Opinion-Policy Dynamics:
Public Preferences and Public Expenditure in the United Kingdom*

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Abstract

Work exploring the relationship between public opinion and public policy over time has largely been restricted to the US. A wider application of this line of research can provide insights into how representation varies across political systems, however. This paper takes a first step in this direction using a new body of data on public opinion and government spending in the UK. The results of analyses reveal that the British public appears to notice and respond (thermostatically) to changes in public spending in particular domains, perhaps even more so than in the US. They also reveal that UK policymakers represent these preferences in spending, though the magnitude and structure of this response is less pronounced and more general. The findings are suggestive about the structuring role of institutions.

A large and growing body of research demonstrates a correspondence between public opinion and policy behaviour (e.g., Miller and Stokes, 1961; Weissberg, 1976; McCrone and Kuklinski, 1979; Monroe, 1979; Bartels, 1991; Page and Shapiro, 1992; Hartley and Russett, 1992; Goggin and Wlezien, 1993; Erikson, Wright, and McIver, 1993; Jacobs, 1993; Stimson, MacKuen, and Erikson, 1995; Wlezien, 1996a,; Wood and Hinton-Anderson, 1998; Hill and Hurley, 1998; Sharpe, 1999; Erikson, MacKuen, and Stimson, 2002; Soroka, 2003; Wlezien, 2004). Some of the research even suggests that policymakers respond to changing public preferences over time (especially Jacobs, 1993; Stimson, MacKuen, and Erikson, 1995; Wlezien, 1996a; Wlezien, 2004). All of this work is satisfying and important, for it suggests that there is opinion representation, both cross-sectionally and longitudinally. However, almost all of the research has focused on the US.[1] Do similar patterns obtain in other countries? Or is the US unique? We do not know.

The current paper represents a first step in this direction. Using a new body of data on public opinion and government spending in the UK, we directly extend research on the dynamics of spending opinion and policy in the US to the UK. The spending data are particularly unique—prior to the creation of the dataset used here, there were no reliable indicators of trends in UK government expenditures (see Soroka and Wlezien, 2002). Using these spending data together with recently-assembled public opinion time series, we explore both (1) *public responsiveness*—the degree to which the public responds 'thermostatically' to public expenditures—and (2) *policy representation*—the extent to which budgetary decisions follow public preferences for spending. The analyses offer additional insight into the dynamics of representation across countries. They don't answer all our questions. They do, however, offer us some basis for comparison.

The paper begins with a description of the thermostatic model of the opinion-policy relationship on which the ensuing analyses rely. Data are described, with particular emphasis on the new measures of expenditures. We then present analyses of public responsiveness and policy representation. These analyses reveal that the British public appears to respond thermostatically to changes in public spending, even more so than in the US. They also show that the magnitude and structure of UK policymakers' response to public preferences is less pronounced and more

[1] There are a few exceptions. Especially see Eichenberg and Stoll's (2003) study of defence spending in various countries. There are selected studies of specific countries and domains, most notably Brooks (1987; 1889); Petry (1999); Soroka and Lim (2003). Also see Weakliem's (2002) excellent review and assessment of the literature.

general. In the concluding section, we consider the implications of these findings and their likely (institutional) causes.

The Thermostatic Model of Opinion and Policy

The representation of public opinion presupposes that the public actually notices and responds to what policymakers do. Without such responsiveness, policymakers would have little incentive to represent what the public wants in policy—there would be no real benefit for doing so, and there would be no real cost for not doing so.[2] We need a responsive public. Effective democracy depends on it.

A responsive public behaves much like a thermostat (Wlezien, 1995).[3] That is, the public adjusts it's preferences for 'more' or 'less' policy in response to what policymakers do. When policy increases (decreases), the preference for more policy decreases (increases). For expository purposes, the public can be viewed as a collection of individuals distributed along a dimension of preference for policy activity, say, spending on defence. This characterization is not meant to imply that individuals have specific preferred levels of spending in mind; rather, it is intended to reflect the fact that some people want more than others. Let the public preference be represented by the median along the dimension, which implies a certain 'ideal' level of defence spending.

Now, if the level of policy differs from the level the public prefers, the public favours a corresponding change in policy, basically, either more or less. If the preferred level is greater than policy itself, the public favours more spending than currently is being undertaken. If policymakers respond, and provide more (but not too much) for defence, then the new policy position would more closely correspond to the preferred level of spending. If the public is indeed responsive to what policymakers do, then the public would not favour as much more activity on defence. It might still favour more, on balance, but not as substantially as in the prior period; if policymakers overshoot the public's preferred level of spending, it would favour less. In effect, a departure from the favoured policy 'temperature,' which itself can change, produces a signal to adjust policy accordingly and, once sufficiently adjusted, the signal stops. This conceptualization

[2] Moreover, as we will see, without public responsiveness to policy, expressed public preferences for 'more' or 'less' policy would contain little meaningful information. There not only would be a limited basis for holding politicians accountable; expressed preferences would be of little use even to those politicians motivated to represent the public for other reasons.

[3] This discussion closely follows Wlezien (1995: 981-983).

of public preferences has deep roots in political science, including Easton's (1965) classic depiction of a political system and Deutsch's (1963) models of 'control.'

These expectations can be expressed formally. The public's preference for 'more' policy—its relative preference, *R*—represents the difference between the public's preferred level of policy (P^*) and the level it actually gets (P):

$$R_t = P^*_t - P_t \quad (1)$$

Thus, as the preferred level of policy or policy itself changes, the relative preference signal changes accordingly. The public is expected to respond currently to actual policy change when put into effect. This is straightforward, at least in theory. It is less straightforward in practice.

Most importantly, we typically do not directly observe P^*. Survey organizations typically do not ask people how much policy they want. Instead, these organizations ask about relative preferences, whether we are spending 'too little,' whether spending should 'be increased,' or whether we should 'do more.' This, presumably, is how people think about most policies. (Imagine asking people how much health or education spending they want.) The public preference, however defined, also is necessarily relative. In one sense, this is quite convenient, as we can actually measure the thermostatic signal the public sends to policymakers.[4]

If policymakers are responsive to public preferences, *changes* in policy (P) will be associated with *levels* of the public's relative preference (R). We can express this expectation as follows:

$$\Delta P_t = a_0 + \beta R_{t-1} + \gamma Z_{t-1} + e_t, \quad (2)$$

where a_0 and e_t represent the intercept and the error term, respectively, and Z represents the set of other determinants of policy, including the partisan control of government. The coefficient β captures responsiveness, where the effect of preferences on policy is independent of partisan control and other factors; if the coefficient is greater than 0, policy 'responds' to preferences.[5]

[4] Because we must rely on proxies to estimate P^* (and also because metrics of the other variables will differ), it is necessary to rewrite Equation 1 in a more general way:

$$R_t = \beta_1 \hat{P}_t^* - \beta_2 P_t + \mu_t,$$

where $\hat{P}_t^*$ is the public's 'predicted' preferred level of policy.

[5] This does not mean that politicians actually respond to changing public preferences, for it may be that they and the public both respond to something else. All we can say for sure is that the coefficient (β)

Notice that the change in expenditure for fiscal year *t* is modelled as a function of net support in year *t-1*. This specification is not meant to imply that policies do not respond to current opinion; rather, it is intended to reflect the reality of budgetary decision-making, which largely happens over the course of the previous fiscal year. Thus, our model captures responsiveness to opinion when most budgetary decisions actually are made. Notice also that the hypothetical interrelationships between opinion and policy are not simultaneous. Preferences in year *t*-1 positively influence budgetary change for fiscal year *t*, which in turn negatively influences preferences in year *t*.

These expectations are general ones and we do not expect the model to apply equally well in all policy domains. Indeed, public and policy responsiveness is likely to reflect the political importance of the different domains if only due to possible electoral consequences.[6] Following Wlezien (2004), we might expect the pattern of representation to be symmetrical to patterns of public responsiveness: where the public notices and responds to policy in a particular domain, policymakers would notice and respond to public preferences themselves; where the public does not respond to policy, policymakers would not represent public preferences. This structure fits well in the US. Now, let us see how it fits in the UK.

The Data

To examine opinion-policy dynamics in the UK, we need reliable measures of budgetary policy and public preferences for spending in various categories over time. Much to our surprise, data for the latter are more readily available than for the former, though the indicators of spending preferences are themselves fairly limited.

Measuring Budgetary Policy

Finding reliable measures of budgetary policy in the UK is not easy. Unlike in the US, the government does not provide data on appropriations of budget authority at any level of

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captures policy responsiveness in a statistical sense, that is, whether and the extent to which public preferences directly influence policy change, other things being equal. Also see the analyses below.

[6] We can explicitly incorporate the variable importance, or 'salience' (*S*), into our model as follows:

$$\Delta P_t = a_0 + \beta S_{t-1} R_{t-1} + \gamma Z_{t-1} + e_t,$$

where *S* ranges between 0 and 1. Here the effect of opinion on policy depends on the level of salience. This follows Franklin and Wlezien (1997); also see Jones (1994) and Soroka (2003).

aggregation. All that is available is data on expenditures. While expenditures are important, they are twice removed from policy. That is, elected politicians have only limited control over what is spent, which may reflect things that they can't anticipate or manage.[7]

There are two sources for UK general government spending data by broad government function. The ONS *Blue Book* is the most commonly used resource. Until 1997, the *Blue Book* presented expenditures by function based on General Government Expenditures (GGE), a measure of government spending including a number of financial transactions but excluding public corporations. From 1997 onwards, *Blue Book* figures are based on Expenditure of General Government (EGG), a measure adjusted to be in line with the 1995 European System of Accounts (ESA). This post-1997 data is not comparable with data from earlier years.

The more significant difficulty is that even pre-1997 functional data are unlikely to be directly comparable over a long period of time. Functional definitions change slightly (or not so slightly) each year, so that a program may be included in Health for one year and Environment the next. When functional definitions change the ONS does not re-calculate most previous years' spending data based on the new definitions.[8] The other difficulty with *Blue Book* data is that, in order to bring it in line with all other tables in the *Blue Book* and ESA itself, government spending is reported by calendar year rather than fiscal year. Calendar year estimates are not particularly useful for those interested in policymaking, however, because spending is allocated by fiscal year. *Blue Book* spending data represent a weighted average of decisions made in year *t* and year *t-1*. And since spending will vary considerably by quarter, it is impossible to retrieve accurate figures by fiscal year.

Thankfully, the Treasury presents functional spending by fiscal year from FY1978 in *Public Expenditure Statistical Analyses* (*PESA*). *PESA* tables are based on a slightly different measure of government spending – Total Managed Expenditure (TME), including public corporations but excluding financial transactions (it includes current and capital spending only). If only because

[7] Using expenditures thus biases analyses against finding opinion representation and policy feedback itself (see Wlezien, 1996a; Wlezien and Soroka, 2003).

[8] Rather, only the most recent year's (*t*-1) spending is re-calculated. The difference between the original number and the new calculation of spending at *t*-1 is then used to create a factor by which all preceding years' data is multiplied. If, for example, the new calculation of spending at *t*-1 is 1.1 times greater than the original estimate, then values for Education in all preceding years are multiplied by 1.1 in an effort to bring them in line with the new functional definition. The resulting data thus represent only an estimate of previous spending as it might look using the new functional definitions. The problems are compounded year-by-year.

spending is aggregated by fiscal year, we should expect the *PESA* tables to more accurately reflect policymaking decisions. The difficulty with *PESA* data is that previous years rely on an estimating procedure similar to that used by the ONS. When functional definitions change, data is *re-calculated* using the new definitions for the current year and the preceding four years (the Treasury maintains 5-year databases). Data previous to year *t-4* is then *re-estimated* using the same methodology as for ONS (see note 8).

So the current state of UK general government spending data is rather poor, at least by comparison with what is available for the US. Those analyses that exist in the UK tend to use *Blue Book* data – repeatedly re-estimated data aggregated by calendar year. The *PESA* series allows researchers to use data aggregated by fiscal year, but the problem of using estimates still exits. In order to provide a more reliable measure of functional spending over time, we have recalculated the expenditure series using FY2000 functional definitions. This involved reclassifying expenditures on various services at a very low level of aggregation, details about which are available on-line (Soroka and Wlezien, 2004a).[9] The resulting data are as good as currently exist for the UK.

Measuring Public Preferences

Measures of spending preferences are more readily available. Gallup has asked the British public about their preferences for spending relatively frequently using the same question that is used in the US. The question is as follows:

> 'Do you think the government is spending too much, too little or about the right amount on [armaments and defence]?'

Respondents were asked about spending in other categories besides defence: education, health, and roads.[10] This is a very limited set compared with what Gallup asks in the US (see Wlezien, 1995). Also, Gallup has asked this question on an irregular basis. Between 1978 and 2000, the years for which we have fairly reliable budget data, Gallup asked it 19 times in only 13 years and not at all since 1995. Using these data, and given the budgetary cycle in the UK—April-March—

[9] It is for these new data that we are particularly indebted to Allan Ritchie, Philippa Todd, Stuart Mitchell at HM Treasury, Russell Hubbard at the Office of the Deputy Prime Minister and Robert Bowles.
[10] In fact, Gallup also asks this question for pensions. We disregard the pensions series here because a matching functional nor subfunctional spending measure is not currently available. The closest functional figures are those for Social Security, which combine spending on pensions with other expenditures, such as Child Benefits.

it only is possible to create time series covering 15 years of the 18-year period between 1978 and 1995.[11] Data are completely missing in the other three years.

The simplest, most reliable way to reflect public preferences using these data is to create percentage difference measures, by subtracting the percentage of people who think we are spending 'too much' from the percentage of people who think we are spending 'too little' in each domain. The resulting measures of 'net support' thus capture the degree to which the public wants 'more' or 'less' spending over time. Indeed, the measures capture both direction and magnitude.[12]

A Basic Analysis of Structure

We know that there is a certain pattern to the movement in spending preferences over time in the US (Stimson, 1991; Wlezien, 1995). A similar pattern is evident in the UK, as can be seen in Figure 1, which plots the four series. (Factor analysis shown in appendix Table A1 nicely summarizes this pattern.) We see that preferences for spending in the various 'social' categories—specifically, education and health—move together over time. Preferences for defence spending virtually mirror preferences for domestic spending, though they are much more variable, as in the US. In effect, preferences for social and defence spending tend to move in the same liberal-conservative direction. This is potentially quite telling for our analysis. Indeed, the pattern implies a certain 'global' movement of opinion that may drive politicians' behavior in various policy domains (Stimson, MacKuen, and Erikson, 1995). The movement is not entirely global, however—although these preferences exhibit a lot of common movement, they also exhibit movement that is specific to particular domains. In particular, preferences for spending on roads appear to share only a little in common with preferences for defence and social spending (as in the US).[13]

[11] Gallup did not ask the question in 1980, 1981, 1984, 1987 and 1994, but we are able to use data from polls conducted in proximate periods for 1981 (using Nov 1980) and 1987 (using Nov 1986). Note also that when more than one poll otherwise exists in a single fiscal year, results are averaged.

[12] Note that the percentage of people who think spending is 'about right' varies within a fairly narrow range over time and the percentages of people who think we are spending 'too little' and 'too much' over time are virtual mirror images of each other.

[13] Given the factor analysis in the Appendix, the estimates are 17 percent for health and approximately 21 percent for defense and education. For roads, 88 percent of the variance is specific. The estimates clearly are conservative ones, however, as the factor is based on information about preferences in each of the domains and where more than one factor is allowed. When the three highly correlated items are forced into

— Figures 1 and 2 about here —

A similar structure also is evident in spending itself, as we can see in Figure 2 (and the factor analysis results in Table A2). Here, we use inflation-adjusted measures of spending on education, health, transportation, and defence.[14] (Spending on transportation is used because we do not have a reliable measure of spending on roads, and this of course may have real—albeit unknown—consequences for our analysis.) Notice that spending on health and education appear to vary together over time, but so does spending on transportation, in contrast with our analysis of preferences. The very tight patterned movement across the three domains is not surprising given that levels of spending in most areas tend to trend positively over time. At the same time, we can see that defence spending does move in a quite opposite direction, virtually a mirror image of social spending. Much as for preferences, spending in the UK exhibits a certain global movement over time, at least on the surface. Now, let us explore the underlying structure of preference and spending dynamics.

An Analysis of Public Preferences

Recall that the thermostatic model implies that the public's relative preference for policy (R) is the difference between the public's preferred level of policy (P^*) and policy (P) itself. We have available measures of R and P, at least in four spending domains in the UK: defence, education, health, and roads. We do not, however, have measures of P^* in these domains, as noted earlier in the paper. It thus is necessary to rely on proxies. Previous research is a useful guide.

We know that public preferences for defence spending in the US closely follow perceived variation in national security over time. Specifically, preferences have reflected attitudes toward the Soviet Union/Russia as reflected in 'likes' and 'dislikes' of the country (Wlezien, 1995; 1996a). There is reason to expect a similar pattern to hold in the UK. The problem is that we do not have comparable measures of likes/dislikes of Russia in the UK. However, if the measure from the US provides a reliable indication of the actual security threat from the Soviet Union

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a single factor, the specific portions tend to increase. Note also that this movement in preferences is not the mere result of sampling error. Given the frequencies and sample sizes (approximately 1000) of the actual polls, the amount of observed variance in net support that is due to sampling error is relatively easy to compute (Wlezien, 2004). The estimates, in fractions, are as follows: health (.03), education (.05), defense (.13). The statistical reliabilities of the different series are simply 1 minus the estimate for each corresponding domain.

[14] The GDP deflator (1987=1.00) used is series YBGB from the Office of National Statistics. A fiscal-year deflator was calculated from the monthly series.

during the period or broad public perceptions of that threat, then it should work equally well in the UK. Thus, we use the US measure here. Our measure of Net Dislike represents the percentage of Americans who dislike Russia minus the percentage who like the country. The data are drawn from the General Social Survey. For years when the GSS was not in the field, namely, 1979, 1981, and 1993 we interpolate using data from adjacent years.[15]

Identifying specific indicators for the different domestic domains is much less straightforward. We nevertheless know that preferences in these areas do exhibit common movement over time, and previous research indicates that it follows variation in economic security over time. It is not clear exactly what effect the economy has, as the findings of different studies differ quite a lot: economic security is positively related to spending opinion in some studies (Durr, 1992) and negatively in others (Erikson, MacKuen, and Stimson, 2002). The studies do rely on different measures—business expectations and unemployment rates, respectively. Still other research on public opinion relies on the sum of unemployment and inflation rates (Franklin and Wlezien, 1997). For this analysis, we adopt this latter measure, commonly known as the 'misery index.'[16] The decision is based on theoretical grounds—that the measure provides a good indication of the direction, magnitude, *and* impact of economic change—and empirical analyses of the various measures. The measure used here represents the average of the (monthly) misery index in fiscal year *t*.

Previous research also shows that there is a guns-butter trade-off in social spending preferences in the US (Wlezien, 1995). That is, an increase in national security threat leads to a decrease in preferences for social spending.[17] This may also be true in the UK, as we have seen that preferences (and spending) for defence and domestic programs are inversely related. The possibility of a guns-butter trade-off is explicitly considered in the second stage of the analyses that follow.

This research shows further that the underlying preferred levels of defence and domestic spending tend to increase over time, other things being equal (Wlezien, 1995). Whether a reflection of

[15] For 1995, we simply carry forward the figure from 1994.

[16] The data are drawn from the BCJE (unemployment) and CBAB and CHAW (retail price index) series from the Office of National Statistics. Fiscal-year data were calculated from the monthly series: For unemployment, by simply taking the yearly mean; for inflation, by taking the yearly mean and then calculating year-on-year changes.

[17] The trade-off does not run the other way, from butter to guns, however. In effect, preferences for social programs in the US are endogenous to public preferences for defence spending, which in turn are exogenous.

income effects or something else, the tendency fits nicely with trends in spending itself, particularly for social programs. To account for the possibility, a linear counter variable is included in the models of net support.

Following the theoretical model in equation 1, the dependent variables used in the analysis represent the *levels* of net support for spending. To preserve precious degrees of freedom, we impute values in the two years when opinion data is missing using a straight linear interpolation. This allows preference time series of 18 years each, and has relatively little consequence for the general pattern of results; it really only serves to reduce the estimated standard errors.[18] The measures of net support are regressed on corresponding levels of spending (in billions of 1987 Pounds) and the indicators of the public's preferred level of spending. Lagged net support also is included when its effect is statistically significant ($p<.10$).[19] The results of estimating models for the four domains are shown in Table 1.

— Table 1 about here —

The defence opinion results in the first column of the table are somewhat unclear. In particular, it would appear that preferences for defence spending do not follow variation in national security over time, at least as reflected in our measure of net dislike. Although the coefficient for the variable is appropriately positive, it is too unreliable to credit. This is somewhat deceiving, however. It appears that the effects of net dislike are partially concealed by the very high collinearity between the variable and the counter variable (Pearson's $r = -.88$) during the period. That is, the counter variable captures much of the fairly secular decline in Cold War hostilities beginning in the mid-1980's.[20] Excluding the variable clarifies the effect of net dislike over time, as can be seen in the second column of Table 2. Here, the coefficient has doubled in size and quadrupled in significance, and the explained variance remains entirely unchanged. The coefficient actually is not significantly different to what we observe in the US (Wlezien, 1995).

[18] More powerful techniques for imputing missing data are not appropriate here—or even possible in some cases—given the relatively short length of our time series.

[19] To be absolutely clear, the variable is included for statistical reasons only, specifically, to capture correlation among the residuals. Where the effect is not significant, the variable is dropped from the model, though note that results including the variable for these domains are shown in Table B1. In this context, note that Dickey-Fuller tests indicate that the preference series exhibit stationary tendencies, which is exactly as we expect given the thermostatic model. That is, preferences represent the difference between what the public wants and what the public gets, both of which, presumably, are integrated. If this is true, and if policymakers represent preferences over time, then preferences are stationary by definition, i.e., the linear combination of two cointegrated series. See Wlezien (2000).

[20] This explains the unexpected negative sign on the coefficient for the counter variable.

The pattern of these results is telling: It indicates that the net dislike measure captures the actual variation in the Soviet threat over the period, or else that public perceptions of that threat in the UK and US were essentially parallel. Either way, the public's underlying preferred levels of defence spending appear to change in understandable ways.

Results in Table 1 also show that the public adjusts its preferences for more defence spending in response to spending itself. As indicated by the significant negative coefficient, when spending increases, support for more spending decreases. The effect is quite pronounced: A one billion (1987) Pound (or 6%) increase in spending produces more than a 16-point decrease in net support. The result implies that the British public notices and responds to what policymakers actually do with respect to defence, as in the US. Indeed, the pattern indicates that the public acquires a good amount of information about defence spending and that this information is remarkably accurate. The thermostatic model clearly works well in the UK defence spending domain.

Much the same is true for the domestic domains. In columns 3-5 in Table 1, we can see that preferences for spending on education and roads move in concert with economic conditions. When the misery index increases, the public favours more spending in these domains, though particularly for education. The pattern is intuitively satisfying, as the results imply that the public's preferred levels of domestic spending reflect economic security.[21] The same is not true for health, however, which is as one might expect. In the health domain, as well as education, we see that spending preferences do trend upward over time, other things being equal. This is clear from the positive, statistically significant coefficient for the counter variable. Notice that the same is not true for roads. Although there are differences across domains, the underlying preferred levels of spending on domestic programs do appear to evolve in understandable ways.

Results in Table 1 show that the public also adjusts its spending preferences in the different domestic domains in response to actual spending. The coefficient for spending is negative in each of the three domains and easily meets conventional levels of statistical significance. The estimated responsiveness in the domestic domains is much lower than for defence, however. This is interesting and important, as we will see. It also appears in Table 1 that responsiveness is approximately the same in the different domestic domains, though this is somewhat deceiving.

[21] Separate diagnostic analyses reveal that the effects of the two components of misery – unemployment and inflation – are virtually identical.

The similarity in the size of the coefficients actually conceals substantial differences in the mean and variance of spending in the different domains (see Figure 2). Put simply, it takes a larger (absolute) change in spending on health as compared to education and especially transport to generate an equivalent public response. These differences neatly parallel the differences in the reliability of the spending coefficients. As we can see in Table 1, the statistical significance of the spending coefficient decreases as we move from health and education to roads, and public responsiveness in each of theses domains is less than for defence.

Although there are differences across domains, there is no escaping the conclusion of thermostatic public adjustment in each of the domains. When spending increases, public preferences for more spending decreases. Public responsiveness in the UK is pervasive, indeed, much more so than in the US.

An Analysis of Spending Change

Thus far, we have seen that the public responds to spending in each of the four domains, although the responsiveness varies in significant ways. However, we also want to know whether and to what extent politicians represent these preferences in policy itself. For this analysis, we build directly on recent 'political' models of policy change (Stimson, MacKuen, and Erikson, 1995; Wlezien, 1996a; 2004; Smith, 1999), which include measures of public preferences and party control of government.

Following equation 2, the dependent variables used in the analyses represent the first *differences* of spending (in billions of 1987 Pounds) for each of the four spending categories.[22] Recall that these changes in spending are expected to be positively related to the *levels* of net support for spending, which capture the public's relative preferences. Politicians are expected to respond currently. In the budgetary context, this means that change in spending for fiscal year t follows the level of net support in year t-1, when the bulk of spending decisions for fiscal year t are made.

The party control variable is fairly standard and takes the value '1' under Labour governments and '0' under Tory governments. The measure of party control taps the *levels* of partisan control, which might appear to be inconsistent with the (differenced) dependent variables. Given that

[22] Dickey-Fuller tests indicate that spending in each of the domains is integrated. This is as we expect of our spending variables. Also see note 19.

budgetary policy feeds back in 'thermostatic' fashion on public preferences, however, the specification actually is theoretically implied (Wlezien, 2004). It also is supported by separate diagnostic analyses.[23]

In addition to preferences and party control, the model includes a measure of public debt (in billions of 1987 Pounds). This is included based on the expectation the UK governments will tend to reduce spending in reaction to accumulating deficits, following Blais, Blake, and Dion (1996). That debt is included in levels rather than changes suggests a particular kind of reaction—when the national debt remains high, governments are expected to continue to reduce spending.[24] To avoid simultaneity with spending change itself, we use a lagged measure of debt.

Other 'baseline' variables, including unemployment and inflation, were incorporated into the analyses using various specifications, though to little effect. The analysis that follows thus relies on a simple model that includes measures of public preferences for spending, the party control of government, and the level of public debt. As for our analysis of preferences, we include the lagged level of spending when its effect is statistically significant (also see note 19).[25] The results of estimating the model for the four budgetary domains are shown in Table 2.

— Table 2 about here —

Here we can see that changes in defence spending do follow public preferences. As indicated by the positive, significant coefficient for net support, when public support for more defence spending is high politicians tend to provide more defence spending. The effect is sizable, particularly given the variance in preferences over time: A one standard deviation (or 21.6 point) increase in net support leads to a .6 billion (1987) pound (or 3.8%) increase in spending. The patterned connection is satisfying and consistent with the analysis of public preferences itself.

[23] Note also that the effect of party is lagged, that is, spending in the budget beginning in 1981 reflected the change in party control in 1979. This specification, which is based on empirical analysis, implies that the reactions of spending to changes in control are delayed somewhat (by one year) in comparison with analysis of appropriations in the US. It is as we might expect given the focus on outlays and not appropriations (see Wlezien and Soroka, 2003).

[24] The specification is supported by diagnostic analysis.

[25] The results including the variable for the other domains are shown in Table B2. These results suggest possible differences in the effects of public preferences, though they also are difficult to credit given that there is no clear theoretical or statistical basis for including the lagged spending variable in the models. Note in this context that Dickey-Fuller tests clearly indicate that the spending series are integrated. Even if we do take seriously the results in Table B2, they only reinforce the conclusion that representation in the domestic domains is primarily collective.

Where the public notices and responds to spending, policymakers appear to notice and respond to the public's preferences.[26]

The pattern does not hold across all the domestic domains, however. The preference coefficient is positive and statistically significant only for health. The estimated effect (.036) here actually is slightly larger than what we observe for defence, and implies that public is highly responsive to changes in health opinion. This is somewhat deceiving, however, as the variance of health spending preferences is only 20 percent of that for defence: A one standard deviation (or 9.6 point) increase in net support produces a .35 billion (87) Pound (or 1.7%) increase in health spending. This is approximately half what we estimated for defence.

The magnitude and significance of the effect of preferences declines consistently as we move from health to education and to transport. For the latter domain, the estimated effect of preferences actually is negative, though unreliable. Education is on the border. The coefficient is positive and quite sizable by comparison with what we observe for health and defence; the estimate nevertheless does not meet standard minimal levels of statistical significance. Thus, although there is a strong hint of representation in education, we cannot fully credit the relationship.[27] We only can conclude that British policymakers are selectively responsive to public preferences *within* the domestic domains.

We further see in Table 2 that spending on education and roads is unresponsive to the party control of government. Based on this analysis, then, politics has little to do with spending on these programs. All that seems to matter is the level of public debt. The results clearly contrast with the results of our analysis of preferences. That is, public and policymaker responsiveness do not neatly match. This is contrast to what we see in the US.

The Domestic Domains Taken Together

Thus far, we have assumed that representation (and public responsiveness) is specific to domains, so that politicians are expected to respond to public opinion within particular areas. This reflects

[26] The positive coefficient for lagged levels of defense spending is quite in contrast to what we expect here, and may be taken to imply a certain explosiveness. Recall that the defense spending series is integrated, however. Note also that the positive coefficient disappears in analyses that follow (see Table 7). In effect, the positive coefficient in Table 2 is the apparent consequence of model underspecification.
[27] This remains true even when we adjust for statistically reliability. See note 13.

the traditional characterization of representation (see, e.g., Monroe, 1979; Bartels, 1991; Page and Shapiro, 1992; Hartley and Russett, 1992; Geer, 1996; Sharpe, 1999). It may be, however, that representation is more collective, and that policymakers respond generally across domains (see Stimson, MacKuen, and Erikson, 1995). We have already seen that preferences for spending and actual spending in the different domestic programs move together over time. Perhaps policymakers notice this common or 'global' movement and not the specific movement unique to the different domains. Perhaps the public likewise only notices the changes in spending for the different programs taken together and not the changes that are particular to each domain. It is important to consider these possibilities.

To do so, we first need to estimate the models of preferences and spending using a measure of domestic net support and the sum of spending in the three domestic domains. The sum of spending is easy to construct. The measure of domestic net support is a bit less straightforward. We could use the common variance in domestic preferences from factor analysis relating the three domains (Wlezien, 2004). Another way is to simply use the mean spending preference. For this analysis, we rely on the latter.[28] The resulting models of preferences and spending are shown in Table 3.

— Table 3 about here —

In the first column of the table, we see that the aggregate model of domestic spending preferences essentially summarizes the by-domain results in Table 1. This analysis thus offers little additional information about the nature of public responsiveness, but is expected.[29] In the second column, however, we see that aggregating actually reveals representation in the domestic domains. Not only is the effect of average preferences significant, the overall level of responsiveness is greater. The coefficient (0.135) for the average net support is substantially larger than—indeed, more than triple—the sum (0.042) of the three coefficients for the specific measures of net support in Table 2. The estimated effect is much larger than what we observed for defence, though this is somewhat deceiving, as the variance in net support for domestic programs is far less. A one standard deviation (or 7.1 point) increase in domestic preferences

[28] This was strongly encouraged by an anonymous reviewer. Analysis using preferences predicted by the factor analysis in Table A1 produce substantially the same results. These are available on request.

[29] There actually is some suggestion that net domestic responsiveness exceeds what we observe in the separate domains. That is, the coefficient is greater than the *weighted average* of the coefficients for the domestic spending domains in Table 1.

produces a 1 billion (1987) pound increase in spending. Although this is about 50 percent more than the change in defence spending due to a comparable change in preferences, in percentage terms the effect (2%) is only little more than half.

What is most important is that results in Table 3 indicate representation in the domestic domains. The nature of this representation is not entirely clear, however. Do policymakers respond in each domain to the general, 'global' signal for more domestic spending? Or is it that the domains are substitutable, so that responsiveness in the set of domains is collective?

— Table 4 about here —

One way to address these issues is to substitute the measure of average net support for the domain-specific measures of net support in the models of spending in the three domestic domains. The results of doing so are shown in Table 4.[30] Here we can see that spending does not respond to the 'global' signal in each domain. Although the coefficient for average net support is positive in each model, the estimated effect never approaches conventional levels of statistical significance, even for health. This tells us that policymaker responsiveness in these domains reflected in Table 3 is primarily collective. When sensing shifting preferences for domestic programs, it appears that policymakers tend to pick and choose, sometimes providing more health and at other times education or roads. At yet other times they may combine spending in different domains. In effect, the programs are 'substitutable' to policymakers. This is a very different sort of pattern to what we observe in the US. Indeed, it is quite different to the pattern of domain-specific responsiveness evident in Table 1.

The aggregate-level analyses in Table 3 also allow us to provide broad assessments of efficiency in the defence and domestic domains. That is, we can assess the net effect of representation and feedback (Wlezien, 1996a). What happens when preferences increase? Imagine a one-unit shock in the public's underlying preferred level of spending. How quickly does it take the system to re-equilibrate? That is, how long does it take for spending to adjust? Based on the representation coefficient in Table 3, we would predict that domestic spending would increase by .135 billion (1987) Pounds in year t+1. In turn, we would expect the public to adjust downward its preferences for more spending. Specifically, we would expect preferences to drop by .30, the

[30] Results including the lagged spending variable for the health and education domains are shown in Table C1. Notice that these are virtually identical to what is reported in Table 4.

simple product of the spending increase (.135) and the coefficient of feedback (-2.21) from Table 3. We can carry this forward through time. The resulting pattern can be seen in Figure 3. Here we plot simulated preferences for the combined domestic domains and for defence, where coefficients for the latter are drawn from Tables 1 and 2.

— Figure 3 about here —

Figure 3 indicates that the half-life of a one-unit shock in defence spending preferences is one year. To be perfectly clear, half of the shock is gone in a year or so. This is a high level of efficiency. Things are a bit different for the domestic domains, however. We can see in Figure 3 that the half-life of a hypothetical shock to preferences is about two years. It indicates comparatively less efficiency than what we observe for defence. The differences admittedly are not dramatic; they nevertheless are real. Given the patterns of public and policy responsiveness, the differences also are not surprising

A Guns-Butter Trade-Off?

Recall that preferences and actual spending for defence and domestic programs are inversely related, which implies a guns-butter trade-off between domains. We have not yet addressed this possibility, however. The evident pattern may reflect interdependence between the public's preferred levels of spending. That is, it may be that when the public wants more defence spending—due for instance to an increase in national security thereat—it wants less domestic spending, as we see in the US. Or the reverse may be true, where an increase in the public's preference for domestic spending—say, owing to a rise in the misery index—leads the public to prefer less defence spending. Because of representation, the tendencies would produce a similar guns-butter trade-off in spending. Of course the pattern also may reflect interdependence in spending decisions themselves. When making spending decisions in one area, policymakers may respond to spending in the other. For instance, when increasing defence spending policymakers may cut domestic spending, and the reverse also could be true. Because of feedback, the tendencies would produce a guns-butter trade-off in preferences.

— Table 5 about here —

Both of these possibilities can be tested directly. We first consider interdependence in preferences. For this analysis, we simply re-estimate the models of defence and domestic

preferences from Tables 1 and 3 including the misery index in the former and net dislike of Russia in the latter. The results of these analyses are shown in Table 5. Recall that we are interested in seeing whether either of these coefficients is negative and significant.

The results suggest that preferences are not interdependent. In the analysis of defence preferences in column 1, we can see that the coefficient for the misery index actually is positive. This implies that when the economy worsens, the public prefers more spending on domestic and defence programs both, though the effect on the latter is not statistically significant. Clearly, this does not help us account for the evident guns-butter trade-off. Analysis of domestic spending preferences in column 2 of the table also does not reveal a solution, as the coefficient for net dislike is incorrectly positively-signed here as well. Thus, based on this examination, the strong negative correlation between defence and domestic spending preferences is not the result of interdependence in the preferred levels of spending. This appears in contrast with what we observe in the US (Wlezien, 1995).

— Table 6 about here —

Now, let us consider interdependence in spending. Here we re-estimate the models of defence and domestic spending from Tables 2 and 3, including spending change in the other 'domain.' To be absolutely clear, we include changes in domestic spending in the model of defence spending and changes in defence spending in the domestic model. Table 6 shows the results. As for preferences, we are interested in seeing whether either of these coefficients is negative and significant.

There is only very weak evidence of interdependence in spending decisions. The coefficient for domestic spending is negative in the defence spending model, but of trivial size and significance. The same is true of the defence spending coefficient in the domestic model. Thus, there is a hint that the trade-off exists in spending decisions, but only a hint. Our models simply do not offer any offer basis for the guns-butter trade-offs in preferences and spending that we observe.[31]

[31] Further exploratory analyses are no more revealing. That is, including domestic (defence) spending in defence (domestic) preference models shows no interdependence. We see the same when domestic (defence) preferences are included in defence (domestic) spending models. The interesting thing is that the system of models nevertheless captures the interdependence. That is, correlations between actual preferences and spending and the levels predicted from the estimated models in Tables 1 to 3 are indistinguishable from what we observe in the measured variables. This indicates that preference and

Assessing Policymaker Responsiveness

The foregoing analyses show that government spending in the UK tends to follow public preferences. When the public wants more defence and domestic spending, the British government provides more spending. But, is the government actually responding to public preferences? Or is the relationship spurious, reflecting the responsiveness of government and the public to something else? Spuriousness is a real possibility, for both spending decisions and preferences may be driven independently by the underlying need for spending in the domains, i.e., the Soviet threat for defence and the misery index for social programs. To what extent, then, do spending decisions uniquely reflect these factors and not the preferences of the public per se?

Incorporating measures of the preferred levels of preferences into the spending models provides a basis for assessing the focus of government responsiveness. That is, we can incorporate net dislike into the model of defence spending and the misery index (and trend variable) into our model of domestic spending. If the government is responding to these factors and not public preferences, the coefficients for net support would tend toward 0. If government is responding only to preferences *per se*, spending change would be unrelated to either net dislike or the misery index.

— Table 7 about here —

The results from estimating the models, in columns 1 and 3 of Table 7, indicate a substantial measure of explicit responsiveness to public preferences. Notice first that policymakers are to some extent responsive to the underlying 'need' for spending, specifically on defence. That is, as indicated by the positive (and highly significant) coefficient for net dislike, defence spending is *independently* responsive to the Soviet threat over time. This result suggests that the government did not respond only to public preferences in this particular domain, and that it responded directly to changes in the Soviet threat. It appears that the government still did respond to defence preferences. It is just that the estimated responsiveness is smaller and much less reliable than in Table 2, where net dislike is not included.

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spending equations quite nicely, though in some unknown way, captures the guns-butter trade-offs in both preferences and spending.

The pattern is clearer for domestic programs, in the third column of Table 7. Changes in domestic spending do not 'respond' to either the misery index or the underlying trend in domestic preference, and the estimated effect of domestic preferences is virtually as large and significant as in previous models. These results very strongly imply that the UK government responds to public preferences when making spending decisions. That is, there appears to be representation in the strictest sense of the word.

The results change quite dramatically when the other halves of spending preferences are included in the models, namely, spending itself. See columns 2 and 4 of Table 7. Here, spending on both defence and domestic programs is unrelated to preferences when taking into account both (our indicators of) the preferred levels of spending and actual spending levels. Of course, this is a very conservative test, but it also is telling. First, it reveals that our models of preferences are quite powerful, which already was clear from the model performance in Tables 1 and 3. What little variance remains may be nothing more than measurement error. Second, it also reveals that, regardless of the source(s) of the remaining variance in preferences, these components are of little value to policymakers. Indeed, it may be that policymakers only respond to the underlying demand for spending and previous spending decisions and not preferences at all. We cannot tell for sure. What we can tell is that, even to the extent the government responds to preferences, it *does not respond independently to poll results* per se, at least those that are publicly available. This is of obvious importance given the emphasis placed on poll results in recent research on opinion-policy connections (see, e.g., Geer, 1996).[32]

Discussion

Whether due to different institutions, policy processes or political culture, both public reactions to public policy and policymakers' responses to public preferences may vary across both policy domains and across countries (and within countries across sub-national governments). The preceding work illustrates this point. To begin with, note the similarities. As in the US, the public in the UK responds to changes in public spending. When spending increases (decreases), net preferences tend to move downwards (upwards). This appears to be true across a number of domains and the effects are quite pronounced; they are even more pronounced than what we observe in the US. Also as in the US, British policymakers represent public opinion. When the

[32] Of course it may be that they are responding to different poll results, perhaps even their own private polls (see, e.g., Jacobs and Shapiro, 1995).

public wants more spending, it gets more spending. There is both representation and negative feedback. There are differences in the details, however.

British policymakers do not to react to public preferences for domestic spending in quite the same way as their American counterparts. In the US, policy representation of preferences is symmetrical to public responsiveness to policy. In the UK, this is not case. For defence spending and to a lesser extent health, UK results are remarkably similar to US models: where the public notices policy change, policymakers notice public preferences in that domain. For the other domestic programs, the UK pattern is quite different. Here, policy representation emerges only when the domains are considered together, in a collective way. That is, policymakers appear to receive signals for increased spending on these programs but exercise some discretion in deciding where spending increases actually occur. The programs are effectively substitutable to policymakers.

What accounts for these differences between the US and UK? Institutional explanations seem particularly plausible.[33] Where public responsiveness is concerned, we might expect public reactions to be more pronounced in unitary systems, as the UK has been into the 1990's, than in federal ones, such as the US. After all, public responsiveness requires reasonably accurate information about what governments are doing, and this should vary with the vertical division of powers. In a unitary system, the locus of responsibility is comparatively clear and reliable; in a federal system, public policies—at least in some areas—emanate from multiple governments (see, e.g., Downs, 1999). Public responsiveness may reflect these differences. It is consistent with what we observe in the UK and US.

Where policy representation is concerned, the institutional underpinnings seem less clear. The literature emphasizes the electoral system itself (e.g., Lijphart, 1999; Powell, 2000), and on this dimension the US and UK are quite similar—both are majoritarian systems. There are significant differences in government institutions, however. Perhaps most important is the horizontal division of powers. We might that policymakers are less representative in parliamentary systems, where the cabinet exercises substantial control over policy decisions in all domains. The parliament is not the proposer. The parliament also has only a limited 'check' on the behaviour of the executive: It can decline to approve government policies, in the extreme, take a no confidence vote. The latter is a very big check, obviously. It also is very costly for the majority

[33] For a far more detailed exposition of what follows, see Soroka and Wlezien (2004b).

party; undertaking such a vote requires that governing party legislators are willing to face an early election. The executive thus controls the legislative process in parliamentary systems (Laver and Shepsle 2002).[34] It not only is true that the legislature cannot impose its own contrary will; it legislature cannot consistently undertake 'error correction,' that is, adjusting the government's position where it may be going too far or not far enough given public preferences. We thus might expect governments in parliamentary systems to be less *reliably* responsive to the public.[35]

Of course, there are other possible explanations for the patterns we observe.[36] The problem is sorting among them. What we really have provided here is one more case. Only when our analyses encompass a larger and more wide-ranging set of countries can we begin to tell how and why opinion-policy linkages vary. We nevertheless do observe both opinion representation and policy feedback in the UK. Indeed, we now know that the thermostatic model works in at least two modern democracies.

[34] See Bagehot (1867) and Jennings (1959) for more traditional statements. See Tsebelis (2002) for a more complex portrait.
[35] Also see Persson, Roland, and Tabellini (1996).
[36] For instance, some are more process-oriented (Risse-Kappen, 1991; Cohen, 1999).

Appendix A:
Factor analyses of preferences and spending

Table A1. Factor analysis, preferences

Domain	Factor	
	1	*2*
Defense	-.89	.29
Health	.89	.37
Health	.92	.27
Roads	.34	-.92
Eigenvalue	2.52	1.14

N=15.
Results are the factor loadings from a principal components factor analysis, unrotated, using data from 1978 to 1995.

Table A2. Factor analysis, spending

Domain	Factor
	1
Defense	-.62
Health	.94
Education	.92
Transport	.86
Eigenvalue	2.84

N=18.
Results are the factor loadings from a principal components factor analysis, unrotated, using data from fiscal years 1978 to 1995.

Appendix B:
Diagnostic analyses of preferences and spending change

Table B1. Health and education preference regressions, including lagged preferences

Independent Variables	*Dependent Variable: Net Preferences$_t$*	
	Health	*Education*
Functional Spending (billions 87£)$_{jt}$	-3.72***	-5.59***
	(1.03)	(1.30)
Misery Index $_t$	-.14	1.21***
	(.29)	(.26)
Counter	3.78***	4.07***
	(1.15)	(.62)
Net Preferences$_{jt-1}$	.07	.04
	(24)	(.14)
Constant	1.89***	1.56
	(.56)	(.76)
Observations	18	18
R^2	.96	.98
Adjusted R^2	.94	.98
Durbin's h	1.84	-.40

NOTE: Functional spending, the counter variable, and the misery index all are mean-centred.
* p < .10; ** p < .05; *** p < .01.

Table B2. Health and education policy representation regressions, including lagged spending

Independent Variables	*Dependent Variable: Changes in Spending (billions 87£)$_t$*	
	Health	*Education*
Net Functional Preferences $_{jt-1}$	.031	.049*
	(.021)	(.024)
Party in Government $_{t-1}$	.99	.86
	(.48)	(.59)
Public Debt (tens of billions 87£) $_{t-1}$	-.12*	-.05
	(.06)	(.06)
Net Spending$_{jt-1}$	.02	-.10
	(.05)	(.08)
Constant	.16	2.27
	(1.09)	(1.61)
Observations	18	18
R^2	.44	.31
Adjusted R^2	.27	.09
Durbin's h	.08	.03

NOTE: Net functional preferences and public debt are mean-centred.
* p < .10; ** p < .05; *** p < .01.

Appendix C:
Diagnostic analysis of spending change, using domestic preferences

Table C1. Health and education policy representation regressions using domestic net support, including lagged spending

Independent Variables	*Dependent Variable: Changes in Spending (billions 87£)$_t$*	
	Health	*Education*
Net Domestic Preferences $_{t-1}$	.052	.047
	(.033)	(.034)
Party in Government $_{t-1}$	1.60**	.77
	(.72)	(.74)
Public Debt (tens of billions 87£) $_{t-1}$	-.11	-.05
	(.07)	(.06)
Net Spending$_{jt-1}$	.06	-.01
	(.04)	(.07)
Constant	-.93	.38
	(.87)	(1.43)
Observations	18	18
R^2	.45	.19
Adjusted R^2	.29	-.06
Durbin's h	.08	.03

NOTE: Net domestic preferences and public debt are mean-centred.
* p < .10; ** p < .05; *** p < .01

References

Bagehot, Walter. 1867 (1966). *The English Constitution*. Ithaca, New York: Cornell University Press.

Bartels, Larry M. 1991. 'Constituency Opinion and Congressional Policy Making: The Reagan Defense Buildup.' *American Political Science Review* 85:429-456.

Blais, Andre, Donald Blake, and Stephene Dion. 1996. 'Do Parties Make a Difference: A Reappraisal.' *American Journal of Political Science* 40:514-520.

Brooks, J.E. 1987. 'The Opinion-Policy Nexus in France - Do Institutions and Ideology Make a Difference?' *Journal of Politics* 49:465-80.

Brooks, J.E. 1990. 'The Opinion-Policy Nexus in Germany.' *Public Opinion Quarterly* 54:508-29.

Cohen, Bernard C. 1995. *Democracies and Foreign Policy: Public Participation in the United States and the Netherlands*. Madison: University of Wisconsin Press.

Deutsch, Karl. 1963. *Nerves of Government*. New York: Free Press.

Downs, William M. 1999. 'Accountability Payoffs in Federal Systems? Competing Logics and Evidence from Europe's Newest Federation.' *Publius: The Journal of Federalism* 29: 87-110.

Durr, Robert H. 1993. "What Moves Policy Sentiment?" *American Political Science Review* 87:158-70.

Easton, David. 1965. *A Framework for Political Analysis*. Englewood Cliffs, N.J.: Prentice-Hall.

Eichenberg, Richard and Richard Stoll. 2003. 'Representing Defense: Democratic Control of the Defense Budget in the United States and Western Europe.' *Journal of Conflict Resolution* 47:399-423

Erikson, Robert S., Michael B. MacKuen and James A. Stimson. 2002. *The Macro Polity.* Cambridge: Cambridge Unversity Press.

Erikson, Robert S., Gerald C. Wright, and John P. McIver. 1993. *Statehouse Democracy: Public Opinion and Policy in the American States*. New York: Cambridge University Press.

Franklin, Mark N. 2004. *Voter Turnout and the Dynamics of Electoral Competition*. New York: Cambridge University Press.

Franklin, Mark and Christopher Wlezien. 1997. 'The Responsive Public: Issue Salience, Policy Change, and Preferences for European Unification.' *Journal of Theoretical Politics* 9:247-263.

Geer, John. 1996. *From Tea Leaves to Public Opinion Polls*. New York: Columbia University Press.

Goggin, Malcolm and Christopher Wlezien. 1993. 'Abortion Opinion and Policy in the American States.' In *Understanding the New Politics of Abortion*, Malcolm Goggin, ed. Newbury Park, CA: Sage.

Hartley, Thomas and Bruce Russett. 1992. 'Public Opinion and the Common Defense: Who Governs Military Spending in the United States?' *American Political Science Review* 86:905-915.

Jacobs, Lawrence R., and Robert Y. Shapiro. 1995. 'The rise of presidential polling: The Nixon White House in Historical Perspective.' Public Opinion Quarterly 59:163-195.

Jankowski, Richard and Christopher Wlezien. 1993. 'Substitutability and the Politics of Macroeconomic Policy.' *Journal of Politics* 55:1060-1080.

Jennings, Sir Ivor. 1959. *Cabinet Government* 3rd ed. Cambridge: Cambridge University Press.

Jones, Bryan D. 1994. *Reconceiving Decision-Making in Democratic Politics: Attention, Choice and Public Policy.* Chicago: University of Chicago Press.

Joumard, Isabelle, and Per Mathis Kongsrud. 2003. 'Fiscal Relations across Government Levels.' *Economics Department Working Papers* (no. 375). Organization for Economic Cooperation and Development. (http://www.olis.oecd.org/olis/2003doc.nsf/linkto/eco-wkp(2003)29)

Laver, Michael and Kenneth A. Shepsle. 1996. *Making and Breaking Governments: Cabinets and Legislatures in Parliamentary Democracies*. Cambridge: Cambridge University Press.

Lijphart, Arend. 1999. *Patterns of Democracy*. New Haven: Yale University Press.

Miller, Warren E., Roy Pierce, Jacues Thomassen, Richard Herrara, Soren Holmberg, Peter Esaiasson and Bernhard Wessels. 1999. *Policy Representation in Western Democracies.* Oxford: Oxford University Press.

Monroe, Alan. 1998. 'Public Opinion and Public Policy 1980-1993.' *Public Opinion Quarterly* 62:6-28.

Monroe, Alan. 1979. 'Consistency between Constituency Preferences and National Policy Decisions.' *American Politics Quarterly* 12:3-19.

Page, Benjamin I. and Robert Y. Shapiro. 1992. *The Rational Public*. Chicago: University of Chicago Press.

Persson, Torsten, Gerard Roland, and Guido Tabellini. 1997. 'Separation of Powers and Political Accountability.' *Quarterly Journal of Economics* 112:1163-1202.

Petry, F. 1999. 'The Opinion-Policy Relationship in Canada.' *Journal of Politics*, 61:540-550.

Powell, G Bingham. 2000. *Elections as Instruments of Democracy: Majoritarian and Proportional Visions*. New Haven: Yale University Press.

Risse-Kappan, Thomas. 1991. 'Public Opinion, Domestic Structure, and Foreign Policy in Liberal Democracies.' *World Politics* 43(4):479-512.

Sharpe, Elaine. 1999. *The Sometime Connection: Public Opinion and Social Policy*. Albany, New York: SUNY Press.

Shiraev, Eric. 2000. 'Toward a Comparative Analysis of the Public Opinion-Foreign Policy Connection,' Pp. 297-304 in Brigette L. Nacos, Robert Y. Shapiro and Pierangelo Isernia, eds., *Decisonmaking in a Glass House: Mass Media, Public Opinion, and American and European Foreign Policy in the 21st Century.* Lanham: Rowman and Littlefield.

Smith, M.A. 1999. 'Public Opinion, Elections, and Representation within a Market Economy: Does the Structural Power of Business Undermine Popular Sovereignty?' *American Journal of Political Science* 43:842-863.

Soroka, Stuart N. 2003. 'Media, Public Opinion and Foreign Policy.' *Harvard International Journal of Press and Politics* 8(1):27-48.

Soroka, Stuart N. and Elvin T. Lim. 2003. 'Issue Definition and the Opinion-Policy Link: Public Preferences and Health Care Spending in the US and UK.' *British Journal of Politics and International Relations* 5(4):576-593.

Soroka, Stuart N. and Christopher Wlezien. N.d. 'Opinion Representation and Policy Feedback: Canada in Comparative Perspective .' *Canadian Journal of Political Science,* forthcoming.

Soroka, Stuart N. and Christopher Wlezien. N.d. *Total Expenditure on Government Services in the UK, 1980-2000*. UK Data Archive. Http://xxxxxxxxxxxxxxxxxxxxx.

Soroka, Stuart N. and Christopher Wlezien. 2004b. 'Degrees of Democracy: Public Opinion and Policy in Comparative Perspective.' *Center for Advanced Study in the Social Sciences Working Paper Series*. Madrid: Juan March Institute

Stimson, James A. 1991. *Public Opinion in America: Moods, Cycles, and Swings*. Boulder, CO: Westview Press.

Stimson, James A., Michael B. MacKuen, and Robert S. Erikson. 1995. 'Dynamic Representation.' *American Political Science Review* 89:543-565.

Tsebelis, George. 2002. *Veto Players: How Political Institutions Work*. New York: Russell Sage Foundation.

Weakliem, David. 2003. 'Public Opinion Research and Political Sociology.' *Research in Political Sociology* 12: 49-80.

Wlezien, Christopher. 2004. 'Patterns of Representation: Dynamics of Public Preferences and Policy.' *Journal of Politics* 66:1-24.

Wlezien, Christopher. 2000. 'An Essay on "Combined" Time Series." *Electoral Studies* 19:77-94.

Wlezien, Christopher. 1996a. 'Dynamics of Representation: The Case of U.S. Spending on Defense.' *British Journal of Political Science* 26:81-103.

Wlezien, Christopher. 1996b. 'The President, Congress, and Appropriations, 1951-1985.' *American Politics Quarterly*24:43-67.

Wlezien, Christopher. 1995. 'The Public as Thermostat: Dynamics of Preferences for Spending.' *American Journal of Political Science* 39:981-1000.

Wlezien, Christopher and Stuart Soroka. 2003. 'Measures and Models of Budgetary Policy.' *Policy Studies Journal* 31(2):273-286.

Figure 1. Net Preferences, by function, 1978-1995

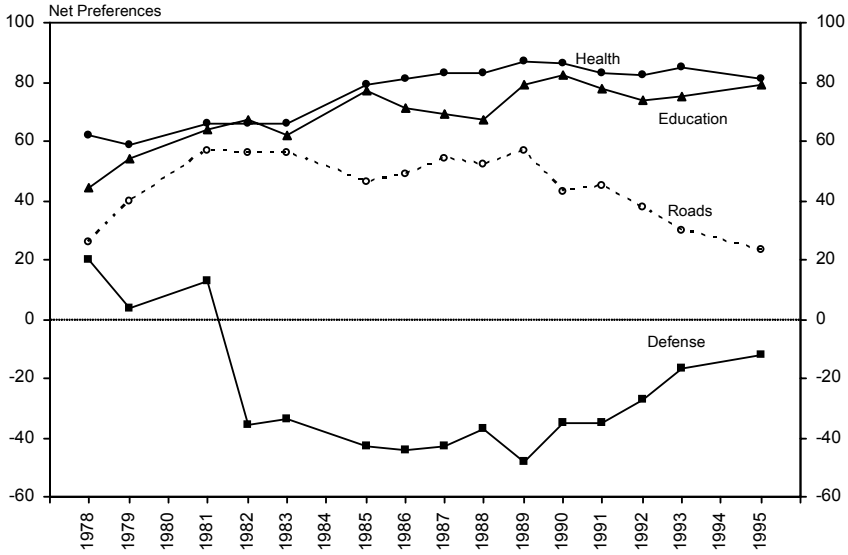

Figure 2. Spending, by function, 1978-1995

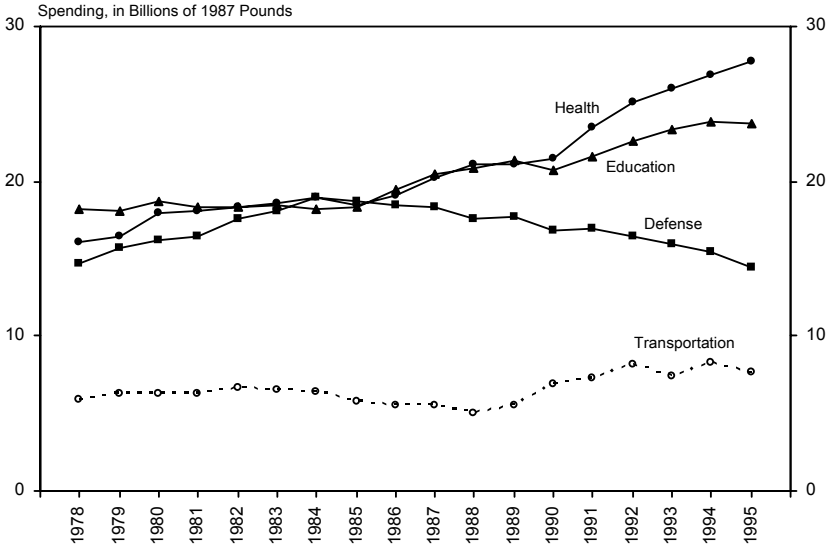

Figure 3. Simulating the net effect of representation and feedback, defense and domestic domains

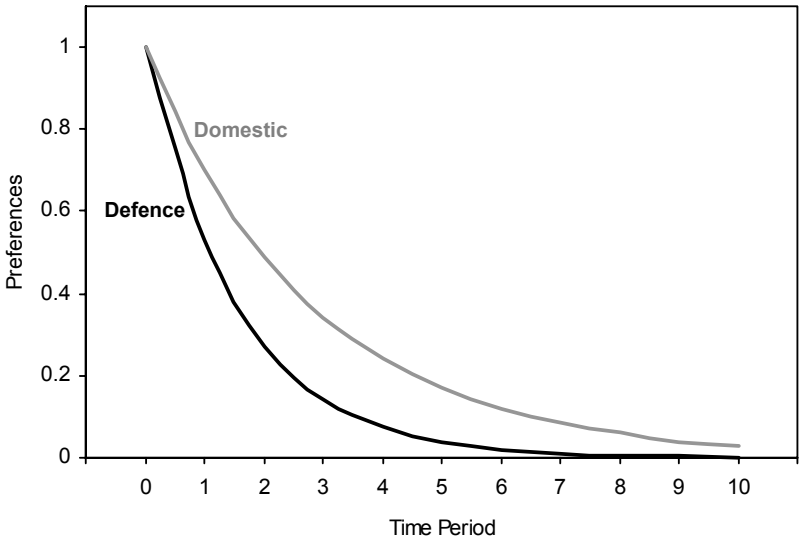

Table 1. Public responsiveness regressions, by function

Independent Variables	*Dependent Variable: Net Preferences$_t$*				
	Defence		*Health*	*Education*	*Roads*
Functional Spending (billions 87£)$_{jt}$	-15.02***	-16.24***	-3.97***	-5.56***	-3.04**
	(1.79)	(1.57)	(.53)	(.90)	(1.20)
Net US Dislike of Russia $_t$	.16	.31***	——	——	——
	(.13)	(.05)			
Misery Index $_t$	——	——	-.11	1.09***	.95
			(.25)	(.30)	(.46)
Counter	-1.15	——	4.08***	4.06***	-.13
	(.87)		(.38)	(.36)	(.31)
Net Preferences$_{jt-1}$	——	——	——	——	.71***
					(.08)
Constant	-21.76***	-21.28***	1.91***	1.86***	12.43***
	(1.89)	(1.90)	(.53)	(.62)	(3.74)
Observations	18	18	18	18	18
R^2	.89	.88	.96	.94	.95
Adjusted R^2	.87	.86	.95	.93	.94
DW	2.08	1.94	1.73	2.66	-.45[a]

NOTE: Functional spending, net dislike, the counter, and the misery index all are mean-centred.
* p < .10; ** p < .05; *** p < .01.

[a] As the model includes a lagged dependent variable, the statistic is durbin's h.

Table 2. Policy representation regressions, by function

Independent Variables	*Dependent Variable: Changes in Spending (billions 87£)$_t$*			
	Defence	*Health*	*Education*	*Transport*
Net Functional Preferences $_{jt-1}$	.029***	.036**	.031	-.025
	(.010)	(.016)	(.019)	(.176)
Party in Government $_{t-1}$	.53	.97*	.68	-.33
	(.49)	(.48)	(.59)	(.45)
Public Debt (tens of billions 87£) $_{t-1}$	-.03	-.12*	-.06	-.25***
	(.06)	(.06)	(.06)	(.06)
Net Spending$_{jt-1}$	.37**	——	——	-.51**
	(.15)			(.20)
Constant	-6.23**	.52***	.20	-.05
	(2.55)	(.13)	(.14)	(.14)
Observations	18	18	18	18
R^2	.51	.43	.22	.59
Adjusted R^2	.36	.31	.05	.47
DW	-.09[a]	2.15	1.72	-.51[a]

NOTE: Net functional preferences and public debt are mean-centred.
* p < .10; ** p < .05; *** p < .01.

[a] The statistic is durbin's h.

Table 3. Responsiveness & representation, domestic functions combined

Independent Variables	*Dependent Variable*	
	Net Domestic Preferences$_t$	*Changes in Spending (billions 87£)$_t$*
Domestic Spending (billions 87£) $_t$	-2.21***	——
	(.34)	
Misery Index $_t$	.97**	——
	(.34)	
Counter	3.62***	——
	(.43)	
Net Domestic Preferences $_{t-1}$	——	.135**
		(.057)
Party in Government $_{t-1}$	——	2.89**
		(1.21)
Public Debt (tens of billions 87£) $_{t-1}$	——	-.29**
		(.12)
Constant	30.19***	.58**
	(4.05)	(.25)
Observations	18	18
R^2	.85	.58
Adjusted R^2	.82	.49
DW	1.58	2.32

NOTE: Domestic spending, the misery index, the counter, net domestic preferences and public debt are mean-centred.
* p < .10; ** p < .05; *** p < .01.

Table 4. Policy representation regressions, by function,
Using domestic net support

Independent Variables	*Dependent Variable: Changes in Spending (billions 87£)$_t$*		
	Health	*Education*	*Transport*
Net Domestic Preferences $_{j-1}$	.052	.046	.009
	(.034)	(.033)	(.034)
Party in Government $_{t-1}$	1.27	.79	.24
	(.73)	(.70)	(.72)
Public Debt (tens of billions 87£) $_{t-1}$	-.10	-.04	-.19**
	(.07)	(.07)	(.07)
Net Spending$_{jt-1}$	——	——	-.28*
			(.14)
Constant	.49***	.20	1.76*
	(.15)	(.15)	(.98)
Observations	18	18	18
R^2	.34	.19	.54
Adjusted R^2	.20	.02	.39
DW	1.73	1.90	-.50[a]

NOTE: Net domestic preferences and public debt are mean-centred.
* p < .10; ** p < .05; *** p < .01.
[a] The statistic is durbin's h.

Table 5. Interdependence in public preferences? Defence and domestic functions

Independent Variables	*Dependent Variable: Net Preferences$_t$*	
	Defence	*Domestic*
Defence Spending (billions 87£) $_t$	-15.69***	——
	(1.55)	
Domestic Spending (billions 87£) $_t$	——	-2.10***
		(.24)
Net US Dislike of Russia $_t$	.23***	.04
	(.07)	(.04)
Misery Index $_t$	1.30	.91***
	(.85)	(.35)
Counter	——	3.70***
		(.45)
Constant	-24.02***	29.52***
	(1.82)	(4.18)
Observations	18	18
R^2	.90	.86
Adjusted R^2	.88	.81
DW	2.20	1.54

NOTE: Defence spending, domestic spending, net dislike, the misery index, and the counter variable are mean-centred.
* p < .10; ** p < .05; *** p < .01.

Table 6. Interdependence in spending? Defence and domestic functions

Independent Variables	*Dependent Variable: Changes in Spending (billions 87£)$_t$*	
	Defence	*Domestic*
Net Defence Preferences$_{t-1}$	.028**	——
	(.012)	
Net Domestic Preferences $_{t-1}$	——	.133**
		(.066)
Changes in Domestic Spending $_t$	-.03	——
	(.15)	
Changes in Defence Spending $_t$	——	-.02
		(.44)
Party in Government $_{t-1}$	.56	2.89**
	(.54)	(1.26)
Public Debt (tens of billions 87£) $_{t-1}$	.04	-.29**
	(.09)	(.13)
Net Spending$_{jt-1}$	.356	——
	(.16)	
Constant	-6.14**	.58**
	(2.71)	(.26)
Observations	18	18
R^2	.52	.58
Adjusted R^2	.31	.45
DW	-.18[a]	2.33

NOTE: Net defence preferences, domestic preferences and public debt are mean-centred.
* p < .10; ** p < .05; *** p < .01.

[a] The statistic is durbin's h.

Table 7. Assessing representation, defence and domestic domains

Independent Variables	*Dependent Variable: Changes in Spending (billions 87£)$_t$*			
	Defence		Domestic	
Net Defence Preferences $_{t-1}$	.009*	-.022	——	——
	(.005)	(.013)		
Net US Dislike of Russia $_{t-1}$	.011***	.023***	——	——
	(.002)	(.005)		
Defence Spending $_{t-1}$	——	-.59**	——	——
		(.23)		
Net Domestic Preferences $_{t-1}$	——	——	.123*	-.065
			(.063)	(.133)
Misery Index $_{t-1}$	——	——	.05	.13
			(.13)	(.13)
Counter	——	——	.07	.64
			(.09)	(.31)
Domestic Spending $_{t-1}$	——	——	——	-.34
				(.26)
Party in Government $_{t-1}$	.26	.01	3.23**	1.78
	(.34)	(.28)	(1.38)	(1.59)
Public Debt (tens of billions 87£)$_{t-1}$	-.10**	-.16***	-.28**	-.39**
	(.04)	(.04)	(.13)	(.14)
Constant	-.14	-.20**	-.03	-5.17
	(.08)	(.07)	(.81)	(3.35)
Observations	18	18	18	18
R^2	.79	.89	.60	.68
Adjusted R^2	.73	.84	.44	.50
Rho	-.42	-.67	——	——
DW	---	---	2.42	2.25

NOTE: Defence preferences, net dislike, defence spending, domestic preferences, the misery index, the counter variable, domestic spending, and public debt are mean-centred.
* p < .10; ** p < .05; *** p < .01.