

Measures and Models of Budgetary Policy

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This manuscript considers the theoretical and empirical differences between appropriations and outlays and the implications of these differences for analyses of public budgeting in the United States. The research focuses on two questions: (1) What is the relationship between appropriations and outlays over time in different budgetary functions? and (2) What is the consequence of using appropriations or outlays in analyses of budgetary change? Results indicate that the relationship between appropriations and outlays varies quite considerably (and surprisingly) across functions and that the differences matter quite a lot, at least in certain areas. Indeed, whether one uses appropriations or outlays may lead one to draw very different conclusions about the politics of public budgeting. Budgetary measures, it appears, really matter.

Much political science and policy research examines the causes and consequences of budgetary policy change. Most of this research focuses on government expenditures (e.g., Berry & Lowery, 1990; Blais, Blake, & Dion, 1993, 1996; Browning, 1985; Hartley & Russett, 1992; Henderson, 1998; Kamlet & Mowery, 1987; Mintz & Huang, 1992; Ostrom & Marra, 1986; Su, Kamlet, & Mowery, 1993). When studying consequences, this makes a good deal of sense, as we are interested in how actual spending matters, say, for health care, crime rates, or environmental quality. When studying causes, however, using expenditures is less justifiable.

In short, although expenditures are important, they are not policy per se. Elected politicians have only limited control over what actually is spent, and the expenditures ultimately reflect things that politicians cannot anticipate or manage. Also, expenditures may be distributed over time, even over long stretches, as in the case of defense procurement. If we are interested in capturing the government's commitment to programs, budgetary *policy* itself is what matters.

The problem is that finding reliable measures of budgetary policy in most countries is not easy. Indeed, in some countries, it may be impossible, and we may have no choice but to rely on outlays in these cases, as in the United Kingdom (e.g., Hogwood, 1992; John & Margetts, 2001; Soroka, 2003; Soroka & Wlezien,

2002). Such data are readily available for the United States (U.S.) federal government, however, which makes clear distinctions between budget authority, obligations, and outlays.

Appropriations bills in the United States specify an amount of budget authority that is available to an agency or department for obligation, that is, for making commitments to spend money. When money is actually spent, an expenditure or, outlay, occurs, which can lag well behind appropriations decisions and obligations themselves. Appropriations and outlays, thus, are two different things. This is well known. The extent and implications of the differences are less well known, however. In this article, we consider the differences in the measures and their implications for analyses of budgetary policy change. We begin with the data itself.

Measuring Budgetary Policy

Finding reliable measures of appropriations and outlays for particular categories of spending is not entirely straightforward, even in the United States. Such data generally are not available in any organized way prior to the Budget Act of 1974. Putting aside the availability of data, it is not clear whether a particular type of spending, say, housing assistance, is spending on “welfare” or “big cities” or something else. Perhaps the best and most reliable data are those corresponding to the budget functions specified in the Budget Act.

Since 1976 the Office of Management and Budget (OMB) has collected appropriations and outlays data for a variety of different “functions,” such as defense, education, health, income security, and transportation, as well as various subfunctions. Measures of outlays by function have been extended back to 1962. This is not the case for the appropriations series, however; these data have been available from the OMB only since fiscal year 1976.¹ Thus, our comparison of appropriations and outlays is limited to fiscal years since that time. The specific data are drawn from the *Historical Tables of the Budget of the United States Government, Fiscal Year 2002*.

In theory, appropriations and outlays are directly connected. That is, the latter should perfectly summarize current and previous appropriations decisions, although in potentially different ways. For some programs, we might expect that appropriations quickly lead to outlays, so that the two series closely track each other over time and with no lag whatsoever. Such a pattern is illustrated in Figure 1, which plots measures of appropriations and outlays (in current dollars) for General Government, for example, “legislative functions” and “central personnel management.” For other programs, the effect of appropriations change on outlays is distributed over time, as we might expect with long-term capital projects. The classic case is Defense, because of the delays in spending associated with procurement noted above. This pattern is clear in Figure 2, where changes in defense outlays lag fairly predictably behind changes in defense appropriations.

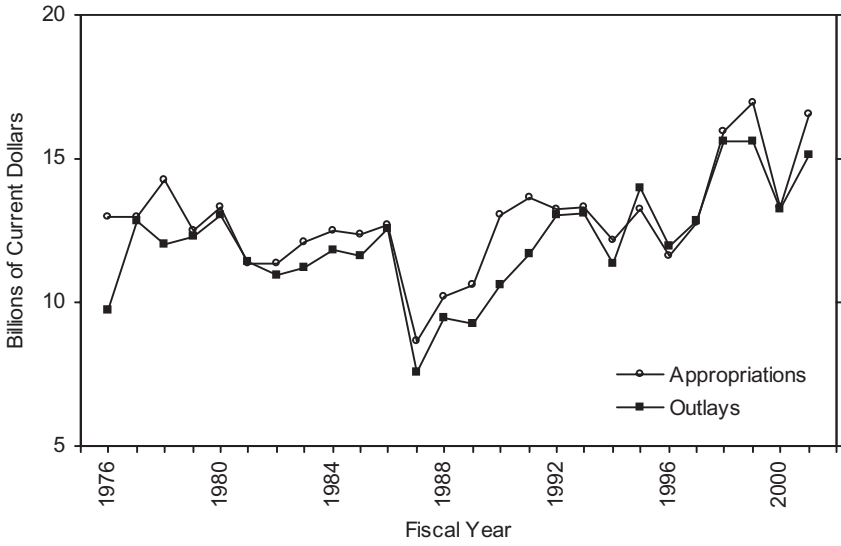


Figure 1. General Government Appropriations and Outlays, 1976–2001.

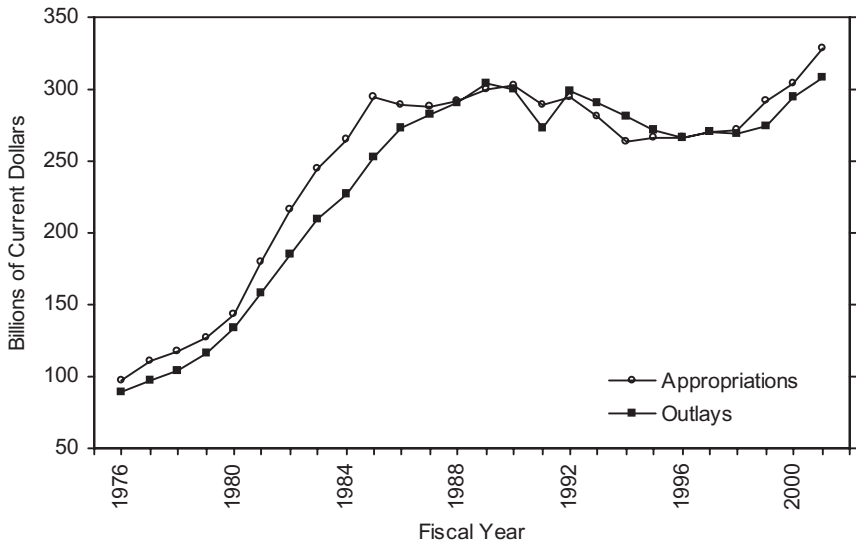


Figure 2. Defense Appropriations and Outlays, 1976–2001.

Now let us more rigorously consider the relationships between appropriations and outlays over time in various policy areas. Table 1 displays the results of regressing changes in outlays on current and lagged changes in appropriations for fiscal years 1976 to 2001. Specifically, we regress changes in outlays in year t on changes in appropriations in year t , year $t-1$, and year $t-2$, all in current dollars.² Note that we do not estimate an intercept and instead constrain it to be 0 in each of the regressions. This makes the most sense a priori and also makes a big difference empirically, by increasing the connections between appropriations and outlays (see note 5). Table 1 reports results for each of the 17 different functions and, at the very bottom, for all functions taken together. The functions are ordered based on the coefficients for appropriations change in year t . So what do the results reveal?

Notice first that the coefficients for current appropriations change in column 1 of Table 1 vary considerably across functions. In some areas, such as Commerce and Housing Credit, General Government, and Income Security, appropriations translate quickly into outlays during the current fiscal year. At the extreme, fully 88% of appropriations change is spent in the current fiscal year. In other areas, such as Energy and Administration of Justice, appropriations do not quickly impact outlays. Indeed, for Energy, the coefficient indicates that only 4% of appropriations increases are spent in the current year. While striking, these differences across functions in the effects of appropriations change are not surprising, given that we expect the lag between appropriations and outlays to differ across programs. It still is worth noting that outlays in a particular year only capture a portion of current appropriations change, 47% on average across the 17 functions.

Now, we would expect the effects of lagged appropriations to be greatest where the effect of current appropriations is least. The coefficients for lagged ($t-1$) appropriations change in the second column of the table generally support this supposition. That is, the coefficients tend to increase in size (and significance) as we move down the table. The pattern is surprisingly weak, however. For some of the domains, as for International Affairs, the change in current outlays is only modestly related to either current or lagged appropriations change. Of course, it may be that the lag is even longer in these areas. The coefficients for the second ($t-2$) lag of appropriations change in the third column indicate that this also is generally true. That is, the coefficients are larger and more significant for the set of programs (at the bottom of the table) in which the effects of current and lagged ($t-1$) appropriations change are relatively small.

The changes in appropriations across lags tend to add up in outlays over time. This is clear in column 4 of Table 1, which lists the sum of the appropriations coefficients (t , $t-1$, $t-2$) for each function. Here we can see that the sums are 1.0 or thereabouts for a number of functions, namely, General Government, Income Security, Social Security, Medicare, Health, and Administration of Justice. For the other functions, the sums are below 1.0, though significantly different in only four cases: Transportation, Natural Resources and Environment, International Affairs,

Table 1. Regressions of Outlays on Appropriations by Function, FY 1976–2001

Dependent variables: Outlays by function (differenced)	Independent variables: Appropriations (differenced)				Sum ^a	R ² /Adj R ²	D-W <i>d</i>
	Apps _{<i>t</i>}	Apps _{<i>t-1</i>}	Apps _{<i>t-2</i>}				
Commerce and Housing Credit (370)	0.88** (0.17)	0.04 (0.17)	-0.02 (0.17)		0.91	0.59/0.42	2.65
General Government (800)	0.85** (0.11)	0.04 (0.12)	0.15 (0.12)		1.03	0.78/0.74	2.42
Income Security (600)	0.75** (0.08)	0.07 (0.09)	0.22* (0.09)		1.04	0.89/0.87	2.11
Agriculture (350)	0.66** (0.10)	0.10 (0.11)	-0.01 (0.11)		0.75	0.68/0.63	1.99
Social Security (651)	0.64** (0.07)	0.37** (0.08)	-0.02 (0.07)		0.99	0.99/0.99	2.53
Medicare (571)	0.62** (0.05)	0.47** (0.03)	-0.07 (0.06)		1.02	0.95/0.94	1.84
National Defense (050)	0.57** (0.16)	0.12 (0.18)	0.21 (0.16)		0.90	0.73/0.69	2.21
Veterans' Benefits and Services (700)	0.54* (0.24)	0.37 (0.21)	0.01 (0.26)		0.92	0.53/0.46	2.31
Education, Train'g, Emp't & Soc. Serv (500)	0.43** (0.12)	0.25 (0.14)	0.24 (0.13)		0.92	0.49/0.41	2.92
Health (550)	0.42** (0.07)	0.35** (0.08)	0.21** (0.08)		0.98	0.92/0.90	1.80
Community and Regional Dev't (450)	0.41** (0.15)	0.34* (0.17)	0.09 (0.12)		0.84	0.30/0.20	2.60
Transportation (400)	0.40** (0.08)	0.07 (0.10)	0.29** (0.10)		0.76*	0.76/0.73	1.47
General Science, Space and Tech (250)	0.26* (0.12)	0.34** (0.12)	0.23 (0.13)		0.83	0.56/0.50	1.63
Natural Resources and Environment (300)	0.17* (0.07)	0.29** (0.07)	0.31** (0.07)		0.77*	0.74/0.70	2.05
International Affairs (150)	0.15** (0.05)	0.09 (0.06)	0.06 (0.06)		0.30**	0.29/0.18	2.12
Administration of Justice (750)	0.12** (0.03)	0.55** (0.11)	0.39** (0.12)		1.05	0.91/0.89	1.89
Energy (270)	0.04 (0.03)	0.22** (0.03)	0.15** (0.03)		0.41**	0.72/0.67	2.22
Total outlays	0.53** (0.08)	0.45** (0.09)	-0.03 (0.09)		0.95	0.95/0.94	1.75

Note: OLS regression coefficients with standard errors in parentheses.

* $p < 0.05$; ** $p < 0.01$ (one-tailed).

^aThe sum of the coefficients for Appropriations (differenced) in fiscal years t , $t-1$, and $t-2$. Asterisks indicate one-tailed tests of significance against the null hypothesis that the sum equals 1.0.

and Energy.³ The mean sum for the 17 functions is .89, and the sum for total outlays is a robust 0.95, as can be seen in the bottom row of the table. The addition clearly is not perfect, and in some areas, appropriations and outlays are not connected in understandable ways. In two cases, the sums of the coefficients are less than 0.5. This would appear to have fairly meaningful implications for analyses of budgetary behavior.⁴

Even to the extent that appropriations do translate directly into outlays, the overall model performance indicated by the *R*-squareds reveals that appropriations change only tells a part of the outlays story. In some cases, especially Social Security, appropriations accounts for virtually all of the variance in outlays. In most cases, however, the performance is middling: Indeed, the mean *R*-squared is .70, which leaves 30% of the variance unaccounted for. In three cases, the explained variance is actually below 0.5. This is significant; indeed, it is disturbing.⁵ What explains these patterns? What explains the substantial differences across domains? These are questions we cannot easily answer. We nevertheless can consider the consequences. More precisely, we can address whether and to what extent these differences matter for analyses of budgetary policy change.

Modeling Budgetary Policy

Thus far, we have seen that appropriations and outlays differ in a variety of ways, and that the differences are more pronounced in some areas than in others. This is of obvious importance. However, we also want to know whether and to what extent the evident differences matter more generally for the kinds of conclusions we draw about the causes of expenditure change. For this analysis, we consider recent “political” models of policy change (Stimson, MacKuen, & Erikson, 1995; Wlezien, 1996a, in press; Smith, 1999). Specifically, we rely on Wlezien’s model of budgetary policy change in different domains. We are interested in whether and how results differ when using appropriations and outlays as dependent variables.

The model is a simple one. Changes in budgetary policy are modeled as a function of public preferences for spending and the party control of government. The measures of public preferences are based on data from different survey organizations that use the same question wording. The question is as follows:

Are we spending too much, too little, or about the right amount on [the military, armaments, and defense]?

In most surveys, respondents are asked about spending in various categories, including big cities, crime, education, the environment, foreign aid, health, space, and welfare.⁶ The General Social Survey (GSS) has asked a battery of items in every year between 1973 and 1994, with the exception of years 1979, 1981, and 1992. Fortunately, other survey organizations asked the same question and about most of the same items in those years.⁷ Since 1994, data are available only in

alternate years, which clearly limits our analysis. From these data, we nevertheless can construct annual time series of public preferences for spending that cover 1973–1994.

The simplest, most reliable way to reflect these preferences over time 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. While imperfect, these measures capture the degree to which the public wants “more” or “less” spending over time—indeed, the measures capture both direction and magnitude. In effect, the measures reflect the difference between how much spending the public wants and how much it gets at different points in time (Wlezien, 1995).

Thus, 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:

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

where a_0 and e_t represent the intercept and the error term, respectively, and I represents the partisan control of government institutions. The coefficient β captures policymaker responsiveness to public opinion, where the effect of opinion is independent of partisan control.⁸ Notice that the change in expenditure for fiscal year t is modeled as a function of opinion and party control in year $t-1$. This specification is not meant to imply that policies do not respond to current political preferences; rather, it is intended to reflect the reality of budgetary decision making, which happens largely over the course of the previous fiscal year. Thus, the model captures political circumstances when most budgetary decisions are actually made.⁹

The party control variables themselves are fairly standard. The party of the president variable takes the value 1 under Democratic presidents and 0 under Republican presidents. The partisan composition of Congress variable represents the average percentage of Democrats in the House and Senate. In models of welfare appropriations, a control for the Carter transition in fiscal year 1977 also is used. This dichotomous variable captures his substantial supplemental appropriations to Ford’s last budget (see Wlezien, 1993); in effect, the impact of this change in the party of the president was felt immediately, in the existing fiscal year.¹⁰

Other models of budgetary policy contain different baseline variables, including economic indicators such as unemployment and inflation (e.g., Kiewiet & McCubbins, 1988; Wlezien, 1996b). Models of defense budgetary policy often include measures of Soviet/Russian spending (e.g., Hartley & Russett, 1992). These variables were incorporated into the analyses using various specifications, but none performed consistently well. Most important of all, including them does not meaningfully alter the results presented below.

For the analysis itself, we focus on seven budgetary domains for which we have measures of public preferences and budgetary data: crime, defense, education, foreign aid, health, environment, and welfare. The budget functions literally match the spending preference items in the case of defense, education, the environment, and health. However, to isolate appropriations and outlays for education per se, it is necessary to exclude the figures for “training and employment.” For the other domains—crime, foreign aid, and welfare—identifying budgetary data is less straightforward. For crime, we rely on the Administration of Justice function, which is not especially controversial. For welfare, it is tempting to use the Income Security budget function, which contains appropriations and outlays relating to welfare. The problem is that it also includes funding that is not obviously for the purposes of welfare, such as “general retirement and disability insurance,” “federal employee retirement and disability,” and “unemployment compensation.” Thus, we exclude these categories from our welfare measures.¹¹ For foreign aid, we include the amounts under the International Affairs function that take the form of direct aid to other countries, specifically, International Development and Humanitarian Assistance, and International Security Assistance. Constant dollar values are calculated by dividing current dollar values into the gross national product implicit price deflator (1996 = 1.00) from the *Historical Tables* (see note 11).

Now let us see whether and how using appropriations and outlays matters in the seven domains using the general model described in equation 1. Recall that appropriations data are available only since 1976, and that the annual public opinion series continue only through 1994. Thus, our analyses are limited to fiscal years 1977–1995. The results of the analyses are presented in Tables 2–4.

We begin with the defense spending domain in Table 2. In column 1 of the table, we can see that changes in appropriations closely follow public preferences for defense spending over time, consistent with previous research (Wlezien, 1996a). A one-point increase (decrease) in net support for more spending leads to just less than an \$800 million (1996) increase (decrease) in defense appropriations. The effect is quite sizable given the range (over 76 points) of the measure of public opinion; indeed, a one standard deviation (i.e. (or 21.8 point)) shift in support produces a \$17.0 billion change in appropriations. The party of the president and congressional composition do not have reliable effects, however. The coefficients are in the right direction, implying that Democratic politicians are less supportive of defense spending; they nevertheless are not sufficiently reliable to credit. Thus, based on this analysis, defense appropriations are largely driven by public preferences. This is not entirely surprising (Bartels, 1991).¹²

Using outlays produces different results. The general pattern of the results is essentially unchanged—that is, public opinion matters, and party control does not. The effect of public preferences drops substantially, however. A one-point increase (decrease) in public support for more spending produces a \$470 million (1996) increase (decrease) in defense outlays, about \$310 million (fully 40%) less than the effect on appropriations. The *R*-squareds also indicate that public opinion

Table 2. Appropriations and Outlays Regressions: Defense Spending Domain, FY 1977–1995 (Billions of 1996 Dollars)

Independent var's	Dependent variable: Budgetary policy _{<i>t</i>} (differenced)	
	Appropriations	Outlays
President _{<i>t-1</i>}	-9.185 (7.289)	-8.890 (7.426)
Congress _{<i>t-1</i>}	-0.825 (0.776)	-1.088 (0.790)
Public opinion _{<i>t-1</i>}	0.781** (0.132)	0.466** (0.134)
Constant	12.944** (3.906)	12.424** (3.979)
<i>N</i>	19	19
<i>R</i> ²	0.77	0.71
Adj. <i>R</i> ²	0.70	0.62
Durbin-Watson <i>d</i>	2.01	1.73

Note: Results are based on an estimated model that includes a control for the Iraq-Kuwait crisis of 1991.

p* < 0.05; *p* < 0.01 (two-tailed).

Table 3. Appropriations and Outlays Regressions: Social Spending Domains, 1977–1995 (Billions of 1996 Dollars)

Independent var's	Dependent variable: Budgetary policy _{<i>t</i>} (differenced)					
	Welfare ^a		Education		Health	
	App's	Outlays	App's	Outlays	App's	Outlays
President _{<i>t-1</i>}	30.240* (12.677)	15.347 (9.845)	-1.843 (1.030)	-1.201 (1.214)	-4.022 (2.727)	0.744 (2.300)
Congress _{<i>t-1</i>}	0.093 (0.785)	0.023 (0.646)	0.374** (0.106)	0.471** (0.123)	0.455 (0.289)	0.040 (0.243)
Public opinion _{<i>t-1</i>}	1.473** (0.374)	0.592* (0.294)	0.090* (0.036)	0.081* (0.042)	0.489** (0.143)	0.539** (0.121)
Constant	34.420** (7.604)	16.857* (6.174)	-3.753 (2.104)	-3.301 (2.453)	-22.584* (8.592)	-26.515** (7.243)
<i>N</i>	19	19	19	19	19	19
<i>R</i> ²	0.67	0.31	0.55	0.55	0.62	0.63
Adj. <i>R</i> ²	0.57	0.12	0.46	0.47	0.54	0.55
Rho	-0.37	-0.15	-0.53	-0.62	—	—
Durbin-Watson <i>d</i>	2.06	2.00	1.77	1.85	1.84	1.75

Note: Estimates are based on Prais-Winsten regression when rho is significant and OLS otherwise.

p* < 0.05; *p* < 0.01 (two-tailed).

^aIncludes a control for the Carter transition in Fiscal Year 1977.

Table 4. Appropriations and Outlays Regressions: Other Spending Domains, 1977–1995 (Billions of 1996 Dollars)

Independent var's	Dependent variable: Budgetary policy _t (differenced)					
	Environment ^a		Crime		Foreign aid	
	App's	Outlays	App's	Outlays	App's	Outlays
President _{t-1}	-1.006 (1.347)	0.482 (0.777)	-0.362 (0.727)	-1.151 (0.557)	-1.068 (2.111)	-0.339 (2.553)
Congress _{t-1}	-0.127 (0.140)	0.104 (0.082)	0.008 (0.094)	0.088 (0.072)	0.114 (0.255)	0.067 (0.308)
Public opinion _{t-1}	0.084* (0.037)	0.074** (0.021)	0.089 (0.073)	-0.003 (0.056)	-0.427 (0.281)	-0.106 (0.289)
Constant	-4.386* (2.220)	-3.762* (1.294)	-4.880 (4.554)	1.094 (3.492)	-27.395 (17.844)	-6.669 (18.361)
<i>N</i>	19	19	19	19	19	19
<i>R</i> ²	0.87	0.77	0.14	0.25	0.14	0.01
Adj. <i>R</i> ²	0.82	0.68	-0.04	0.09	-0.04	-0.20
Rho	-0.47	-0.35	—	—	-0.31	—
Durbin-Watson <i>d</i>	2.08	2.24	2.00	1.82	2.22	2.01

Note: Estimates are based on Prais-Winsten regression when rho is significant and OLS otherwise.

* $p < 0.05$; ** $p < 0.01$ (two-tailed).

^aIncludes controls for program growth in Fiscal Years 1977 and 1978.

better accounts for change in appropriations over time than it does for the change in outlays. These results are quite understandable. The influence of preferences is felt most strongly on budgetary *policy* itself, not the actual expenditures that flow over time. This is of obvious importance.

Results for the three social domains in Table 3 are more mixed. In the welfare domain, there are big differences when appropriations or outlays are used. Changes in welfare appropriations reflect both the party of the president and public opinion. The effects seem to be quite large. Democratic presidents appropriate approximately \$30 billion (1996) more than their Republican counterparts. A one-point shift in public opinion produces a \$1.5 billion change in appropriations, which is about twice the effect we observed in our analysis of defense appropriations. For the purposes of comparison with the results for defense, note that a one standard deviation (or 11.4 point) shift in opinion leads to a \$17.1 billion change in appropriations. This is virtually identical to the effect on defense appropriations of a comparable shift in public support for defense spending.

Unlike welfare appropriations, changes in welfare outlays only reliably reflect public opinion. Although the coefficient for presidential party remains fairly large, it is not highly significant. The effect of public opinion on outlays is itself substantially smaller, 40% of the estimated effect on appropriations. The differences in the explained variances are even more striking. As indicated by the adjusted *R*-squareds, the model accounts for 57% of the variance in appropriations on welfare but only 12% of the variance in outlays. It thus is clear, based on these

analyses, that public preferences better account for changes in appropriations than they do changes in outlays. Indeed, appropriations and outlays tell very different stories about the politics of budgeting in the welfare domain.

In the education and health domains, conversely, the differences are relatively minor. As we can see in the second pair of columns in Table 3, the partisan composition of Congress and public opinion predict changes in both appropriations and outlays for education. The estimated effects on appropriations and outlays also are strikingly similar and the overall performance of the models is virtually identical. We see much the same in the final set of columns, which describes results for the health domain. Here it is clear that public opinion matters in both models and the coefficients differ only marginally. Thus, whether one uses appropriations or outlays in these two domains appears to make little difference.

We detect a similar pattern in the other spending domains, namely, the environment, crime, and foreign aid. As the results in Table 4 show, the structure of the results remains essentially the same when using appropriations or outlays. There is some suggestion that the effect of public opinion is comparatively larger for appropriations on the environment and crime, though the differences are far too unreliable to credit. Whether one uses appropriations or outlays in these domains evidently makes little difference.

Discussion and Conclusions

Appropriations and outlays are different things. This is well known. What is less well known is the nature and extent of the differences and the consequences of these differences for analyses of budgetary change. Our analyses indicate that the disparity between appropriations and outlays is often quite substantial. The degree to which current outlays are clearly the product of current and past appropriations varies considerably across budget functions. For some functions, the connections between the two are virtually inscrutable. At a minimum, these results indicate the potentially vast gap that exists between appropriations and outlays. More substantively, they highlight a critical difference between budgetary policy and actual government expenditures.

The analyses also indicate that these differences matter quite a lot, at least in certain domains. Using outlays can dampen or otherwise distort the effects of public opinion and, to a lesser extent, other political variables. We have seen that this is not true in each and every domain; indeed, whether one uses appropriations or outlays makes little difference in many areas. However, there are substantial differences in certain domains, ones that happen to be the most politically important, namely defense and welfare (see Abramowitz, 1994; Asher, 1992). Whether one uses appropriations or outlays in these domains leads one to draw very different conclusions about budgetary dynamics.

These findings have obvious implications for the study of budgetary policy in the United States. But they also have implications for the study of budgetary policy in other countries, where we often have no choice but to rely on outlays.

Having to rely on outlays complicates the examination of the politics of public budgeting, and in potentially unknowable ways. Budgetary measures clearly matter.

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Notes

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1. Recognizing the advantages of appropriations rather than outlays as indications of budgetary policy, Jones, True, and Baumgartner (1997) have created appropriations series back to FY1947 (see also Jones, Baumgartner, & True, 1998), available from the Center for American Politics and Public Policy at the University of Washington. Above and beyond providing a longer time series, these data have the additional advantage of correcting for changes in budget categories over time. Because these data are not directly comparable with published outlays data, and because this comparison is critical to the current work, we do not use them here.
2. Including additional lags makes no meaningful difference except in the case of Natural Resources and Environment (see Note 3).
3. Adding a third lag of appropriations (differenced) to the models alters the results for one of these functions—Natural Resources and Environment—but leaves results for the others essentially unchanged.
4. Notice that the Durbin Watson statistics in the last column of Table 1 indicate significant autocorrelation among the residuals in some of the estimated models, specifically, for Commerce and Housing Credit and Education. As there is no clear a priori basis for such autocorrelation—that is, given that outlays in theory are *solely* a function of appropriations—we do not correct for it in the analyses. In any case, explicitly doing so makes little difference to the results.
5. The numbers are even more disturbing when we do not constrain the intercept in each model to be 0. The mean sum of appropriations coefficients drops to 0.76 and the mean R-squared to 0.59, implying that appropriations change accounts for just more than half of the variance in outlays change on average.

6. The other categories (with the exact wording) are the following: Solving the problems of big cities? Crime prevention? Improving the nation's education system? Improving and protecting the environment? Foreign aid? Improving and protecting the nation's health? Space exploration? and Welfare? Other categories have been used regularly by different survey organizations, including "big cities," the "condition of blacks," and "drug addiction," but are not included in the analysis because they do not neatly correspond with spending behavior. Yet others have been asked only sporadically.
7. In any analysis of representation, though particularly in one that relies on measures of relative public preferences, it is important to use polls conducted at about the same point in time in different years. The GSS is conducted in February–March in each year, when Congress begins to consider appropriations bills. Fortunately, Gallup asked the defense spending question in the early part of the missing years—1979, 1981, and 1992—and that data is used here. Gallup did not ask about spending for the various other programs, however, and there seemingly is no other source of data about preferences for spending on these programs during the early part of the particular years. It thus is necessary to rely on data from the Roper Poll, which was conducted in December of each year. Given the timing of the poll, results from Roper surveys conducted in *previous* years are used here. For justification, see Wlezien (1996a).
8. That is, if the coefficient is greater than 0, policy "responds" to preferences. Of course, 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 (Wlezien, 1996a). All we can say for sure is that the coefficient (β) 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.
9. That is, it captures political circumstances during the regular appropriations process. There can of course be later adjustments in the form of supplemental appropriations and impoundments (Gosling, 2002; Wlezien, 1996b).
10. The measures of party control tap the *levels* of partisan control, which might appear to be inconsistent with the (differenced) dependent variables. Given that budgetary policy feeds back in "thermostatic" fashion on public preferences, the specification actually is theoretically implied (Wlezien, 1995, in press). The specification also is supported by separate diagnostic analyses.
11. For more detailed information, see Table 5.1 of the *Historical Tables, Budget of the United States Government* at <http://www.whitehouse.gov/omb/budget/fy2002/hist.pdf>.
12. Note that presidential party does have a reliable effect over longer stretches of time and congressional composition still does not (Wlezien, 1996a).

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