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Elections and UK government expenditure cycles in the 1980s: an empirical analysis

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ABSTRACT

This paper tests whether there exists any significant difference in the responsiveness of UK government expenditure policy to changes in national income and unemployment in pre- and post-election periods. The absence of such a political effect would see the national income and unemployment elasticities for government expenditure being uniform over an election period. The empirical analysis deliberately covers the three UK Conservative governments between 1979 and 1992 when academic debate on the implications of discretionary policy for the economy and social welfare were particularly prominent and when it appeared that political rhetoric concurred with the academic prescriptions.

JEL Classifications: C22, E61, E62, H10

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I INTRODUCTION

Macroeconomics has been enriched over the last twenty years or so by its modelling of the interaction of political and economic agents. For instance, Kydland and Prescott (1977) and Barro and Gordon (1983) demonstrate how inflation policy announcements can lack credibility because of the policy-maker's temptation to generate surprise inflation. Consequently, the possible electoral benefits for governments in inducing surprise inflation lead to what has been termed an inflation bias or an excessive level of inflation. Simultaneously, work under the broad heading of "political business cycles" has also focused more generally on the economic implications of political objectives, both opportunistic and ideological. Perhaps, the best known model is that of Nordhaus (1975) who also highlights the gains from an expanding economy prior to election and shows how a government may be led to create a boom-bust cycle over the course of an election period.

This paper is concerned with a particular aspect of what can be called 'political macroeconomics'. We will focus on the potential role of politics in shaping government expenditure regimes. This is important to economists because politically motivated policy formulation has important welfare implications. This is a crucial concern in much of the political macroeconomics literature. This paper thus seeks to empirically test whether such concerns are justified by considering Conservative UK government expenditure policy between 1979 and 1992[1].

The political macroeconomic models of Frey (1978), Frey and Schneider (1978), Rogoff (1990) and Rogoff and Sibert (1988) explicitly relate government expenditures to political variables. The Frey-Schneider analysis models regimes switches in government expenditures as dependent upon the government's perceived electoral security, where electoral security is the

[1] A non-linear analysis of total government expenditure for this period using a non-linear switching model is found in Easaw and Garratt (1998)

government's popularity standing discounted by the time to an election. The closer an election the more important becomes the government's perceived re-election likelihood. In the Rogoff-Sibert models governments attempt to signal their administrative competence to the electorate by appearing to deliver a "healthy" provision of public goods and services at the lowest possible tax price. Its willingness to resort to post-election seignorage and/or bias expenditures in the pre-election period towards those expenditures which can be consumed more immediately is the result of an informational asymmetry. The public are only aware of the government's true administrative competence in the following period with higher inflation and consequent seignorage revenues. Therefore, these political macroeconomic models identify the possible influence of elections in shaping government expenditure policy. We will consider this particular influence for the three election periods from 1979 to 1992.

The choice of this time period is quite deliberate since the period coincides with the heightened debate in academic circles over discretionary economic powers. The likes of Kydland and Prescott (1977) and Barro and Gordon (1983) explicitly warned of the effects of governments using demand management policies to increase their own level of welfare given the potential response of private agents to such policies. Whilst the government could not hope to affect unemployment or output, for anything other than a transitory period, the political cost of discretionary economic policy would manifest itself in inflation bias. Consequently, both the government and the public alike would be the losers of discretionary demand management policies. As Rogoff and Sibert (1988) observe from their model, once you increase the weight that policy-maker's give to reputation and social welfare considerations the less frequently policy cycles should occur. Alesina and Perotti (1995) conclude that there has been a marked move away in the political business literature from the boom-bust cycles of Nordhaus (1975) as a result of models including

reputation building. Therefore, electoral policy cycles 'should be observed only occasionally and should not be very large' (p. 235).

The rhetoric of the UK's Conservative government appeared, on the surface at least, to reflect the concerns of the reputation and credibility literature. Indeed, Backus and Driffill (1986) claim that the fall in UK inflation in the 1980s reflected the determination of the UK Conservative government to pursue "hard-nosed" and, therefore, credible economic policies aimed at reducing inflation. Our primary question is whether such rhetoric was actually supported by their actions in relation to government expenditure policy.

In modelling UK government expenditure we attempt to identify whether there exist two expenditure states dependent upon the time to the next election. In particular, we consider whether there exists any difference in the long-run elasticities of government expenditures with respect to national income and unemployment in the pre- and post-election periods or whether the elasticities are uniform over the entire period. A significant difference would suggest that politics has affected this important area of economic policy while a uniformity in the elasticities across the election period would suggest that this aspect of politics has not influenced the determination of government expenditures. The essence of our analysis is the responsiveness of government to these economic variables pre- and post-election. Consequently, the analysis allows explicitly for a supply-side effect in modelling government expenditures.

Drawing on the Frey-Schneider and Rogoff-Sibert approaches we use our analysis to consider:

(i) whether total government expenditure is more responsive to changes in national income and unemployment in pre-election periods.

(ii) whether transfer and exhaustive government expenditures are more responsive to changes in unemployment and/or national income in pre-election periods.

(iii) following (ii), whether there is any asymmetry in the behaviour of transfer and exhaustive expenditures across election periods.

In section 2 of the paper we define those components of government expenditures on which the empirical analysis is based. Section 3 begins by detailing the error correction model employed to test UK government expenditure policy for the effect of elections, before presenting the findings of the empirical analysis. Finally, section 4 aims to draw some conclusions from our findings.

II UK GOVERNMENT EXPENDITURES, 1979-1992

The empirical analysis focuses on three categories of government expenditures: total (less net lending), transfers and exhaustive. We have used total expenditures less net lending in order to avoid working with an inconsistent data series that would arise by including the privatisation receipts as negative expenditures in the net lending component (See Bailey, Chapter 11, 1995). Between 1979(2) and 1992(1) the mean quarterly growth rate of total expenditure less net lending was 0.52% which was *larger* than 0.46% for the economy as a whole.[2] Total expenditure to GDP at factor cost averaged 50.1%. The breakdown of the mean quarterly growth rates for total government expenditure and GDP for each individual election period and for the first and second halves of these election periods is shown in table 1.

Table 1 here

[2] The importance of privatisation receipts is obvious when one looks at the average quarterly growth rate of total expenditures inclusive of net lending (privatisation receipts are included as negative expenditure within net lending). In this case the quarter to quarter growth rate averages 0.35% and is thus *less* than the mean growth rate of the economy over this period.

As well as focusing upon the sum of government expenditures we also analyse the effect of elections on the long-run relationship between current and capital transfer expenditures and both factor GDP and unemployment and that between exhaustive expenditures and factor GDP. Current transfers are predominantly grants to the personal sector in the form of national insurance benefits. They also include subsidies and grants paid abroad. Capital transfers are largely investment grants. Exhaustive expenditure is the sum of consumption and investment expenditures and is thus expenditure on goods and services. Consumption expenditures are those on current inputs used in the production of public sector output, of which over half is on public sector employees' wages and salaries. Investment relates to expenditures on fixed assets such as land, buildings and machinery.

The average quarterly growth rate of real current and capital transfers over the sample period 1979(2) to 1992(1) was 0.68% compared to 0.52% for total expenditure (less net lending). In contrast, the mean growth rate for exhaustive expenditures was 0.39% and thus less than that for total expenditures. Table 2 shows the growth rates for these two expenditure components over the three election periods.

Table 2 here

Figure 1 plots the quarterly growth rate for the three measures of real government expenditure, with the individual election periods indicated.

Figure 1 here

Exhaustive expenditures remain the largest component of UK government expenditure. Over our sample period of 1979(2) to 1992(1) exhaustive expenditure averaged 56.0% of total government expenditure while current and capital transfers averaged 36.5%.

III EMPIRICAL ANALYSIS

Empirical model

The hypothesis to be tested is that there are two states of government expenditure associated with pre- and post-election periods. The equations estimated are log-linearised therefore enabling us to infer the responsiveness of government expenditure to national income (Wagner's Law)[3] and unemployment. We subsequently examine any differences in the long-run elasticities of government expenditure between the two regimes.

An error correction model is employed to test government expenditures. An error correction model in logarithm allows us to estimate both the growth rates and dynamic elasticities. From the dynamic elasticities, we can derive the long-run elasticities for both pre- and post-election periods. Then we can look for possible significant differences in long-run elasticities pre- and post-election. Consequently, we are able to distinguish between regime shifts in the long-run dynamic relationship and differences in the trend of the steady state or equilibrium path. Identifying this distinction would be useful in light of the views expressed in Rogoff and Siebert (1988) and Alesina and Perroti (1995) that electoral policy cycles may only be observed occasionally and not very large.

We have omitted the unemployment variable from the exhaustive expenditures equation because the composition of exhaustive expenditures does not suggest an obviously strong relationship. This was confirmed by statistical tests showing there to be no significant long-run relationship between unemployment and exhaustive expenditures (see below). Furthermore, this is consistent with the consumption and investment expenditure equations estimated by Frey and Schneider (1978).

The pre-election period is defined as either 4, 6, 8, 10 or 12 quarters up to and including the election quarter itself. We include the government's popularity lead as a control variable since the effect of elections could be tempered somewhat by the government's popularity standing. However, it is our contention that elections have their own unique effect on policy-making even when allowing for popularity. The popularity lead variable is taken from replies to the Gallup survey as to which party an individual would vote if there were a general election tomorrow. It is the difference between those that expressed a preference for the incumbent Conservatives and those Labour.

The linear error correction model takes the following general form :[4]

$$\begin{aligned}\Delta \lg_{i_t} = {} & \alpha_0 + \alpha_1 \Delta ly_t + \alpha_2 \Delta lu_t + \alpha_3 \lg_{i_{t-1}} + \alpha_4 ly_{t-1} + \alpha_5 lu_{t-1} \\ & + \beta_0 d_t + \beta_1 (d_t * \Delta ly_t) + \beta_2 (d_t * \Delta lu_t) + \beta_3 (d_t * \lg_{i_{t-1}}) + \beta_4 (d_t * ly_{t-1}) \\ & + \beta_5 (d_t * lu_{t-1}) + \alpha_6 lead_t + \varepsilon_t \end{aligned} \qquad (1)$$

g_i measure *i* of government expenditures (all in 1990 prices and seasonally adjusted).

y factor GDP (1990 prices, seasonally adjusted);

u unemployment rate (seasonally adjusted);

d dummy variable. This takes a value of 0 in the defined post-election period. The dummy takes a value of 1 in the *n* quarters up to and including the election quarter.

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[3] See Wagner (1883) articulated that total government expenditure in developing economies would have an income elasticity in excess of unity. Wagner's Law is often cited in explaining the increasing share of government expenditure in national income.

[4] When the dummy variable $d_t = 0$ this is equivalent to

$$\lg_t = \delta_0 + \delta_1 \lg_{t-1} + \delta_2 ly_t + \delta_3 ly_{t-1} + \delta_4 lu_t + \delta_5 lu_{t-1} + \delta_6 lead_t$$

lead Conservative government's popularity lead over Labour.

Δ represents the difference operator.

We are thus able to define two expenditure regimes. These are:

regime 1: ($d_t = 0$)

$$\Delta \lg_{i_t} = \alpha_0 + \alpha_1 \Delta ly_t + \alpha_2 \Delta lu_t + \alpha_3 \lg_{i_{t-1}} + \alpha_4 ly_{t-1} + \alpha_5 lu_{t-1} + \alpha_6 lead_t + \varepsilon_t \quad (2)$$

regime 2: ($d_t = 1$)

$$\Delta \lg_{i_t} = \alpha_0 + \beta_0 + (\alpha_1 + \beta 1)\Delta ly_t + (\alpha_2 + \beta_2)\Delta lu_t + (\alpha_3 + \beta_3)\lg_{i_{t-1}} + (\alpha_4 + \beta_4)ly_{t-1} + (\alpha_5 + \beta_5 l)u_{t-1} + \alpha_6 lead_t + \varepsilon_t \quad (3)$$

The time-varying slope enables us to test whether the both the growth rates and long-run relationship between government expenditures and unemployment or GDP is affected by the time to the next election or whether the elasticities of government expenditure are uniform over an election period. However, in the exhaustive expenditures model the unemployment terms drop out and the long-run relationship of interest is solely with GDP.

Furthermore, the long-run elasticities can be calculated and estimated as:

$$\eta_y = -\frac{\alpha_4}{\alpha_3} \text{ and } \eta_u = -\frac{\alpha_5}{\alpha_3} \text{ in post-election regime} \quad (4)$$

$$\eta_y = -\frac{\alpha_4 + \beta_4}{\alpha_3 + \beta_3} \text{ and } \eta_u = -\frac{\alpha_5 + \beta_5}{\alpha_3 + \beta_3} \text{ in pre-election regime} \quad (5)$$

Subsequently, the difference between the two long-run elasticities are estimated to establish whether there is a difference in the trend of the

steady state or equilibrium path of the long-run relationship between the respective variables[5].

The Dickey Fuller Tests show that we cannot reject the hypothesis that the g, y and u series have a unit root. These series are found to be I(1). However, we can reject the null hypothesis for a unit root for the popularity lead series at the 5% level. Consequently, a residual-based cointegration test is undertaken for the estimated error-correction models. It is based on the critical values as provided in MacKinnon (1991). Gregory and Hansen (1996) argue that these are satisfactory critical values in establishing long-run relationships in the data, even in the presence of regime shifts (p. 117).

Results

In this sub-section we estimate the error-correction model for total government expenditures (less net lending), current and capital transfers, and exhaustive expenditures. For total expenditures and transfer expenditures we proceed to show the inferred long-run relationship with both factor GDP and unemployment, while in the case of exhaustive expenditures we look at the long-run relationship with GDP only. In each case the fundamental question is whether there is significant evidence that GDP and/or unemployment has a larger influence on government expenditures when closer to an election. However, in order to have a benchmark with which to compare the elasticities in the pre- and post-election periods we have estimated each of the three expenditure models before allowing for any possible effect of elections. Thus, we estimated models equivalent to equation (2). The regressions for each expenditure type are in shown in table 3.

[5] Gregory et al (1996), confirming the position of Zivot and Andrews (1992), state that a joint null hypothesis using an *F stat*, or equivalent the *Wald stat*, in a cointegrated relationship has the disadvantage that the power may be low and the chi squared critical values biased against the null hypothesis. Hence, we just use the estimated difference to determine whether there is a significant differences in the trend of the equilibrium path .

Table 3 here

The dynamic elasticities indicate that only exhaustive expenditures respond positively and significantly to the growth rate of GDP, whereas all the expenditures considered respond positively and significantly to the level of GDP. Total expenditures respond positively and significantly to both the level and growth rate of unemployment whereas transfers respond significantly only to the growth rate of unemployment. The government's popularity lead is not found to have a significant relationship with government expenditures over the period of Conservative rule in the UK from 1979 to 1992.

The inferred long-run elasticities with respect to income (η_y) and unemployment (η_u) are shown in table 4. The figures in parenthesis are absolute t-values.

Table 4 here

The income elasticities, while positive, do not support the hypothesis that public expenditures are luxury or superior goods and, thus, do not support Wagner's Law. However, Wagner's analysis was never intended to be interpreted strictly as a 'law' and, moreover, was directed towards the industrialisation stage of an economy's development. The income elasticities infer that a 1% increase in real national income results in real transfer and exhaustive expenditures increasing by just over half a percentage point, but total expenditures by one-quarter of a percentage point. The unemployment elasticities infer that a 1% increase in the rate of unemployment increases real

transfer expenditures by one-fifth of a percentage point and total expenditures by less than one-thirteenth of a percentage point.[6]

Total Expenditure and Time to the Next Election

We now examine whether proximity or time to a general election results in a pre- and post-election total expenditure regime. Table 5 shows the results from the Ordinary Least Squares estimation of the error correction model (equation 1) for total UK government expenditure.

Table 5 here

LEAD is insignificant in all variants of the total government expenditure model. The estimated dynamic elasticities are now distinguished according to pre- and post-election. Total expenditures do not respond significantly to national income growth rates in these two periods. However, they appear to respond significantly and positively to the level of national income in the pre-election period as defined by 8, 10 and 12 quarters up to the election. The growth rate of unemployment is seen to be insignificant in both pre- and post-election periods, while the level of unemployment has a positive impact on total expenditures in the post-election period.

Table 6 shows the results relating to the long-run elasticities for total government expenditures derived from the estimated dynamic elasticities. For each long-run relationship the first line of results relate to the period furthest from the election when the dummy equals zero, while the second line is for the *n* quarters up to the election. If the elasticity prior to the election is greater

[6] When the appropriate model for exhaustive expenditures is estimated the unemployment elasticity is found to be 0.04 with a calculated t-ratio of 1.11 and thus statistically insignificant.

(less) than in the post-election period, the difference between the two will be some negative (positive) number.

Table 6 here

The results show significant evidence that the proximity of an election has impacted on the relationship between national income and government expenditure. This is not true of the relationship between unemployment and government expenditure. The hypothesis that the elasticity of government expenditure with respect to income in the ten or twelve quarters up to the election is different to that in the remainder of the election period is statistically significant at the 2.5% and 10% levels respectively. This is consistent with the dynamic elasticities. The magnitudes indicate that the income elasticity of total government expenditures is *larger* in the pre- as opposed to post-election periods. This amounts to between a three-tenths of one percent to a full one percent extra increase in real total expenditures for a 1% increase in real national income prior to an election. Indeed, the model where $n = 12$ indicates that in the more immediate aftermath of an election the elasticity of total expenditure with respect to national income was negative.

The unemployment elasticity of total government expenditure is constant across election periods. This is perhaps because the effect of unemployment on government expenditures is essentially demand-driven. Governments appear both unable and unwilling to respond differently to unemployment changes across an election period. Greater generosity in the coverage of benefits or the levels of benefits themselves imply more pressure on government's budget constraint, and in the case of coverage more entitlements in the future. It is easier, in political terms, to extend benefit coverage than to reduce it.

Furthermore, with regards to the level of benefits the recent experience in the UK has been to index them to the retail price index.

Transfers and Time to the Next Election

We now examine whether time to the next election has influenced the GDP and unemployment elasticities for transfer expenditures.

Table 7 shows the full set of regression results from estimating the error correction model for transfer expenditures.

Table 7 here

The government's popularity lead is typically found not to exert a significant impact on transfer expenditures, the exception being the 8 quarter variant. The growth rates of national income and unemployment similarly do not exhibit a significant relationship, except for the former in the post-election period in 8 quarter variant. The levels of national income and unemployment have a significantly positive post-election relationship with transfers in the 4 and 6 quarter variants. The level of national income has a significantly positive relationship in the pre-election period again in the 8 quarter variant.

Table 8 shows the long-run elasticities consistent with the estimated dynamic elasticities.

Table 8 here

The long-run elasticities are consistent with the dynamic elasticities. In the 8 quarter model the income elasticity is significantly *larger* in the pre-election period. The difference amounts to close on an extra four-tenths of one percent increase in transfers in the pre-election period for a 1% rise in real national income. Again, the unemployment elasticity is found to be uniform across election periods.

Exhaustive Expenditures and Time to the Next Election

The largest part of government expenditure is on exhaustive expenditures. The final set of tests considers the possible impact of the time to the next election on exhaustive expenditures. The full set of regressions results are shown in table 9 below.

Table 9 here

The estimated dynamic elasticities show that exhaustive expenditures are not significantly responsive to national income growth rates. However, these expenditures respond significantly to the level of national income in the post-election period in the 4, 6 and 8 quarter model variants. The popularity lead variable is insignificant except in the 10 quarter model where it is significantly negative and thus consistent with electoral security exerting downward influence on expenditures.

Table 10 shows the estimated long-run elasticities from the dynamic elasticities.

Table 10 here

There is evidence that the elasticity of exhaustive expenditures with respect to national income was significantly influenced by the proximity of a forthcoming election. In the 10 and 12 quarter model variants the income elasticity of exhaustive expenditures is significantly different to the remainder of the period at the 1% level. Once more, the income elasticity of expenditure is *larger* in the pre-election period. The difference amounts to close on a four-tenths of one percent extra increase in real exhaustive expenditures for a 1% rise in real national income.

IV CONCLUSIONS

The implication of time inconsistency and credibility in macroeconomic policy is that governments which practise discretionary economic policy can cause excessive inflation without any reduction in unemployment. Therefore, governments can increase both their own welfare and that of private agents by committing themselves to economic rules and resisting the temptation to allow politics to affect their economic policy-making. The present paper empirically analysed UK government expenditure behaviour in the 1980s, and whether their hard-line position in fiscal policy was influenced by electoral considerations. We focused on the elasticity of three measures of real government expenditures with respect to real national income and the rate of unemployment over three election periods. A summary of the findings with respect to these elasticities is shown Table 11.

Table 11 here

There is evidence to support the hypothesis that the income elasticity in all our expenditure models was larger in the pre-election phase. This seems

particularly apparent approximately two and half years prior to an election, or the latter half of a UK election period. The effect amounts typically to between an extra one-third and four-tenths of one percentage point increase in expenditures following a 1% increase in national income, although in the total expenditures model there is evidence that in the immediate aftermath of an election the income elasticity was negative so that the effect is larger at nearer an extra one-percentage point.

Whereas government expenditure policy is seen to respond differently to national income pre- and post-election, the effect of unemployment, while significant in determining in total and transfer expenditures, appears to be uniform over an election period.

We posed three questions at the outset of this paper in relation to long-run elasticities. In response we have found:

(i) total government expenditure is more responsive to national income in pre-election periods, but not to unemployment where the response is uniform across the whole election period.

(ii) transfer and exhaustive expenditures are more responsive to changes in national income in pre-election periods. Transfer expenditures responded uniformly to unemployment across election periods, while there is no significant long-term relationship between exhaustive expenditures and unemployment.

(iii) from (ii) it appears that transfer and exhaustive expenditures respond similarly to national income since, in each case, the long-run elasticity is larger in pre-election periods.

The present analysis indicates that there is a significant difference in the trend of the steady-state and equilibrium path between pre and post election periods. However, with the of exception total expenditures, there are no significant

differences between growth rates and dynamic elasticities in pre and post election periods. This would suggest that while the incumbent government did not react dynamically to electoral cycles, there is significant change in the long run trend. This, together with the insignificant re-election indicators, gives some credence to the position expressed by Rogoff and Sibert (1988) and Alesina and Perroti (1995) that there is a movement away from the traditional boom-bust framework as in the 1980s UK governments did not react dynamically to impending elections. Nevertheless, there is sufficient evidence in the present analysis that show that the UK government expenditure types in the 1980s have significantly changed their long-run steady-state or equilibrium path with respect to electoral cycles.

The idea that government expenditure policy is affected by electoral expediency is not a new one. However, developments in macroeconomics over the last twenty years have demonstrated the possible pitfalls for governments, particularly in relation to credibility and the associated inflation bias. In this paper by empirically testing for the existence of two expenditure regimes determined by the proximity of an election, there is evidence to support that in recent British political history government expenditure has been affected by political motives. While government may have appeared to have accepted the pitfalls identified by the emerging new classical macroeconomic literature, this acceptance was at best a mere appreciation in relation to government expenditure policy and an appreciation that would seem to have been ignored. Politics continues to matter.

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Table 1. *Quarterly growth in government expenditure (G) and GDP (Y)*

Election	Average		First half		Second half	
Period	**G**	**Y**	**G**	**Y**	**G**	**Y**
79(2)-83(2)	0.776	0.238	0.582	-0.208	0.949	0.636
83(3)-87(2)	-0.077	0.899	-0.060	0.867	-0.094	0.931
87(3)-92(1)	0.798	0.280	0.865	0.881	0.736	-0.262

Table 2. *Quarterly growth in transfers (T) and exhaustive expenditures (E)*

Election	Average		First half		Second half	
Period	**T**	**E**	**T**	**E**	**T**	**E**
79(2)-83(2)	0.812	0.318	0.676	0.123	0.933	0.491
83(3)-87(2)	0.571	0.172	0.760	0.124	0.382	0.220
87(3)-92(1)	0.664	0.627	-0.093	0.531	1.346	0.713

FIGURE 1:QUARTERLY GROWTH RATE OF EXPENDITURES

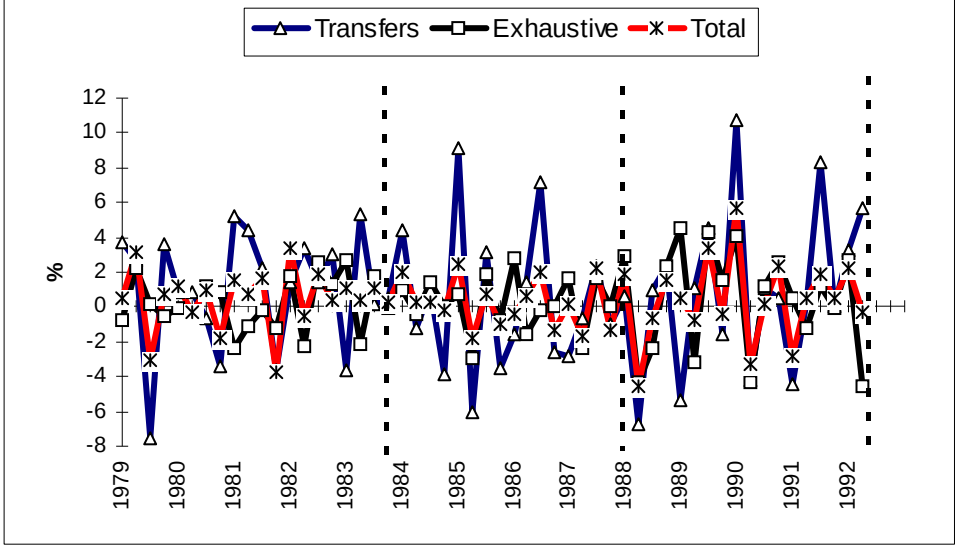

Table 3. *Government Expenditures; Sample 1979(3)-1992(1)*

	Total	**Transfers**	**Exhaustive**
int*ercept*	9.8563	2.2339	0.8835
	(7.25)*	(2.67)*	(1.48)
Δly	-0.1981	0.1928	-0.5206
	(0.22)	(0.21)	(1.84)+
Δlu	0.2401	0.0609	
	(2.03)*	(0.50)	
lg(−1)	-1.2939	-0.7817	-0.2142
	(8.84)*	(5.14)*	(2.32)*
ly(−1)	0.3450	0.4451	0.1144
	(4.94)*	(4.13)*	(2.72)*
lu(−1)	0.0994	0.1566	
	(3.63)*	(3.99)*	
LEAD	-0.0007	-0.0014	0.0003
	(0.87)	(1.56)	(0.90)
adjusted R^2	0.60	0.30	0.10
RSS	0.0625	0.0664	0.0118
Log-likelihood	98.5816	97.0525	140.9370
DW	1.96	1.80	2.21
SC(4)	0.71	3.49	2.65
FF(1)	3.47	1.88	0.29
N(2)	2.54	5.38	5.58
H(1)	0.87	0.42	0.01
DF(res)	6.88*	6.64*	7.86*

Notes: Figures in parentheses are (absolute) t-values.
DF relates to test of non-stationarity in the regression residuals
* denotes statistical significance at the 5% level for a 2 tailed-test
+ denotes statistical significance at the 10% level for a 2 tailed-test
SC, FF, N, relates to tests of serial correlation, functional form and heteroskedasticity which follows a χ^2 distribution

Table 4: *Elasticity of Government Expenditures*

Expenditure	η_y	η_u
Total	0.2666 (5.67)*	0.0768 (4.00)*
Transfers	0.5695 (7.12)*	0.2004 (6.11)*
Exhaustive	0.5343 (4.33)*	

Note: * denotes statistical significance at the 5% level for a 2 tailed-test

Table 5. *Total Expenditure and Time; Sample 1979(3)-1992(1)*

	4qtrs	**6qtrs**	**8qtrs**	**10qtrs**	**12qtrs**
int *ercept*	8.8507	10.5926	13.6168	13.6420	17.4184
	(4.89)*	(4.55)*	(2.97)*	(4.01)*	(3.50)*
Δly	0.8114	0.7550	0.7107	-0.1796	3.1308
	(0.75)	(0.68)	(0.52)	(0.12)	(1.04)
Δlu	0.2494	0.1203	0.0883	0.1106	-1.9258
	(1.50)	(0.62)	(0.44)	(0.38)	(1.81)+
lg(−1)	-1.1665	-1.2190	-0.9902	-1.3388	-0.9421
	(6.72)*	(6.36)*	(3.70)*	(4.59)*	(2.46)*
ly(−1)	0.3164	0.2142	0.1353	0.0569	-0.6411
	(3.31)*	(1.79)+	(1.08)	(0.36)	(1.71)+
lu(−1)	0.0744	0.0791	0.0659	0.1100	0.0619
	(2.33)*	(2.33)*	(1.68)	(2.63)*	(0.84)
TIME	1.7716	-0.4137	1.3994	-3.6962	-7.7653
	(0.53)	(0.13)	(0.40)	(1.00)	(1.50)
$\Delta ly * TIME$	-3.7780	-2.5346	-0.3453	0.9327	-3.1804
	(1.67)	(1.21)	(0.18)	(0.48)	(1.01)
$\Delta lu * TIME$	0.4921	0.1897	0.1859	0.0824	2.1822
	(0.81)	(0.51)	(0.66)	(0.25)	(2.04)*
lg(−1) * *TIME*	-0.2095	-0.2703	-0.5543	-0.1294	-0.4133
	(0.51)	(0.77)	(1.64)	(0.38)	(1.00)
ly(−1) * *TIME*	0.0024	0.2715	0.3936	0.4456	1.0612
	(0.01)	(1.41)	(2.27)*	(2.41)*	(2.76)*
lu(−1) * *TIME*	0.2168	0.1002	0.0331	-0.0185	0.0395
	(1.28)	(1.26)	(0.58)	(0.34)	(0.50)
LEAD	0.0007	0.0007	-0.0011	-0.0001	-0.0002
	(0.63)	(0.80)	(1.12)	(0.11)	(0.17)
adjusted R^2	0.59	0.59	0.61	0.64	0.63
RSS	0.0552	0.0552	0.0539	0.0485	0.0504
Log-likelihood	101.7456	101.7829	102.3385	105.0747	104.0983
DW	2.03	1.97	2.08	2.24	2.05
SC(4)	3.08	0.46	1.97	9.18	0.40
FF(1)	6.10	5.88	0.02	1.87	0.58
N(2)	2.39	4.18	2.89	10.90	5.60
H(1)	0.99	0.93	0.49	1.31	1.60
DF(res)	7.15*	6.89*	7.28*	7.90*	7.19*

Notes: Figures in parentheses are (absolute) t-values.
DF relates to test of non-stationarity in the regression residuals
* denotes statistical significance at the 5% level for a 2 tailed-test
+ denotes statistical significance at the 10% level for a 2 tailed-test
SC, FF, N, relates to tests of serial correlation, functional form and heteroskedasticity which follows a χ^2 distribution

Table 6**.** *Elasticities from Total Government Expenditure Model*

	4qtrs	**6qtrs**	**8qtrs**	**10qtrs**	**12qtrs**
η_y	0.2713 (3.45)*	0.1757 (1.78)+	0.1146 (0.93)	0.0425 (0.37)	-0.6804 (1.25)
	0.2317 (2.03)*	0.3261 (4.46)*	0.3259 (5.49)*	0.3423 (6.39)*	0.3100 (5.94)*
difference	0.0304 (0.76)	-0.1504 (1.29)	-0.2113 (1.56)	-0.3000 (2.35)*	-0.9904 (1.81)+
η_u	0.0637 (2.62)*	0.0649 (2.63)*	0.0777 (2.47)*	0.0822 (3.48)*	0.0657 (1.04)
	0.2116 (1.43)	0.1204 (2.10)*	0.0764 (2.58)*	0.0623 (2.36)*	0.0748 (3.20)*
difference	-0.1478 (0.98)	-0.0556 (0.89)	0.0013 (0.03)	0.0198 (0.59)	-0.0091 (0.14)

Note: * denotes statistical significance at the 5% level for a 2 tailed-test
+ denotes statistical significance at the 10% level for a 2 tailed-test

Table 7. *Transfers and Time; Sample 1979(3)-1992(1)*

	4qtrs	**6qtrs**	**8qtrs**	**10qtrs**	**12qtrs**
int*ercept*	2.3947	3.3772	3.6810	5.2677	4.0183
	(2.00)*	(2.21)*	(1.96)+	(2.05)*	(0.76)
Δly	1.1800	1.0351	2.8529	2.0989	4.8088
	(1.03)	(0.88)	(2.06)*	(0.98)	(1.41)
Δlu	0.1049	0.0064	0.1587	0.1054	0.3735
	(0.60)	(0.03)	(0.85)	(0.34)	(0.31)
lg(−1)	-0.7976	-0.8047	-0.5928	-0.7873	-0.6842
	(4.39)*	(4.39)*	(2.05)*	(1.84)+	(1.21)
ly(−1)	0.4463	0.3661	0.1664	0.1861	0.2185
	(3.08)*	(2.22)*	(1.02)	(0.73)	(0.51)
lu(−1)	0.1464	0.1541	0.1121	0.1594	0.0857
	(3.01)*	(3.08)*	(1.50)	(1.49)	(0.56)
TIME	-0.3293	-1.8962	-1.6576	-3.1206	-2.1735
	(0.16)	(0.96)	(0.80)	(1.13)	(0.40)
$\Delta ly * TIME$	-3.5677	-2.4986	-2.9346	-2.3036	-5.2162
	(1.56)	(1.16)	(1.56)	(0.92)	(1.46)
$\Delta lu * TIME$	-0.1246	0.0038	-0.4669	-0.2301	-0.3342
	(0.20)	(0.01)	(1.77)+	(0.66)	(0.28)
lg(−1) * *TIME*	0.1720	0.0162	-0.4997	-0.0624	-0.0522
	(0.40)	(0.04)	(1.45)	(0.14)	(0.10)
ly(−1) * *TIME*	-0.1260	0.1410	0.5601	0.3269	0.2213
	(0.35)	(0.44)	(2.42)*	(1.09)	(0.49)
lu(−1) * *TIME*	0.0495	0.0515	0.0598	-0.0109	0.0741
	(0.28)	(0.50)	(0.72)	(0.10)	(0.48)
LEAD	-0.0016	-0.0015	-0.0015	-0.0012	-0.0015
	(1.40)	(1.48)	(1.77)+	(1.27)	(1.44)
adjusted R^2	0.24	0.25	0.48	0.35	0.29
RSS	0.0619	0.0611	0.0425	0.0533	0.0582
Log-likelihood	98.8473	99.1784	108.4459	102.6362	100.4084
DW	1.82	1.82	1.67	1.88	1.98
SC(4)	6.13	3.63	8.02	6.48	4.95
FF(1)	1.12	0.61	0.08	2.19	4.04
N(2)	3.26	6.93	0.75	4.33	11.00
H(1)	0.16	0.48	0.01	0.07	0.53
DF(res)	6.68*	6.81*	6.19*	6.90*	7.04*

Notes: Figures in parentheses are (absolute) t-values.
DF relates to test of non-stationarity in the regression residuals
* denotes statistical significance at the 5% level for a 2 tailed-test
+ denotes statistical significance at the 10% level for a 2 tailed-test
SC, FF, N, relates to tests of serial correlation, functional form and heteroskedasticity which follows a χ^2 distribution

Table 8. *Elasticities from Transfer Expenditure Model*

	4qtrs	**6qtrs**	**8qtrs**	**10qtrs**	**12qtrs**
η_y	0.5595	0.4550	0.2807	0.2363	0.3193
	(4.66)*	(2.88)*	(1.40)	(0.99)	(0.57)
	0.5120	0.6432	0.6650	0.6037	0.5972
	(1.84)+	(4.34)*	(8.77)*	(6.08)*	(5.79)*
difference	0.0475	-0.1882	-0.3843	-0.3674	-0.2779
	(0.16)	(0.90)	(1.80)+	(1.42)	(0.48)
η_u	0.1836	0.1915	0.1891	0.2024	0.1252
	(4.85)*	(4.87)*	(3.50)*	(4.40)*	(0.94)
	0.3133	0.2607	0.1573	0.1747	0.2170
	(1.05)	(2.41)*	(4.11)*	(3.58)*	(4.58)*
difference	-0.1297	-0.0693	0.0318	0.0277	-0.0918
	(0.43)	(0.61)	(0.51)	(0.66)	(0.67)

Note: * denotes statistical significance at the 5% level for a 2 tailed-test
+ denotes statistical significance at the 10% level for a 2 tailed-test

Table 9. *Exhaustive Expenditures and Time; Sample 1979(3)-1992(1)*

	4qtrs	**6qtrs**	**8qtrs**	**10qtrs**	**12qtrs**
int *ercept*	1.3727	2.1030	1.1738	3.6785	4.1221
	(1.47)	(1.84)+	(0.59)	(1.53)	(1.31)
Δly	-0.5307	-0.4733	-0.7796	-0.4548	0.3701
	(1.49)	(1.20)	(1.63)	(0.86)	(0.54)
lg(−1)	-0.2967	-0.3686	-0.2562	-0.4682	-0.4701
	(2.29)*	(2.50)*	(1.12)	(1.70)+	(1.32)
ly(−1)	0.1453	0.1460	0.1264	0.0976	0.0600
	(3.09)*	(3.04)*	(2.42)*	(1.59)	(0.77)
TIME	-1.0056	-2.0650	-0.1113	-2.2913	-2.8448
	(0.71)	(1.40)	(0.05)	(0.92)	(0.89)
$\Delta ly * TIME$	0.2178	0.3398	0.4431	-0.0249	-0.9340
	(0.28)	(0.52)	(0.66)	(0.41)	(1.29)
lg(−1)* *TIME*	0.3507	0.3200	-0.0466	0.0668	0.1430
	(1.24)	(1.23)	(0.16)	(0.22)	(0.39)
ly(−1)* *TIME*	-0.2245	-0.1056	0.0516	0.1400	0.1210
	(1.40)	(0.78)	(0.44)	(1.60)	(1.32)
LEAD	0.0001	0.0001	-0.0005	-0.0006	-0.0005
	(0.11)	(0.37)	(1.30)	(1.73)+	(1.61)
adjusted R^2	0.09	0.07	0.08	0.20	0.22
RSS	0.0109	0.0111	0.0111	0.0096	0.0094
Log-likelihood	143.1153	142.5652	142.6409	146.3850	146.9120
DW	2.25	2.06	2.16	2.22	2.39
SC(4)	4.72	2.06	2.26	4.96	10.12
FF(1)	0.18	0.89	0.18	1.72	2.29
N(2)	4.79	6.33	1.84	0.78	4.80
H(1)	0.04	0.06	0.57	0.50	0.11
DF(res)	7.99*	7.25*	7.63*	7.88*	8.71*

Notes: Figures in parentheses are (absolute) t-values.
DF relates to test of non-stationarity in the regression residuals
* denotes statistical significance at the 5% level for a 2 tailed-test
+ denotes statistical significance at the 10% level for a 2 tailed-test
SC, FF, N, relates to tests of serial correlation, functional form and heteroskedasticity which follows a χ^2 distribution

Table 10. *Elasticities from Exhaustive Expenditure Model*

	4qtrs	**6qtrs**	**8qtrs**	**10qtrs**	**12qtrs**
η_y	0.4897	0.3961	0.4934	0.2085	0.1277
	(4.00)*	(3.85)*	(1.47)	(2.01)*	(1.04)
	1.4655	0.8304	0.5879	0.5920	0.5536
	(0.33)	(0.55)	(4.63)*	(7.42)*	(6.70)*
difference	-0.9758	-0.4343	-0.0944	-0.3835	-0.4259
	(0.22)	(0.29)	(0.27)	(2.97)*	(2.87)*

Notes: * denotes statistical significance at the 5% level for a 2 tailed-test
+ denotes statistical significance at the 10% level for a 2 tailed-test

Table 11. *Electoral security and Elasticity of Government Expenditures*

Expenditure	η_y	η_u
Total	**Greater pre-election** 10 and 12 quarters	No significant difference
Transfers	**Greater pre-election** 8 quarters	No significant difference
Exhaustive	**Greater pre-election** 10 and 12 quarters	- Not applicable -