index to the basic deficit equation in (9), with a coefficient q. The estimates are as follows:

(11)
$$\hat{k} = 0.79 \quad (15.5)$$
$$\hat{m} = -0.48 \quad (6.66)$$
$$\hat{n} = 0.11 \quad (0.60)$$
$$\hat{p} = 0.78 \quad (3.01)$$
$$\hat{q} = 0.0033 \quad (2.01)$$

$R^2 = 0.64$

s.e. = 0.021

The coefficient on the POL variable ($\hat{q}$) is positive and statistically significant, suggesting that large coalition governments indeed have higher budget deficits, cet. par., than d one-party, majoritarian governments. The coefficient estimate on POL suggests that in a given year, holding constant the lagged values of the deficit, the difference in dby between a majority government (POL = 0) and a multiparty coalition government (POL = 3), is 0.0099 , or a deficit of one percent of GNP.

3.5 Some Summary Cross-Section Regressions

We conclude this section with some cross-section regressions which in a sense summarize the results of the various time-series, cross-section equations. Using the variables we have identified, we want to specify equations that explain the differences in the rise in G/Y, T/Y, and D/Y across countries in the interval 1973-85. For all of the regressions, the left-hand side variable is of the form $X_{1985} - X_{1973}$, where X = G/Y, T/Y, and D/Y. All of the cross-section equations are reported in Tabl 13.

The equation for the growth of G/Y relates the change in G/Y to several variables that we have identified earlier. We expect the change to be greatest in countries with: (1) a larger average slowdown in year-to-year growth during the period 1973-1985 relative to the previous 1967-1973 period, which we measure as th average of x_t for the years 1973-85 minus the average of x_t for

the 1967-1973 years $(DAVG(x_t)=AVG(x_t)_{1973-85} - AVG(x_t)_{1967-73})$; (2) a larger value of WI, the wage index variable; (3) a larger value of AVG(POL), the average value of the political power dispersion variable during 1973-85 [25]; (4) a larger value of IDEOL, a measure of the average ideological orientation (left versus right) of the parties in the government [26]. We also include a dummy variable for Sweden (SWEDUM), since there is an unaccountably large rise in the Swedish share of government expenditure in GNP, and since our sample is so small that an important outlier can distort the remaining results [27]. The desired regression equation is:

$$(12) \quad (G/Y)_{i_{1985}} - (G/Y)_{i_{1973}} = a + b*DAVG(x_{it}) + c*WI_i + d*AVG(POL)_i + e*IDEOL_i + f*SWEDUM$$

In fact, with only 13 country observations, it is unlikely that all of the right-hand-side variables can be estimated with any

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[25] Remember that POL can vary over time in an individual country, as the government might shift from being a coalition government to a single party government, or vice versa (e.g. the shift in Sweden from a multi-party coalition government during 1976-82, to a single-party government during 1983-85). We take the average value of POL in the cross-section regression.

[26] This IDEOL variable is a weighted average of the share of leftist, centrist and rightist cabinet positions (with weights 3, 2 and 1 respectively) derived from the data in Cameron (1985). Therefore this IDEOL index takes the value of 300 if all the cabinet portfolios in the period were held by members of leftist parties and 100 if they were all rightists.

[27] We also tested for the role of a larger rise in unemployment in the period $(U_{1985} - U_{1973})$ and found this variable to have the right sign but to be only weakly significant in the expenditure and deficit equations.

precision, especially given that some are highly correlated (e.g. WI, POL, and IDEOL). Therefore, we experimented with several versions of the equation, dropping out some of the variables to test the robustness of the relationship.

The results of the regression equations are shown in Table 13. We see clearly that the average extent of growth slowdown, $(AVG(x_t)_{1973-85} - AVG(x_t)_{1967-73})$, is an important explanatory variable in all of the regressions. Countries with the greatest slowdown in growth after 1973 (such as Italy and Belgium), also tended to show the greatest increase in G/Y, holding other factor constant. Similarly, INDEX, and POL, are all significant, and with the correct sign, if they are entered in the equation alone with the growth slowdown variable. When they are entered together they are still of the right sign but their statistical significance is weakened because of their multicollinearity [28]. Our index of the ideological orientation of the government turned out to be insignificant and was therefore dropped from the regressions [29].

The equation for the change in T/Y has basically the same form as in (12) [30]. As shown in Table 13, we find that the

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[28] We had a similar problem in the regressions in table 12 (the target ratio of government spending on the socio-political variables (equation 6).

[29] Similarly, introducing the variable LEFT instead of IDEO in these spending equations did not lead to significant coefficient estimates.

[30] The only difference is the introduction of the lagged change in the tax to GDP ratio (i.e. the change in this ratio in the 1967-1973 period) in this equation. This variable enters

increase in taxes is greater where: (1) the growth slowdown is larger; (2) WI is higher; and (3) IDEOL is larger. Importantly, the rise in taxes is a negative function of $AVG(POL_i)$, indicating that on average, divided coalition governments raised tax rates less than majority governments. This finding helps to account for the effect of POL on budget deficits that we observed earlier, and that we found in Roubini and Sachs (1988): a larger POL is associated, cet. par. with a larger rise in spending and a smaller rise in taxes over the period 1973-85.

Finally, we present the equation for the deficit $(D/Y)_{1985} - (D/Y)_{1973}$. As expected, we find that the deficit is highest in countries that experienced the greatest slowdown in growth; and in countries with large POL. Higher IDEOL countries (i.e. more leftist countries) show a tendency towards larger deficits in the period, but a high value of WI is not associated with larger budget deficits (apparently because a high WI contributed to a comparable rise in both spending and taxes).

3.6. The role of the EMS in the pattern of budget deficits after 1979

Since the EMS has played a fundamental role in the design of monetary policies in Europe, it might be supposed that the monetary regime has also influenced the exercise of fiscal policy. Two hypotheses come immediately to mind. The first, in analogy to the discussion of monetary policy in the EMS, is that the EMS may

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significantly in the regression.

have led to a convergence of fiscal policies, and in particular, to the size of public sector deficits. The second is that the EMS, by shifting the extent of seignorage collection, has also affected the rate of increase of public sector debt (by substituting debt finance for inflation finance in the formerly high-inflation countries).

The empirical evidence to date has shown that there has been some convergence of monetary policies and inflation rates in the EMS period, though the evidence is mixed on whether this convergence reflects the constraints imposed by EMS, or instead is just a coincidental outcome of the common antiinflationary objectives of most OECD countries. [31] In contrast, the evidence on fiscal deficits (using various measures, including the primary deficit, total PSBR, and changes in the debt-to-GDP ratios) shows no evidence of fiscal convergence.[32] If anything, one observes some degree of fiscal divergence, as most measures of dispersion of deficits rise among the EMS group of countries after 1979.

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[31] See Ungerer (1986), Giavazzi-Giovannini (1988), Collins (1988)

[32] We examined both the standard deviation and coefficient of variation of budget deficits (as a percent of GNP) for the EMS group of countries before and after 1979. For the budget deficits, we tried two measures: the standard overall financial balance as a percent of GNP; and the annual change in the debt-GNP ratio. The group of countries in the sample is: Germany, France, Italy, Belgium, Netherlands, Denmark, and Ireland. There is no evidence of any decline in the dispersion of budget deficits among this group of countries after 1979. For example, consider the measure of the standard deviation of the deficits for this group of countries, measuring the deficit as the annual change (multiplied by 100) in the debt-to-GNP ratio. For the years 1977-85, the standard deviation of deficits for the seven countries was: 1.8, 1.7, 2.9, 3.1, 4.2, 2.7, 2.8, 2.2, 3.8.

Basically, Italy, Belgium, the Netherlands, and Ireland have larger deficits after 1979 than before, while the deficits in Germany and Denmark decline markedly.

This absence of fiscal convergence is not really surprising, since the constraints imposed on fiscal policy by the requirement of pegging the exchange rate are very long-run constraints. In the short run, a given nominal exchange rate target can be consistent with a very wide range of fiscal policies, assuming that the government has access to domestic and international borrowing. This point is especially true in cases where capital controls have been operative. (See Roubini (1988), on these points).

On the question of the links of the EMS to seignorage collection, and of seignorage collection to the rise of the debt-to-GNP ratio, the evidence is mixed. The hypothesis is that the EMS induced a slowdown in inflation in the member countries outside of Germany, as they undertook the commitment to peg to the Deutsche Mark. As a result, they experienced a reduction in seignorage collections. If the lost seignorage was not fully compensated for by higher taxes or lower spending, we should observe a faster rise in the debt-GNP ratio. We find that, on average, a reduction of seignorage collections after 1979 is indeed associated with a faster growth of the debt-to-GNP ratio. As shown in the following regression estimate, the tradeoff even appears to be approximately one-for-one: lower seignorage after 1979 translated fully into higher debt accumulation.

To perform the test in a simple manner, we estimate the cross-section, time-series equation for the change in debt (equation 9), and add the annual seignorage collection as a right-hand-side explanatory variable.[33] The results, estimated for the period 1979-85 (the period of the EMS) are as follows:

(14) $\hat{k} = 0.76$ (10.5) $R^2 = 0.73$

$\hat{m} = -0.41$ (3.18) s.e. = 0.021

$\hat{n} = 0.12$ (0.48)

$\hat{p} = 1.41$ (2.73)

$\hat{q} = 0.0083$ (2.90)

$\hat{s} = -1.06$ (2.28)

The coefficient on the seignorage variable ($\hat{s}$) is negative (-1.06) and statistically significant. The other variables all maintain their signs and statistical significance from the earlier estimation. The equation suggests that each 1 percent of GNP reduction in seignorage was associated with a rise in the debt-GNP ratio of around one percent. In other words, over this period, it appears that indeed, seignorage and public debt accumulation were close substitutes. The reduction in seignorage did not really solve the fiscal problems of the high-inflation countries: it just pushed the problems into the future in the form of a higher stock

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[33] Seignorage is measured as a percent of GNP as $(M_t - M_{t-1})/Y_t$, where M_t is end-of-period base money, and Y_t is nominal GNP. The data are taken from the International Financial Statistics of the IMF, and M is taken from line 14 ("reserve money") for each country.

of public debt.

At the same time, however, we can note from the data that the EMS seems to have played no special role in inducing a decline in seignorage collection. The change in seignorage (measured as a percent of GNP) is about the same outside of the EMS than inside, as is shown in Table 14. This can also be verified by a formal t-test on the mean difference of the change in seignorage inside and outside of the EMS.

It seems that most OECD countries pursued anti-inflation programs (mainly tight monetary policy) after 1979, whether the countries were or were not members of the EMS. And on average, the resulting reduction in seignorage collection did indeed show up in the form of higher public debt.

4. Prospects for the growth of government in the next few years

The striking fiscal phenomenon in the 1980s in the industrial economies has been the slowdown, and in some cases reversal, of the growth of government as a share of GDP. We can note that Table 3 shows a decline in G/Y between 1983 and 1985 in 10 of the 15 countries shown. In every one of those cases, that decline comes after a period of rapid increase in the G/Y ratio. In this section, we discuss briefly the possible meaning of this trend for the future.

There is, of course, a difficult "identification" problem in sorting out the meaning of the slowdown in government spending. At least three possible interpretations come to mind. First, part

of the retrenchment may be the error-correction to the overshooting of the size of government in the 1970s. Second, the slowdown may reflect some long-run satiation in the desired level of government spending (i.e. the "completion" of the welfare state in many industrial economies). Third, there might be a real reconsideration of the appropriate role of government, or at least an exogenous shift in political power to forces that oppose an extension of the size of the state.

There is of course no airtight way to disentangle these competing interpretations, though our basic econometric results do indeed shed some light on these questions. In principle, our framework allows for a separation of the first and second considerations, i.e., the cyclical effects on G/Y versus the effects of satiation in the public demand for G/Y. We saw earlier that according to our estimates, most countries were still under, but close to, their long-run target levels of G/Y. Only Germany is measured to be above the long-run target; the U.S., France, Italy, Austria, Netherlands, and Norway, are estimated to be close to, but below, equilibrium; and Japan, Denmark, and Sweden are still estimated to be closing in on significantly higher levels of G/Y.

The equations also suggest that an increase in output growth, or reduction in unemployment, is likely to have a significant cyclical effect on the share of spending in GNP (and of course on the budget deficit). There are many signs that after 15 years of relative stagnation, the European economies are beginning to grow

again at respectable rates (of around 4 percent per year), enough finally to bring the high unemployment rates down. Both the rise in GNP growth and the fall in unemployment rates augers for a further drop in the G/Y ratio in the next couple of years.

Of course, all of this evidence is much too crude to evaluate the third possibility: that there has been a significant conceptual change in thinking about the role of government in the economy, that will lead to a significant retrenchment of G/Y.[34] This may in fact be occurring, but our crude statistical techniques could not tell us so with any confidence. For that, we would have to delve much more deeply, and on a country-by-country basis, into political and social trends, perhaps using survey data rather than macroeconomic time-series data.

5. Conclusions

In this paper, we have tried to interpret several important trends in the size of governments and government deficits in the OECD economies. We noted three phenomena of central importance: (1) the rapid increase in G/Y in the period after 1965, and particularly after 1973; (2) the sharp rise in budget deficits and in debt-GNP ratios after 1973; and (3) the early signs of a slowdown or reversal in the rise of G/Y in the 1980s. We have tried to offer some economic and political interpretations of each of these findings.

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[34] This hypothesized change of thinking is termed by its promoters in the U.S. as the "Reagan Revolution".

With respect to the first, we noted that the rise in G/Y was importantly associated with the slowdown in growth after 1973, as well as with the gradual adjustment of G/Y to a long-run target value. That long-run value itself was shown to depend on the political and institutional characteristics of the various economies.

As for budget deficits, we showed that much could be explained by normal cyclical factors (the slowdown in growth and the rise in unemployment after 1973), but that in addition, the size of the budget deficits was related to political as well as economic characteristics of the countries. Budget reduction requires political consensus, at least among the members of the government. We noted that such consensus was harder to achieve in multi-party coalition governments (as in Belgium and Italy), and that the failure to reach a consensus on budget cutting could help to explain why such countries have experienced such an enormous rise in the debt-GNP ratio.

We also digressed briefly to consider whether the EMS had played any apparent role in budgetary policy of the member governments. We found little evidence of policy convergence among the EMS members, and also little evidence that the EMS had played a special role in reducing seignorage financing. We did note, however, that governments which cut their seignorage collections after 1979 seemed to finance that reduction through a faster accumulation of public debt. In other words, public borrowing was substituted for the inflation tax after 1979.

At the end of the paper, we explored briefly the possible explanations for the slowdown in the growth of G/Y in the most recent years, and the implications for the future. Our conclusions were necessarily cautious. We noted that the estimated equations suggested that most, though not all, of the industrial countries were now very close to their long-run target levels of G/Y. We also pointed out that the incipient "mini-boom" in many countries in Europe suggested a further drop in G/Y in future years. But at the same time, we necessarily left open the possibility that recent trends reflect not merely a satiation of G/Y, but also a reconsideration of the appropriate role of government, that might lead to a retrenchment of G/Y in the future. The macroeconomic data do not yet suggest such a shift, but the time-series macroeconomic evidence is much too weak to make any conclusive statements in this regard.

REFERENCES

Barro, R. (1979). "On the Determination of Public Debt", Journal of Political Economy, 87, October.

Barro, R. (1987). "Government Spending, Interest Rates, Prices, and Budget Deficits in the United Kingdom, 1701-1918", Journal of Monetary Economics, September.

Bruno, M. and J. Sachs (1985). Economics of Worldwide Stagflation, Harvard University Press.

Calmfors, L. and J. Driffill (1988). "Bargaining Structure, Corporatism and Macroeconomic Performance" Economic Policy, No.6, April.

Cameron, D.R. (1985). "Does Government Cause Inflation? Taxes, Spending and Deficits", in L. Lindberg and C. Maier (eds.) The Politics of Inflation and Economic Stagnation, The Brookings Institution, Washington, D.C.

Cameron, D.R. (1978). "The Expansion of the Public Economy: A Comparative Analysis", American Political Science Review, 72, December.

Cohen, D. (1988) "What Caused the Rise of Conservatism: A French View", Economic Policy, No.6, April.

Collins, S. (1988). "Inflation and the EMS", mimeo, Harvard University.

Emerson, M. (1986). "What Model for Europe"?, mimeo, Harvard University.

Giavazzi, F. and A. Giovannini (1988). Limiting Exchange Rate Flexibility: The European Monetary System, forthcoming, M.I.T. Press.

Larkey, P.D., C. Stolp and M. Winer (1981). "Theorizing about the

Growth of Government: A Research Assessment", Journal of Public Policy, 1, May.

Lybeck, J.A. (1986). The Growth of Government in Developed Economies, Aldershot: Glower Press.

Lybeck, J.A. (1988). "Comparing Government Growth Rates: The Non-Institutional vs. the Institutional Approach" in Lybeck, J.A. and H. Henrekson (eds.) Explaining the Growth of Government, North Holland.

Lybeck, J.A. and H. Henrekson (1988), (eds.) Explaining the Growth of Government, North Holland.

Moynihan, D.P. (1988). Came the Revolution, San Diego, Cal.: Harcourt, Brace, Jovanovich.

Mueller, D.C. (1987). "The Growth of Government: A Public Choice Perspective", IMF Staff Papers, 34, March.

O.E.C.D. (1985). "The Role of the Public Sector", OECD Economic Studies, No.4 Spring 1985.

Ram, R. (1987) "Wagner Hypothesis in Time-Series and Cross-Section Data Perspectives: Evidence from 'Real' Data for 115 Countries", Review of Economics and Statistics, 69, May.

Roubini, N. (1988), "International Transmission of Macro Policies under Alternative Exchange Rate Regimes: A Four Country Model", mimeo, Harvard University.

Roubini, N. and J. Sachs (1988). "Political and Economic Determinants of Budget Deficits in the Industrial Economies", NBER Working Paper No. 2682, forthcoming in European Economic Review, 1989.

Schmidt, M.G. (1982). Wohlfahrtsstaatliche Politik unter burgelichen

und Sozialdemokratischen Regierungen: ein Internationaler Vergleich, Frankfurt: Campus Verlag.

Schmidt, M.G. (1983). "The Growth of the Tax State:The Industrial Democracies, 1950-1978", in C.L. Taylor (ed.) Why Governments Grow, Beverly Hills: Sage Publications.

Tarschys, D. (1975). "The Growth of Public Expenditures - Nine Modes of Explanation", Scandinavian Political Studies, 10.

Ungerer, H., O. Evans, T. Mayer and P. Young (1986). "The European Monetary System: Recent Developments", Occasional Paper No.48, December.

Wagner (1877, 1890). Finanzwissenschaft Vol I and II, Leipzig: C F Winter.

Table 1. Public Expenditures (as a Share of GDP) in Selected OECD Countries

Level

Year	1938	1950	1965	1973	1982	1985
Country:						
France	21.8	27.6	38.4	38.5	51.1	52.4
Germany	42.4	30.4	36.6	41.5	49.4	47.2
Japan	30.3	19.8	19.0	22.4	33.7	32.7
Netherlands	21.7	26.8	38.7	45.8	61.6	60.2
United Kingdom	28.8	34.2	36.1	40.6	48.2	47.7
United States	18.5	22.5	27.4	30.6	36.5	36.7
Italy	29.2	30.3	34.3	37.8	47.6	50.8

Average Change per Year

Period:	1938-1950	1950-1965	1965-1973	1973-1982	1982-1985
Country:					
France	0.48	0.72	0.01	1.40	0.43
Germany	-1.00	0.41	0.61	0.87	-0.73
Japan	-0.87	-0.05	0.42	1.25	-0.33
Netherlands	0.42	0.79	0.88	1.75	-0.46
United Kingdom	0.45	0.12	0.56	0.84	-0.16
United States	0.33	0.32	0.40	0.65	0.06
Italy	0.09	0.26	0.43	1.08	1.06

Source: Lybeck and Henreckson (1988) (page 189) for 1938,1950,1960,1985 figures. OECD Economic Outlook for 1973 and 1965 figures.

Table 2. Net Debt to GDP Ratio. 1960 - 1986.

Year	1960	1973	1986
US	45.0	23.0	29.1
Germany	-13.2	-6.7	22.1
France	29.1	8.3	18.2
UK	128.2	57.9	46.7
Italy	26.6 **	45.1	84.9
Canada	21.8	2.6	33.7
Belgium	83.3	50.9	113.3
Finland	-5.0 *	-10.7	-0.4
Austria	19.4 *	17.5	47.7
Netherlands	28.9 *	21.0	46.0
Sweden	-24.0 *	-31.1	14.5
Norway	2.5 *	-1.4	-24.4
Japan	-5.6 ***	-6.1	26.3
Denmark	-2.8 *	-12.2	28.5
Ireland	35.7 *	32.0	108.2

* 1970 figure
** 1964 figure
*** 1965 figure

Source: OECD data.

Table 3. Total Outlays of the General Government (as as share of GDP)

YEAR	US	GERMANY	FRANCE	UK	ITALY	JAPAN	CANADA
1965	27.4	36.6	38.4	36.1	34.3	19.0	28.5
1966	28.5	36.7	38.5	35.3	34.3	19.1	29.5
1967	30.5	38.6	39	38.2	33.7	18.2	31.5
1968	30.7	39.1	40.3	39.2	34.7	18.3	32.3
1969	30.4	38.6	39.6	41.2	34.2	18.3	32.7
1970	31.6	38.6	38.9	39.8	34.2	19.4	34.8
1971	31.6	40.1	38.3	38.9	36.6	20.9	36.1
1972	31.3	40.8	38.3	40.5	38.6	22.1	36.6
1973	30.6	41.5	38.5	41.5	37.8	22.4	35.4
1974	32	44.6	39.7	45.7	37.9	24.5	36.8
1975	34.6	48.9	43.5	47.3	43.2	27.3	40.1
1976	33.4	47.9	44	46.6	42.2	27.7	39.1
1977	32.2	48	44.2	44.7	42.5	29	40.1
1978	31.6	47.8	45.2	44.2	46.1	30.5	40.3
1979	31.7	47.6	45.5	43.9	45.5	31.6	39
1980	33.7	48.3	46.4	46	41.6	32.6	40.5
1981	34.1	49.2	49.1	48.7	45.5	33.5	41.5
1982	36.5	49.4	51.1	48.2	47.6	33.7	46.4
1983	36.9	48.3	52	48.1	48.8	34.1	46.9
1984	35.8	48	52.7	48.9	49.5	33.2	47
1985	36.7	47.2	52.4	47.7	50.8	32.7	47

YEAR	BELGIUM	NETHER	AUSTRIA	SWITZL	DENMARK	IRELAND	SWEDEN	FINLAND	OECD	OECD EUROPE
1965	32.3	38.7	37.8	19.7	29.9	33.1	36.1	30.8	29.5	34.5
1966	33.5	40.7	38.3	20.1	31.7	33.6	38.3	32	30.1	34.6
1967	34.5	42.5	40.5	20.4	34.3	34.8	40.2	32.9	31.5	35.9
1968	36.3	43.9	40.6	20.7	36.3	35.2	42.8	32.8	31.8	36.9
1969	36.1	44.4	40.3	21.8	36.3	36.6	43.2	31.2	31.7	37.0
1970	36.5	43.9	39.2	21.3	40.2	39.6	43.3	30.5	32.4	36.8
1971	38	45	39.7	21.9	43	40.5	45.3	32	32.9	37.6
1972	38.8	45.6	39.8	21.9	42.6	38.8	46.2	32.4	33.1	38.3
1973	39.1	45.8	41.3	24.2	42.1	39	44.7	31	33	38.7
1974	39.4	47.9	41.9	25.5	45.9	43	48.1	32	34	40.6
1975	44.5	52.8	46.1	28.7	48.2	46.5	48.9	36.1	38	44.2
1976	45	52.9	46.9	30.2	47.8	46	51.7	37	37.4	44.3
1977	46.5	53	46.8	30.4	48.9	43.7	57.5	38.2	37.2	44.7
1978	47.8	54.4	49.7	30.2	50.6	44.3	59.2	37.7	37.6	45.5
1979	49.3	55.8	48.9	29.9	53.2	46.8	60.7	36.6	38.1	45.5
1980	50.8	57.5	48.9	29.3	56.2	50.9	61.6	36.5	39.6	46.5
1981	55.7	59.7	50.3	28.9	59.8	52.5	64.6	37.3	40.3	49.0
1982	55.7	61.6	50.9	30.1	61.2	55.3	66.6	39	41.7	50.1
1983	55.6	62.2	51.4	30.9	61.6	55.7	66.2	40.3	41.8	50.5
1984	55	61.3	50.8	31.4	60.7	53.9	63.5	39.9	40.8	50.6
1985	54.4	60.2	50.7	31	59.5	54.4	64.5	41.5	41	50.5

Source: OECD Economic Outlook, various issues.

Table 4. Changes in the Components of Current Outlays in the 1970-85 Period. (as a share of GDP)

	(1) TOTAL CURRENT OUTLAYS	(2) FINAL CONSUMPTION	(3) SUBSIDIES	(4) CURRENT TRANSFERS	(5) INTEREST PAYMENTS	(6)= (3)+(4) / (2)+(3)+(4)
Country:						
US	5.7	-0.5	0.1	3.2	2.8	1.17
GERMANY	10.9	4.1	0.3	4.4	2.1	0.53
FRANCE	14.7	2.9	0.3	9.9	1.7	0.77
UK	11.2	3.5	0.5	5.9	1.2	0.64
FINLAND	11.1	5.7	0.3	4.3	0.8	0.44
AUSTRIA	12.1	4	1	4.8	2.4	0.59
JAPAN	12.9	2.3	0.1	6.6	3.9	0.74
ITALY	21.7	5.7	1.2	7.1	7.5	0.59
NETHERLAND	17	0.9	0.6	11.1	4.4	0.92
SWEDEN	23.9	6	3.2	8.1	6.6	0.65
IRELAND	16.2	4.6	-1.4	7.5	5.6	0.57
DENMARK	19.3	4	0.2	6.4	8.5	0.62
NORWAY	7.5	1.7	0.2	3.1	2.5	0.66
CANADA	12.4	1.6	1.6	4.5	4.8	0.79
BELGIUM	19.3	4	0.2	7.9	7.2	0.66

Source: OECD National Income Accounts.

Table 5. OECD Countries. Structure of Expenditures in 1985 (as a share of GDP).

	TOTAL EXPENDITURES	FINAL CONSUMPTION OF GOODS AND SERVICES	INTEREST PAYMENTS	SUBSIDIES	CURRENT * TRANSFERS	SOCIAL SECURITY BENEFITS
US	0.353	0.183	0.050	0.006	0.113	0.072
GERMANY	0.434	0.199	0.029	0.020	0.185	0.117
FRANCE	0.494	0.163	0.028	0.023	0.280	0.218
UK	0.449	0.211	0.059	0.022	0.155	0.065
FINLAND	0.377	0.202	0.018	0.031	0.126	0.067
AUSTRIA	0.452	0.187	0.035	0.027	0.203	0.102
JAPAN	0.269	0.097	0.045	0.012	0.115	0.091
ITALY	0.519	0.195	0.093	0.027	0.203	0.195
NETHERLANDS	0.552	0.163	0.078	0.019	0.292	0.201
SWEDEN	0.608	0.274	0.085	0.049	0.200	0.145
IRELAND	0.504	0.192	0.093	0.035	0.184	0.070
DENMARK	0.567	0.253	0.099	0.030	0.184	0.164
NORWAY	0.440	0.186	0.043	0.054	0.157	0.148
CANADA	0.437	0.201	0.085	0.025	0.127	0.072
BELGIUM	0.523	0.177	0.106	0.015	0.226	0.196

Source: OECD National Income Accounts

* : Current transfers include social security benefits, social assistance grants and unfunded employee pension fund and welfare payments.

Table 6. Current Receipts of the General Government (as a share of GDP).

YEAR	US	JAPAN	GERMANY	FRANCE	UK	ITALY	CANADA	AUSTRIA
1966	26.7	19.1	36.1	38.4	34.3	29	28.8	39.3
1967	27.1	19.3	36.7	38.2	36.2	31	30.3	39.1
1968	28.7	19.6	37.8	38.8	37.6	31.6	31.7	38.9
1969	29.9	19.6	39.3	39.8	39.5	30.7	33.7	39.6
1970	28.9	20.7	38.3	39	41.2	30.4	34.2	39.7
1971	28.2	21.6	39.4	38.3	39.1	31.1	34.7	40.5
1972	29.3	21.5	39.8	38.2	37.5	30.9	35.2	41.2
1973	29.6	22.5	42.2	38.6	36.8	30.4	34.9	41.9
1974	30.3	24.5	42.7	39.4	40.6	30.6	37.2	42.5
1975	28.8	24	42.7	40.3	41.3	31.2	36.1	42.9
1976	29.5	23.6	44	42.5	40.4	32.9	35.8	42.4
1977	29.7	24.7	45	42.4	39.9	34.3	36.1	43.7
1978	29.9	24.5	44.7	42.3	38.5	36	35.7	46.2
1979	30.5	26.3	44.4	43.7	39.3	35.7	35.5	45.8
1980	30.8	27.6	44.7	45.5	41	32.9	36.2	46.4
1981	31.6	29.1	44.8	46.2	43.1	33.8	38.5	47.8
1982	31.1	29.5	45.4	47.1	44.2	36	39	46.7
1983	30.7	29.8	45.1	47.7	43.2	37.8	38.7	46.3
1984	30.7	30.4	45.4	48.5	43.7	37.7	38.9	47.2
1985	31.1	31.2	45.4	48.5	43.7	38.2	38.9	48.3
1986	31.3	31.3	44.7	NA	41.9	38.9	39.2	47.6

Table 6 (cont.)

YEAR	BELGIUM	DENMARK	FINLAND	NETHERL	NORWAY	SWEDEN	IRELAND	SWITZERLAND
1966	32.4	33.5	32.8	39.2	38.3	41.3	30	24.1
1967	33.2	34.1	34.6	40.6	40.5	42.7	30.6	24.2
1968	33.8	36.9	34.8	42.4	41.1	45.7	31	25.3
1969	34.3	37.2	33.8	43.2	43.3	46.7	31.6	26.4
1970	35.2	41.7	34.1	42	43.5	46.6	35.3	26.5
1971	35.7	46.4	35.7	43.3	46.6	49.4	36.3	26.2
1972	35.5	45.9	35.4	44.5	48.4	49.5	34.9	26.4
1973	36.4	46.8	36	45.9	49.6	47.7	34.5	28.8
1974	37.7	48.4	35.7	47	48.5	48.8	35.2	29.7
1975	40.4	46.1	37.8	49.2	49.6	50.5	34.6	32.1
1976	40.2	46.9	41	49.5	50.9	55.1	37.9	33.9
1977	41.6	47.6	40.3	50.5	51	58	36.4	33.7
1978	42.4	49.6	38	50.9	52	57.5	35.2	33.8
1979	43.1	50.8	36	51.4	51.9	56.4	35.9	33.1
1980	42.8	52.2	35.9	52.8	54.2	56.6	38.8	32.8
1981	43.6	52.1	37.6	53.5	52.8	58.3	39.6	32.8
1982	45.3	52.1	37.5	53.8	53.2	58.9	41.7	33.3
1983	44.7	53.6	37.5	55.3	53.1	59.9	43.9	33.9
1984	46	55.9	39.1	54.3	54.4	59.6	44.3	34.7
1985	46.5	57	40.5	54.4	56.1	59.4	NA	34.4
1986	44.8	58	41.8	52.8	56.3	61.5	NA	35

Table 6 (cont.)

YEAR	TOTAL G-7	TOTAL SMALLER COUNTRIES	TOTAL OECD
1966			
1967	29.2	32.3	29.5
1968	30.3	33.4	30.6
1969	31.3	34.1	31.5
1970	30.8	34.8	31.2
1971	30.6	36	31.1
1972	31	36.3	31.6
1973	31.6	37.2	32.2
1974	32.7	37.6	33.3
1975	32.2	39.2	33.1
1976	32.7	40.8	33.7
1977	33	41.9	34.1
1978	32.9	42.1	34.1
1979	33.9	41.9	35
1980	34.6	42.8	35.7
1981	35	43.5	36
1982	35.1	43.9	36.1
1983	34.8	45.1	35.8
1984	34.6	45.5	35.6
1985	35	46.2	36
1986	34.3	46.2	35.7

Source: OECD ECONOMIC OUTLOOK, Table 15R.

Table 7. General Government Financial Balances (as a share of GDP).

YEAR	OECD	US	JAPAN	GERMANY	FRANCE	UK	ITALY	CANADA
1970	0.1	-1	1.8	0.2	0.9	2.5	-3.7	0.9
1971	-0.5	-1.8	1.2	-0.2	0.7	1.4	-5.5	0.1
1972	-0.5	-0.3	-0.1	-0.5	0.8	-1.8	-7.9	0.1
1973	0.1	0.6	0.6	1.2	0.9	-3.4	-7.4	1
1974	-0.5	-0.3	0.4	-1.3	0.6	-3.8	-7.5	1.9
1975	-3.8	-4.1	-2.7	-5.7	-2.2	-4.7	-12.4	-2.4
1976	-2.7	-2.2	-3.7	-3.4	-0.5	-4.9	-9.5	-1.7
1977	-2.1	-1	-3.8	-2.4	-0.8	-3.4	-8.4	-2.4
1978	-2.3	0	-5.5	-2.4	-1.9	-4.2	-10.3	-3.1
1979	-1.8	0.5	-4.7	-2.5	-0.7	-3.3	-10.1	-2
1980	-2.5	-1.3	-4.4	-2.9	0	-3.5	-8.5	-2.8
1981	-2.7	-1	-3.8	-3.7	-1.9	-2.8	-11.5	-1.5
1982	-4.0	-3.5	-3.6	-3.3	-2.8	-2.3	-11.3	-5.9
1983	-4.2	-3.8	-3.7	-2.5	-3.2	-3.6	-10.7	-6.9
1984	-3.4	-2.8	-2.1	-1.9	-2.7	-3.9	-11.5	-6.6
1985	-3.4	-3.3	-0.8	-1.1	-2.9	-2.9	-12.6	-7
1986	-3.3	-3.5	-0.9	-1.2	-2.9	-2.6	-11.6	-5.5

YEAR	BELGIUM	DENMARK	FINLAND	NETHERL	NORWAY	SWEDEN	IRELAND	AUSTRIA
1970	-2	3.2	4.3	-0.8	3.2	4.4	-3.7	1
1971	-3	3.9	4.5	-0.5	4.3	5.2	-3.5	1.5
1972	-4	3.9	3.9	-0.6	4.5	4.4	-3.2	2
1973	-3.5	5.2	5.7	0.6	5.7	4.1	-4.2	1.3
1974	-2.6	3.1	4.6	-0.4	4.7	1.9	-7	1.3
1975	-4.7	-1.4	2.6	-3	3.8	2.7	-11.3	-2.5
1976	-5.4	-0.3	4.8	-2.9	3.1	4.5	-7.5	-3.7
1977	-5.5	-0.6	3.1	-2.1	1.7	1.7	-6.9	-2.4
1978	-6	-0.3	1.4	-3.1	0.6	-0.5	-8.8	-2.8
1979	-7.3	-1.7	0.4	-3.5	3.4	-3	-10.7	-2.4
1980	-9.2	-3.2	0.5	-4	5.7	-3.7	-11.6	-1.7
1981	-13.4	-6.9	1.3	-5.5	4.7	-4.9	-13.9	-1.8
1982	-11.3	-9.1	-0.4	-7.1	4.4	-6.3	-16.1	-3.4
1983	-11.9	-7.2	-1.6	-6.4	4.2	-5	-13.6	-4.2
1984	-9.8	-4.1	0.3	-6.2	7.5	-2.6	-12.3	-2.7
1985	-9.1	-2.1	0.1	-4.8	10.4	-3.8	-12	-2.2
1986	-9.2	3.4	0.6	-5.6	5.9	-0.3	0	-3

Source: OECD Economic Outlook, Table 13R.

Table 8.
Changes in the Net Debt to GDP Ratio.

YEAR	AVERAGE	US	GERMANY	FRANCE	UK	ITALY	CANADA	BELGIUM
1961	NA	-0.24	-2.16	-3.29	-7.33	NA	21.76	-2.22
1962	NA	-2.29	-0.15	-3.61	-4.79	NA	-1.07	-3.23
1963	NA	-2.06	2.18	-2.30	-6.89	NA	0.25	-2.34
1964	NA	-2.04	-1.42	-1.92	-6.58	NA	-2.06	-5.57
1965	NA	-3.01	1.91	-1.92	-5.91	3.56	-2.22	-2.30
1966	NA	-2.82	0.97	-1.09	-4.22	4.04	-1.31	-1.47
1967	NA	-0.16	1.77	-0.37	-0.06	-0.15	-0.13	-1.85
1968	NA	-1.62	1.30	0.20	-5.62	2.90	-2.05	-1.04
1969	NA	-2.48	-0.07	-1.38	-4.68	-0.26	-3.94	-3.08
1970	NA	-0.42	0.73	-1.98	-7.31	2.43	-3.12	-3.69
1971	-0.94	0.09	1.08	-0.48	-4.75	4.81	-1.53	-0.83
1972	-1.11	-2.10	1.36	-1.91	-4.75	5.98	-0.41	-2.02
1973	-2.25	-2.79	-0.94	-0.74	-7.44	-4.82	-1.56	-1.70
1974	-0.36	-0.80	1.98	0.43	-2.96	-2.40	-1.49	-3.43
1975	3.65	2.31	5.63	2.31	2.32	9.20	3.17	2.32
1976	1.42	-0.19	3.66	-0.12	-1.18	0.80	0.90	0.35
1977	1.34	-1.09	2.36	-0.74	-0.35	-0.10	2.34	3.50
1978	2.41	-1.96	2.45	0.04	-2.32	2.70	2.79	3.85
1979	1.99	-1.56	2.08	-0.49	-4.68	-0.10	0.55	4.24
1980	1.15	0.07	2.86	-0.67	-0.60	-1.70	0.70	7.31
1981	3.46	-0.72	3.10	0.80	-0.90	3.80	-0.76	12.50
1982	4.02	2.55	2.31	1.47	-0.56	6.00	6.21	7.64
1983	3.89	2.74	1.65	2.01	0.58	5.50	3.51	10.18
1984	1.97	1.03	0.33	1.83	1.70	6.10	4.39	4.95
1985	1.60	1.69	0.41	1.58	-1.49	6.90	5.62	6.92
1986	0.41	1.99	-0.07	1.44	-0.72	3.10	3.16	2.06

Table 8. (cont.)

YEAR	FINLAND	AUSTRIA	NETHERL	SWEDEN	NORWAY	JAPAN	DENMARK	IRELAND
1961	NA	NA	NA	NA	NA	NA	NA	NA
1962	NA	NA	NA	NA	NA	NA	NA	NA
1963	NA	NA	NA	NA	NA	NA	NA	NA
1964	NA	NA	NA	NA	NA	NA	NA	NA
1965	NA	NA	NA	NA	NA	NA	NA	NA
1966	NA	NA	NA	NA	NA	0.04	NA	NA
1967	NA	NA	NA	NA	NA	-1.45	NA	NA
1968	NA	NA	NA	NA	NA	0.72	NA	NA
1969	NA	NA	NA	NA	NA	0.77	NA	NA
1970	NA	NA	NA	NA	NA	-0.99	NA	NA
1971	-2.30	-1.20	-1.20	-3.50	0.10	-0.73	-3.10	-0.60
1972	-0.70	-0.70	-3.20	-2.00	-2.02	0.77	-3.10	-1.90
1973	-2.70	NA	-3.50	-1.60	-1.95	0.42	-3.20	-1.20
1974	0.20	0.10	-2.00	1.00	-0.46	0.72	-1.40	5.10
1975	1.00	6.30	0.70	1.40	2.50	3.27	3.50	8.80
1976	-1.00	3.50	0.60	-1.00	2.85	3.99	2.40	5.70
1977	0.60	2.60	-1.10	0.90	5.98	3.57	2.70	-1.00
1978	1.60	3.80	0.80	3.50	4.50	5.76	2.90	5.70
1979	1.50	2.10	1.80	5.50	2.80	3.64	3.90	8.60
1980	0.80	1.20	3.10	6.30	-9.90	2.38	5.40	NA
1981	1.40	2.10	2.40	8.30	-3.00	3.35	9.30	10.20
1982	2.80	2.40	4.00	9.60	-2.60	2.55	9.80	6.10
1983	2.17	4.80	5.20	6.10	-3.70	2.97	7.80	6.80
1984	0.32	1.40	1.80	2.10	-7.20	0.80	3.40	6.60
1985	-0.14	-0.50	3.30	2.80	-9.40	-0.41	-2.30	9.00
1986	-0.95	0.40	4.40	-0.90	-5.40	-0.24	-6.70	4.60

Source: OECD data.

Table 9. Actual and Long Run Target Value of the Expenditures to GDP Ratio.

COUNTRY	Actual 1985 Figure	Long-Run Target Value
US	30.2	32.3
Germany	44.0	43.4
France	46.6	46.9
UK	39.0	43.9
Belgium	41.7	42.6
Italy	42.5	43.9
Japan	22.4	27.3
Austria	41.8	44.4
Netherlands	47.4	49.4
Sweden	52.2	62.1
Norway	39.7	43.5
Finland	35.9	36.9
Denmark	46.7	51.5

Notes:

The expenditure measure in this table excludes interest payment on public debt.

Source for actual 1985 figure: OECD National Income Accounts. See text, equation (5'), p.22, for estimation of long-run target values.

Table 10. Description of POL variable.

POL : Index of the Political Cohesion of the National Government.

	United States	France	Germany	Japan	United Kingdom	Austria	Belgium
1960	0	1	1	0	0	1	1
1961	0	1	1	0	0	1	1
1962	0	1	1	0	0	1	1
1963	0	1	1	0	0	1	1
1964	0	1	1	0	0	1	1
1965	0	1	1	0	0	1	1
1966	0	1	1	0	0	0	1
1967	0	1	1	0	0	0	1
1968	0	1	1	0	0	0	1
1969	1	1	1	0	0	0	1
1970	1	1	1	0	0	0	1
1971	1	1	1	0	0	0	1
1972	1	1	1	0	0	0	1
1973	1	1	1	0	0	0	2
1974	1	1	1	0	0	0	2
1975	1	1	1	0	0	0	2
1976	1	1	1	0	0	0	2
1977	0	1	1	0	0	0	2
1978	0	1	1	0	0	0	2
1979	0	1	1	0	0	0	2
1980	0	1	1	0	0	0	2
1981	1	1	1	0	0	0	2
1982	1	1	1	0	0	0	2
1983	1	1	1	0	0	1	2
1984	1	1	1	0	0	1	2
1985	1	1	1	0	0	1	2

	Denmark	Finland	Italy	Netherlands	Norway	Sweden	Ireland
1960	1	1	3	2	0	0	0
1961	1	1	3	2	0	0	0
1962	1	1	2	2	0	0	0
1963	1	1	3	2	0	0	0
1964	0	1	2	2	0	0	0
1965	0	1	2	2	2	0	0
1966	0	1	2	1	2	0	0
1967	0	1	2	2	2	0	0
1968	2	1	3	2	2	0	0
1969	2	1	1	2	2	0	0
1970	2	1	2	2	2	0	0
1971	0	1	2	2	0	0	0
1972	3	1	3	2	2	0	0
1973	3	1	2	2	0	0	1
1974	3	1	3	2	0	0	1
1975	3	1	3	2	0	0	1
1976	3	1	3	2	0	2	1
1977	3	1	3	2	0	2	1
1978	1	1	3	2	0	3	0
1979	3	1	3	2	0	2	0
1980	3	1	2	2	0	2	0
1981	3	1	2	2	3	3	1
1982	3	1	2	3	2	3	1
1983	3	1	2	2	2	1	1
1984	2	1	2	2	2	1	1
1985	2	1	2	2	2	1	1

Source: Data on national governments in "Political Parties of Europe" ed. by V. McHale and S. Skowronski, Greenwood Press, 1983; "The Europa Yearbook", 1987. Details may be found in Roubini and Sachs (1988).

Note: France and Finland are given a score of 1 for being presidential regimes where coalition governments are usually formed. The United States is given a score of 1 when there is divided power (different parties in control of the executive and legislative branch).

Table 11. Long-run size of the government and socio-political variables.

Country	Long-Run Target Value of GY	% of Cabinet Portfolios held by Leftist Parties	Average Political Stability 1973-1985	Degree of Indexation
Italy	43.9	21	3.4	2
Belgium	42.6	30	2.9	2
Netherlands	49.4	22	3.1	2
Denamrk	51.5	69	3.5	2
Sweden	62.1	69	2.5	1
UK	43.9	62	1.0	1
Japan	27.3	0	1.0	0
Germany	43.4	61	2.0	0
US	32.3	0	1.6	1
Austria	44.4	73	1.1	0
France	46.9	3	2.0	2
Finland	36.9	45	2.0	1
Norway	51.5	61	1.9	1

GY : Expenditure to GDP Ratio (excluding interest payments) from OECD National Income Accounts. Target value from table 8.

Average political stability: average of POL variable from table 9 in the 1973-1985 period.

Indexation: Degree of indexation from Bruno and Sachs (1985).

Leftist Governments: Share of cabinet portfolios held by Social Democratic and other leftist parties in the 1965-1981 period from Cameron (1985).

Table 12. Cross-section regression results. Effects of socio-political variables on the long-run value of the expenditure to GDP ratio.

Dependent Variable: GYTAR

Equation:	(1)	(2)	(3)
Explanatory variables:			
Constant	0.28 (6.64)	0.26 (4.90)	0.27 (4.90)
LEFT	0.0023 (3.80)	0.0018 (2.89)	0.0022 (3.26)
WI	0.060 (2.80)	-	0.049 (1.30)
POL	-	0.047 (2.28)	0.011 (0.34)
R^2	0.57	0.49	0.53

GYTAR: Long-run target value of the expenditure to GDP ratio; see table 8 and 11

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Table 13. Cross-Section Regression Results. 13 OECD Countries.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable :	DG7385 Expenditures			DI7385 Revenues		DB7385 Deficit		
Indep. Variable:								
Constant	1.61	-0.42	0.21	-1.85	2.56	-29.6	-62.8	-34.3
	(0.92)	(0.18)	(0.09)	(0.68)	(1.61)	(1.89)	(2.38)	(2.36)
DAVG(x)	-1.96	-1.76	-1.88	-1.90	-1.39	-9.24	-12.7	-8.72
	(3.75)	(3.10)	(3.62)	(4.30)	(3.38)	(2.44)	(3.00)	(2.51)
WI	3.51	-	2.32	4.79	3.49	-	-	-15.3
	(4.19)		(1.73)	(4.06)	(3.10)			(1.73)
AVG(POL)	-	3.08	1.39	-3.43	-2.05	14.5	11.8	25.4
		(3.65)	(1.12)	(2.84)	(1.82)	(2.57)	(2.11)	(3.13)
IDEOL	-	-	-	0.02	-	-	0.15	-
				(1.89)			(1.51)	
DI6773	-	-	-	0.42	0.37	-	-	-
				(2.95)	(2.28)			
SWEDUM	11.3	9.49	10.5	6.54	6.69	-	-	-
	(4.63)	(3.53)	(4.22)	(4.11)	(3.59)			
R^2	0.77	0.73	0.78	0.75	0.66	0.47	0.53	0.56

$DAVG(x) = (AVG(x_t)_{1973-85} - AVG(x_t)_{1967-73})$

DI6773 = Change in the revenue to GDP ratio in the 1967-1973 period.
DG7385 = $(G/Y)i_{1985} - (G/Y)i_{1973}$
DI7385 = $(T/Y)i_{1985} - (T/Y)i_{1973}$
DB7385 = $(D/Y)i_{1985} - (D/Y)i_{1973}$

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Table 14.
Seignorage Revenues (Change in Reserve Money to GDP Ratio).
Average Percentuage Rate per Year.

Country	Period		
	1975-79	1980-85	Change between the two periods
EEC countries			
EMS countries			
Germany	0.78	0.18	-0.60
France	0.03	0.70	0.67
Italy	3.55	1.96	-1.59
Belgium	0.74	0.10	-0.64
Netherlands	0.57	0.43	-0.14
Denmark *	0.39	0.95	0.56
Ireland	2.15	0.83	-1.32
Average	1.17	0.73	-0.43
Non-EMS Countries			
UK	0.70	0.02	-0.68
Spain	2.33	3.17	0.84
Greece	2.87	3.85	0.98
Portugal	4.17	3.45	-0.72
Average	2.51	2.62	0.10
Non-EEC countries			
US	0.47	0.34	-0.13
Japan	0.77	0.49	-0.28
UK	0.70	0.02	-0.68
Canada	0.62	0.20	-0.42
Austria	0.94	0.49	-0.45
Finland	0.49	0.75	0.26
Norway	1.02	0.43	-0.59
Sweden	0.96	0.20	-0.76
Australia	0.62	0.53	-0.09
Switzerland	1.04	0.19	-0.85
Average	0.76	0.36	-0.39

*: The Danish figure for the 80-85 period is biased by a large outlier in 1985.
Source: Elaboration on IMF-IFS data.