Presidential Pork Barrel Politics*

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Abstract

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Although the literature on pork barrel politics in the United States is decidedly Congress-centered, we argue that presidents pursue strategies to target federal expenditures to local areas to promote their goals of reelection and preservation of a policy legacy. We develop and test a theory of expenditure targeting which delineates how patterns of federal spending will vary depending on whether the spending is part of a reward system for elites who have aided the president's campaign efforts or is aimed directly at attracting the support of ordinary voters. We also consider how the institutional complexity of federal expenditures affects the ability of elites to manipulate spending and the ability of voters to credit the president for such spending. An analysis of data measuring the geographic distribution of federal spending during the second term of the Reagan Administration provides support for our theory.

> "Forget the polls," I said. "You can't beat an incumbent president. Remember, he's got a hundred billion dollars at his disposal to distribute to local governments, and he can send that money anywhere he wants. Everybody from Alabama to Alaska files for projects, and the administration decides which ones to approve. In an election year, they go where the votes are."
>
> —Tip O'Neill (O'Neill and Novak 1987, 326)

The literature on the geographic distribution of federal government spending in the United States is decidedly Congress-centered, practically ignoring the president (e.g., Ferejohn 1974; Levitt and Snyder 1995; Stein and Bickers 1995; Bickers and Stein 2000; Lee 2000; two important exceptions are Mayer 1995 and McCarty 2000). It has become the conventional wisdom that pork barrel politics—"bringing home the bacon"—plays a central role in the electoral strategies of members of Congress (Mayhew 1974; Arnold 1979; Fiorina 1989; Levitt and Snyder 1997), but it is not known whether presidents pursue similar strategies to deliver federal benefits in the form of local federal expenditures (LFEs) to electorally relevant constituencies. While anecdotal evidence of presidents targeting LFEs for electoral purposes abounds, systematic analysis regarding such actions is lacking.[1]

In this paper we examine whether patterns in the distribution of LFEs are consistent with the president's electoral interests and interests in preserving a policy legacy. We develop and test a theory of expenditure targeting which delineates how patterns of federal spending will vary depending on whether the spending is part of a reward system for elites who have aided the president's campaign efforts or is aimed directly at attracting the support

[1] For examples from recent presidential elections see James Gerstenzang, "Santa Claus is an incumbent, states find as Bush dips into his federal goody bag," *Los Angeles Times*, 11 March 1992, 13A; Jack Anderson and Michael Binstein, "Chowing down in 'Porkland,'" *Washington Post*, 24 Aug. 1992, 12C; Brian Kelly, "Pigging out at the White House," *Washington Post*, 6 Sept. 1992, 1C; Jack Meyers and Ed Hayward, "Clinton makes promi$e$ to Bay State," *The Boston Herald*, 29. Sept. 1996, 4; Brian McGrory, "Clinton Vows Money for Area Projects," *The Boston Globe*, 29 Sept. 1996, City Edition, Metro/Region, A1; David Dahl, "How Bill Clinton Bought California," *St. Petersburg Times*, 15 Sept. 1996, South Pinellas Edition, National section, 1A ; Robert A. Rankin, "Clinton gets creative with near-empty pork barrel," *The Fort Worth Star-Telegram*, 22 Sept. 1996, Final A.M. Edition, 26. See Mayer (1995, 167) for examples of announcements of defense contract awards that were intended to influence the 1992 election.

of ordinary voters.[2] Our theory predicts that after a successful reelection campaign, the president rewards local elites who worked especially effectively in that effort by appointing them to positions in his administration. These appointees become actors in policy subsystems (Stein and Bickers 1995) where they can work with other elites back in the local area to deliver their share of federal largesse. Thus in the first part of the president's term (i.e., after the previous election), targeting ought to depend on the amount of support actually received as newly appointed elites from areas that were important to the president's election direct spending back to the areas from whence they came. By midterm, however, most of these appointees have left office (Heclo 1977, 103–104). After the midterm election, the president redirects some kinds of government spending to build support among voters for the next election. Hence, in the second half of the president's term (i.e, before the next election) targeting ought to be based on the support expected from each area. We expect this general argument to hold whether the president is in his first or second term, since a lame-duck president has an interest in promoting the electoral chances of his party's successor candidate in order to preserve the president's policy legacy.

The types of spending that are targeted will vary depending on whether the spending is elite-oriented or voter-oriented. A necessary condition for voters to respond to LFEs is that the spending outcomes are traceable to presidential decisions (cf. Arnold 1990, 47). Traceability would mean that the outcomes involve LFEs that each voter can both observe and attribute to presidential actions. Elite responses may also require such causal and retrospective analysis, but we posit that the connection to elites follows quite different kinds of engagement focused on *anticipated* spending. The prospect of presidential patronage should lead elites to expect that they will enjoy special advantages in competing for LFEs when spending decisions are made.

Traceability is a function of the spending's "institutional complexity"—that is, the number of federal, state, and local government institutions that are involved in the expenditure of

[2] A key difference between our analysis and Mayer's (1995) is that he examines electorally motivated *announcements* of expenditures, while we focus on actual expenditures.

federal funds. The institutional complexity of many kinds of LFEs ought to make it difficult for anyone who is not immediately involved in the disbursement process to trace responsibility for the spending results back to the president. Among those not closely involved are most voters. Spending that is primarily aimed to attract the support of voters directly should be less institutionally complex than spending that is associated with elites' support.

In our analysis we estimate *targeting functions* to test for the patterns posited by our theory. We find that patterns in LFEs during the Reagan administration support our theory in terms of the timing of elite-oriented and voter-oriented spending and the extent to which expenditures are bound up with the institutions of American federalism.

The paper proceeds as follows. We first develop the theory of elite-oriented targeting, detailing how presidents can use their appointment power to provide incentives for elites to devote resources to the president's campaign in exchange for influence over the distribution of federal spending. We then discuss the issue of institutional complexity and how it affects presidents' targeting strategies. We then specify an econometric model of targeting and report the results of the estimation of this model. We conclude with a discussion of the implications of our findings for the literature on federal spending with respect to presidential, congressional, and bureaucratic interactions.

Strategic Interactions with Local Elites: Delegating Patronage

Our theory begins with the fundamental assumption that the president's main goal in targeting LFEs is to get reelected, or in the case of a president in his second term, to aid the election of his party's successor candidate, which is typically the vice president. Reelection to a second term or the maintenance of party control of the White House promotes what Moe and Howell (1999) contend is the president's overarching goal—the establishment and sustenance of a legacy.[3]

[3] We also assume the president is already committed to an overall election plan that includes such decisions as which states to go after in the Electoral College (Brams 1978, 98–107). Our concern is with the targeting strategies the president may be expected to use in the context of such a plan.

The president's strategy for targeting LFEs ought to depend on the effects he expects spending in different geographic areas will have on his election prospects.[4] The biggest effects, and therefore the most vigorous targeting efforts, may or may not reflect direct responses to LFEs by voters. If it is difficult for voters to trace responsibility for particular expenditures back to the president, it may not pay the president to target based on their anticipated direct reactions (cf. Stein and Bickers 1995). Plainly it is not easy for ordinary voters to sort out exactly what the president has and has not done. Usually a multitude of public officials and private groups claim credit for each governmental action or inaction. The scope of federal spending is so vast that even the most dedicated voter would not be able to comprehend it in detail in its entirety (cf. Bureau of the Census 1984–90). The fact that a large amount of federal spending reaches voters indirectly further complicates the tracing task. Substantial amounts of spending pass through state governments, for example, often with each state supplementing the federal amount. Sometimes the level of federal spending is pegged to the amount of state spending, as in the case of matching requirements in grants for transportation construction. A voter who tried to measure the president's unique contribution across the full range of LFEs would face an impossible task.

In addition to the traceability problems, a president who tries to use LFEs directly to attract voters may face a credibility problem. If voters act prospectively, then the president has to convince voters that after the election he will deliver the amounts of LFEs they prefer. Mere promising is likely not to be sufficient, for the challenger can make promises as well (Downs 1957; Fiorina 1981). The only thing the president can do that the challenger cannot do is to target some LFEs before the election, and to do so in a highly visible way. Baron's (1989) analysis of possible shirking by incumbents who receive campaign contributions in anticipation of services they promise to provide after the election suggests

[4] Levitt and Snyder (1995, 961) contend that the Democratic party, despite its control of the House and the Senate throughout most of the postwar period, has not been able to target "extraordinary amounts" of federal money to specific local areas, though they find that Democratic constituencies generally fare better in the distribution of certain funds. Yet, their analysis does not take into consideration the president's preferences for LFEs, nor does their analysis include certain types of LFEs (e.g., military procurements and wages), which we suspect are ones that the president would be especially interested in targeting.

that the president will target some LFEs before the election, to signal voters regarding the president's commitment, even if the bulk of the targeting—the actual delivery of the payoffs the president promised—takes place afterward. Hence, even if voters are making their decisions based solely on their expectations about future outcomes, the president needs to act to appeal to their retrospective evaluations. Such a strategy will require targeting actions late in the president's term.

In light of the traceability problems, or perhaps simply in order to exploit all possible electoral resources, the president may wish to use LFEs to appeal to the elites who have interests in each local area and who control resources that can help or harm the president's reelection chances. It is such local elites who are involved in filing for projects ("from Alabama to Alaska," as Tip O'Neill said) and in determining the local distribution of the projects' benefits and costs. Hence, at a minimum, local elites are more capable than ordinary voters are of knowing both where money is being spent and where money is not being spent when it might have been (Haider 1974). Local elites can more effectively trace responsibility for particular spending decisions back to the president.

A presidential candidate who wishes to appeal to local elites has not only to answer concerns elites may have about his credibility, but also needs to find a way to ensure that the local elites in fact do work to advance his electoral goals. At least in the aggregate, a candidate can verify directly how strongly voters in a locality have supported him simply by counting the votes cast in his favor. But the effort local elites exert on his behalf is only imperfectly observable.

One way to solve both the candidate's credibility problem and the problem of verifying local elites' effort is for the candidate to commit to a plan to appoint specially chosen local elites to positions in the administration in which they will have some discretion over how LFEs are distributed geographically. We call this *patronage delegation*. That presidents use appointments to deliver political patronage is a well established fact (Tolchin and Tolchin 1971; Heclo 1977, 92–99; Macy, Adams, and Walter 1983; Pfiffner 1988, 68–89).

After the election, the White House is inundated with requests for appointments from those who worked during the campaign (Macy et al. 1983, 48–49). Among the roughly 4,000 civilian appointments a president typically makes, we distinguish two classes: partisan core appointees, whose principal job is to advance the president's ideological and policy agenda; and local elite appointees, who do not oppose the president's program but who are especially concerned with returning federal benefits to their home localities. It is the latter class of appointee that will most directly be involved in the delivery of LFEs.

Before each presidential election, the task of learning what actions will electorally most benefit each candidate is given to the population of local elites who might wish to be appointed to federal offices if the candidate wins. The president can expect such would-be appointees to be especially knowledgeable about the local areas with which they are most strongly connected, and many will be strongly interested to be in a position to direct LFE benefits to those areas. Local elites may have direct interests in the benefits, or they may be interested in using the delivery of the LFEs to further their careers, political or otherwise, by enhancing their local reputations or their connections with other local elites. Having everyone understand that a suitable rule will be used to make appointments to the discretion-carrying positions allows each candidate to give many local elites incentives to deploy their political resources for the candidate in ways that are optimal for the candidate, even though the candidate can only imperfectly observe local elites' actions.

Local elites have recourse to two kinds of actions to enforce a candidate's commitment to a patronage delegation rule and hence make the commitment credible. Should the candidate be elected and then renege, they may refuse to work for a possible reelection effort or for the successor candidate of the same party. They may even refuse to work for the party's candidates for other offices. The threat of such actions may not strongly constrain the president, however, in part because the elites' threat not to work in the future may not itself be credible. But to the extent such threats are taken seriously, they may act even on a lame-duck president based on the president's commitment to his party and concerns about preserving a policy legacy.

The other kind of action can affect the president more directly and immediately: local elites may be able to use the connections they have with their congressional delegations to interfere with appointments the president may attempt to make that deviate from the generally understood appointment plan. Because the opposition of even a single senator may suffice to derail a nomination, local elites who have the appropriate connections may be able in effect to veto deviating appointments. Senators of the same party as the president may be more susceptible to local elite threats not to work for the party's candidates than the president is. Members of the House do not have the ability directly to intervene in the confirmation process, though they may add their voices to the possible chorus of complaints from local elites. But prompted by "fire alarms" (McCubbins and Schwartz 1984) sounded by the local elites, Representatives may be able to use their oversight powers to make life difficult for those appointed out of line with the patronage delegation norm. The anticipation of such problems at least gives the president a strong incentive to consult with Congress about appointments and hence may give local elites chances to enforce the patronage delegation appointment rule.

Each candidate needs an appointment rule that encourages local elites to exert their efforts in the most useful way during the campaign. The effort each local elite exerted during the campaign is only imperfectly observable. So each candidate needs to choose a rule that can be implemented using observable information and that leads each local elite to act on the private information each has about his or her own capacity in the way that most helps the candidate's election chances.

We focus on a feasible rule that we describe as *converted-loss*. The rule aims to motivate local elites to work where they think their effort will convert a probable loss into a probable win. The rule specifies that the highest probability of getting an appointment will go to those who convert a pre-election expectation that the candidate's share of the two-party vote will be less than .5 into a election-day result of greater than .5. To observe increases in support, each candidate must be able to measure the level of support he has in each local area before the campaign period begins. It is reasonable to assume that focused opinion polling and other sources give the major candidates fairly accurate information about such levels.

A downside of such a converted-loss approach is that the president cannot be confident that the local elites he appoints will share his policy goals. Voting in presidential elections is strongly partisan. Elites who would be most effective in mobilizing votes in a candidate's geographic areas of strongest support are likely to endorse at least the broad, partisan outlines of the candidate's policy preferences. But local areas that can be converted are likely to be areas in which many voters do not identify with either party and are only weakly committed to the core policy stands of any candidate. The elites who can best swing voters in such areas to support a particular candidate may not be the elites most strongly aligned with that candidate's policy commitments.

Appropriate procedures for screening and for defining appointees' authority can substantially reduce this defect in the converted-loss approach.[5] Calvert, McCubbins, and Weingast (1989) show that under a wide variety of conditions an appointee's decisions will be constrained to lie in a region bounded by the president's and the Congress's preferred spending positions.[6] So local elites ought not to exert campaign effort for a candidate whose policy goals—especially with respect to preferences for spending—are very different from their own if they expect that candidate to use effective screening and review procedures. Seriously discrepant local elites ought to anticipate that they will not receive appointments, or that the president's central monitoring agent (e.g., the Office of Management and Budget [OMB]) will veto their efforts to implement their preferred spending patterns. A converted-loss approach coupled with screening and review can therefore give the president appointees who

[5] Pfiffner (1988, 68–69) reviews the appointments procedures used in presidential administrations and notes the especially rigorous screening procedures used by the Reagan administration and the first Bush administration.

[6] The president has institutional advantages that enable him to appoint individuals to government positions that are more sympathetic to his policy goals than they are to those of members of Congress (Moe 1987). Thus appointees' decisions may be skewed toward the president's preferred spending position.

worked as effectively as they could to support his election, and who support his preferences for the distribution of LFEs as closely as possible given the preferences and powers of the Congress.[7]

But if each appointee has information superior to the president's (and the Congress's) about the capacity or tastes for LFEs in at least one local area, then there will be an element of uncertainty that increases each appointee's discretion in making spending decisions (Calvert et al. 1989, 597). Local elites who secure appointments can use this discretion to extract the rewards that presumably helped to motivate them to work for the winning candidate in the first place—for example, extra LFEs being directed to the local areas the elites are associated with. Being a patron-delegate may be a good way to ensure that one receives one's share of direct patronage. If an appointed local elite has only a small informational advantage over the president's central monitor (such as OMB—see Pfiffner 1979), then the amount targeted through such discretion will be small relative to the total amount of expenditure over which the elite has authority (cf. Chubb 1985).

Targeting and Institutional Complexity

LFEs can help attract active support from local elites. They may also help win votes directly if voters like the patterns of expenditure they see and can trace responsibility for them back to the president. The president will face a dilemma if the strategy that best appeals to voters is incompatible with the one best suited to local elites. This should be true if, as we expect, appointment-seeking local elites care about the absolute levels of their post-election

[7] The converted-loss appointments strategy can maximize the effort locally interested elites exert on the president's behalf, and pre-appointment screening can minimize the chances that an appointee has policy goals at wide variance from the president's. But a presidential candidate would gain electorally from using the converted-loss strategy even if he or she were completely indifferent to the geographic distribution of LFEs. Indeed, such indifference can attract effort in favor of the candidate from the widest range of local elites, if local elites can reasonably expect to encounter minimal screening of their geographic preferences. In this case the president would be largely uninvolved in the post-election efforts to target spending, and spending outcomes would be determined through interactions between the bureaucracy and Congress. Even in this case, however, bureaucratic appointees' preferences would be shaped by the processes that selected them, so that the interactions with Congress would be strongly affected by the geographic distribution of electoral support for the president

LFE rewards, while retrospective voters who want to know "what have you done for me lately" care about recent changes in LFEs. Maximizing post-election levels for local elites may make it difficult to produce the pre-election changes that voters would like. The need to choose between local elites and voters may be obviated, however, if elites and voters do not care equally intensely about the same kinds of LFEs. On the one hand, LFEs that elite-appointees can control relatively easily but that are virtually invisible or unfathomable to voters ought to be prime territory for elite-oriented maneuvers. On the other hand, features of LFEs that make them easy for voters to trace to the president may render them less attractive to local elites.

What we call the *institutional complexity* of LFEs is likely to affect both their susceptibility to local elite control and the difficulty voters face in tracing them. The most complex are LFEs that pass through state or local governments before being disbursed into private hands, and over which the lower-level governments exercise some autonomous authority. Such LFEs offer local elites many opportunities to influence who receives money, because institutional complexity creates many decision points at which they may intervene. Elite-appointees are often closely connected to state and local governments and parties (e.g. Mackenzie 1981, 64). Intergovernmental LFEs often closely match local needs (Peterson, Rabe, and Wong 1986, 81–94). We would expect that appointees often coordinate with officials at several levels of government to deliver special intergovernmental LFEs to their "home" areas (cf. Haider 1974). Anyone not familiar with the negotiations that produce such expenditures—such as ordinary voters—may have a hard time deciding whom to credit for the results.

LFEs that go directly from the Federal government into individuals' hands are less complex and are the easiest for individual voters to trace. Examples of such LFEs include military and civilian employment and procurements, and transfer payments to individuals for social security retirement pensions, and other direct Federal payments. Some administrations have gone to great lengths to make sure recipients of these kinds of spending credit the president for their good fortune (Tufte 1978, 30–32). Education, highway, and social welfare transfers are not perfectly traceable to the Federal level, because states and localities help fund some kinds of payments and expenditures and have authority over some payment levels (Peterson and Rom 1990). But to a great extent transfer payments depend on entitlement rules and mandates set at the Federal level.

The targeting strategy to be expected for local elites is the one induced by the converted-loss appointments strategy. If the president is rewarding local elites through such a strategy, then after the election LFE levels ought to be highest in those areas where the president received more than half the votes, but less than an overwhelming proportion. Recall that a converted-loss strategy would make elites from such areas the most likely to receive new appointments and therefore put them in position to direct LFEs—new government jobs, procurements, intergovernmental grants—back to those areas.

One might well say that, strictly speaking, the president does not have a targeting strategy with respect to local elites. Rather we expect the actions of elite-appointees to induce a pattern in which there is more spending in areas where the president received somewhere in the range of 50–70% of the votes than there is in other areas. Patronage delegation ought to produce such elite-induced targeting. Yet since the discretionary authority of local elites newly appointed after the election lasts only as long as they hold office, which is typically less than two years (Heclo 1977, 103), we expect this pattern to dominate only during the first part of the president's term.[8]

We expect to see more voter-oriented targeting in the second-half of the term, which means that the type of LFEs involved should be less institutionally complex than those targeted in the first-half. Yet at least in terms of the relation between LFEs and expectations of voter support, similar types of geographic areas ought to be targeted in both cases. Under reasonable assumptions about the distribution of voter support (such as that individual voters each choose according to a probit model), the geographic areas where LFEs are most likely to convert losses to wins are the areas where the marginal gain from each unit of

[8]Those who were appointed after the election are usually replaced with more career-oriented civil servants who would have much weaker ties to local areas throughout the country.

spending is the largest (Wright 1974; cf. Dixit and Londregan 1996). The scope and sizes of the changes the president can produce in LFEs to appeal directly to voters are not unlimited. The president will want to deploy the changes he can make to produce the largest possible increase in his reelection prospects. This implies, similar to the elite-oriented strategy, that such changes will be concentrated in the areas where the president expects they are most likely to convert a loss to a win. Relative to the *pre*-election information the president uses to make the changes, we ought to observe the largest changes where his prospects look bad but not hopeless—say areas where his pre-election support appears to be somewhere in the range of 30–50%.[9]

An Statistical Model for Targeting and Voting

To summarize our theoretical development, targeting can be elite-oriented or voter-oriented. Elite-oriented targeting is induced by appointees who are selected based on the support the president received in the most recent presidential election. Voter-oriented targeting is based on expectations of support in the upcoming election for the president (or his party's successor candidate) based on information obtained during the president's term. Elite-oriented targeting should occur in the first part of the president's term, as elite-appointees reap the rewards of helping the president gain office. Since appointees on average serve less than two years, voter-oriented targeting should occur in the second-half of the president's term. The politics of the midterm election should also inform assessments of support for the president in different local areas. The types of LFEs involved in targeting should vary in terms of their institutional complexity across the pre- and post-midterm periods.

The president cares about the aggregate distribution of the vote in each area. Suppose each individual voter i in local area s in year t decides whether to vote for the incumbent based on a continuous index y^*_{ist}, according to the rule $y_{ist} = 1$ if $y^*_{ist} > 0$, $y_{ist} = 0$ if $y^*_{ist} \leq 0$, where $y_{ist} = 1$ indicates a vote for the incumbent and $y_{ist} = 0$ indicates a vote

[9]When targeting voters, presidents can rely on institutional resources, such as the veto (McCarty 2000) or OMB monitoring, to direct spending to particular constituencies.

against the incumbent. Given the Electoral College, the president's direct interest is in winning half or more of the electoral votes. Because a direct model of the president's choice among all the possible electoral vote majority patterns would be unwieldy, we simplify by assuming that the president is interested in the aggregate vote propensity in each local area. Specifically, we assume that the president cares about the mean value of y^*_{ist} in area s, i.e., about $y^*_{st} = N_{st}^{-1} \sum_{i \in V_{st}} y^*_{ist}$, where V_{st} denotes the set of voters in area s at time t and N_{st} denotes the number of such voters.

The administration targets LFEs to each area during each year t to match his support there, according to a particular strategy. The strategy is a function of the information $\tilde{y}^*_{st}$ that the president has at time t about y^*_{st}, and is tailored to each type of expenditure. We use $\mathcal{S}_{jk}$ to denote the targeting function the president uses for the kth type of LFE during either the early period $j = E$ or the later period $j = L$. For each value of $\tilde{y}^*_{st}$, this function indicates how much the supply of the kth type of LFE to area s during t ought to deviate from a baseline value. The set of possible strategies for each kind of LFE includes the null possibility that the president does no targeting related to y^*_{st} at all. In this case $\mathcal{S}_{jk}(\tilde{y}^*_{st}) = 0$.

Consistent with our theory, we allow the targeting function to differ between the first two years and the last two years of the president's term; that is, possibly $\mathcal{S}_{Ek} \neq \mathcal{S}_{Lk}$. Let $h_t = 0$ during the first two years and $h_t = 1$ during the second two years, and let $\mathbf{z}_{st}$ be a fixed vector of observed exogenous variables, δ_{k0} be a scalar and $\boldsymbol{\delta}_k$ a vector of constant coefficients, and λ_{ks} and μ_{kt} be respectively area-specific and time-specific fixed effects. Our specification for the amount x_{kst} of the kth type of LFE going to area s in year t is

$$x_{kst} = \exp[\delta_{k0} + (1 - h_t)\mathcal{S}_{Ek}(\tilde{y}^*_{st}) + h_t \mathcal{S}_{Lk}(\tilde{y}^*_{st}) + \mathbf{z}'_{st}\boldsymbol{\delta}_k + \lambda_{ks} + \mu_{kt}] + u_{kst} \tag{1}$$

The area-specific effects would capture any adjustment in the level of the LFE done throughout whole states pursuant to a plan to build a majority in the Electoral College. The disturbance u_{kst} has expectation $E\left[u_{kst}\right] = 0$ and variance $E\left[u^2_{kst}\right] = E\left[x_{kst}\right] \sigma^2_k$ and is uncorrelated across k, s, and t. We use the exponential form in equation (1) because virtually all observed local aggregations of LFEs are nonnegative. An additive disturbance with the specified form of heteroscedasticity is frequently appropriate for models with log-linear expectations (McCullagh and Nelder 1989, 193ff).

Targeting Model Specifications and Results

To estimate the relationships between LFE levels and support across geographic areas, we use annual, county-level data for years 1985–88 to estimate equation (1) separately for each of sixteen kinds of LFEs.[10] Analyzing these years provides an interesting test of our theory since, with the possible exception of defense spending, the Reagan administration opposed government spending—at least in rhetoric. It also enables us to test the application of our theory to a lame-duck president. Although the incumbent president did not run in 1988, we expect our theory to hold because the Reagan administration went to great lengths to assist George Bush, Sr. in his "friendly takeover" of the White House. Reagan traveled extensively to campaign for Bush and "personnel changes in the cabinet in 1988 were molded to fit Bush priorities" (Pfiffner 1990, 65).

The specification is designed to check whether LFE targeting behavior varies during the president's term. We focus on the distinction between targeting early and targeting late in the term, using the midterm election as the dividing point. To measure the president's information $\tilde{y}^*_{st}$ we use two different quantities. During the first two years of the term, we measure information by the proportion of the two-party vote cast for the incumbent in each county in the preceding presidential election, transformed using the inverse Normal cumulative distribution function. That is, during the first two years, $\tilde{y}^*_{st} = \Phi^{-1}(p_{sP})$, where p_{sP} denotes the preceding presidential election vote proportion in county s. Since we are not privy to internal polling the president does to assess his support in different areas, during the second two years of the term we use NES data to simulate the support the president (or

[10]The counties in the analysis are 138 of the 139 counties included in the 1986 NES sample (one county was omitted due to missing data), which we use to compute midterm support for the president.

his successor) might expect to receive at midterm from each county if individual voters were to use at that time the same voting decision rule they used in the preceding election. This approach gives post-midterm information values computed using $\tilde{y}^*_{st} = \Phi^{-1}(\hat{p}_{sM})$, with

$$\hat{p}_{sM} = n_{sM}^{-1} \sum_{i \in v_{sM}} \hat{p}_{isM} \tag{2}$$

where $\hat{p}_{isM}$ is the predicted probability that voter i surveyed in the midterm NES would vote for the president, and n_{sM} is the number and v_{sM} is the set of all voters in the midterm sample in county s. Details regarding the computation of the probabilities $\hat{p}_{isM}$ appear in the Appendix.

We use polynomials to approximate the targeting functions $\mathcal{S}_{Ek}$ and $\mathcal{S}_{Lk}$. For each kind of LFE k we define

$$\mathcal{S}_{Ek}(\tilde{y}^*_{st}) = \sum_{r=1}^{m_k} \theta_{kr} (\tilde{y}^*_{st})^r \tag{3a}$$

$$\mathcal{S}_{Lk}(\tilde{y}^*_{st}) = \sum_{r=1}^{m_k} \tau_{kr} (\tilde{y}^*_{st})^r \ . \tag{3b}$$

for constant coefficients θ_{kr} and τ_{kr} and some choice of polynomial degree m_k. To choose m_k we use F-tests based on deviance statistics.

The variables $\mathbf{z}_{kst}$ include a set of dummy variables that represent the annual memberships on fifteen standing committees of the U.S. House delegation from the state to which county s belongs, and a variable that measures the annual average for the state of the number of consecutive terms served by the state's House members.[11] Admittedly, these variables are crude measures of congressional influence on LFEs, but should serve our purpose since

[11] Each committee dummy variable equals one if any member of the delegation is a member of the committee in the referent year; otherwise the variable equals zero. We used dummy variables for the following committees: Agriculture; Appropriations; Armed Services; Banking, Finance and Urban Affairs; Budget; Education and Labor; Energy and Commerce; Government Operations; Interior and Insular Affairs; Merchant Marine and Fisheries; Post Office and Civil Service; Public Works and Transportation; Science, Space and Technology; Veterans Affairs; Ways and Means. Committee data were compiled from Joint Committee on Printing (1983–87). Terms data were provided by Robert Stein.

our focus is on the president.[12]

The sixteen LFEs cover most federal expenditures that disburse funds in particular geographic areas in the United States. The LFE variables include transfer payments, civilian and military employment, salaries and procurements, direct payments (not for individuals and not procurements), and intergovernmental transfers to local governments for education, for highways, for social welfare or for other purposes. The LFE variables are listed, with source citations, in Table 1. For the LFE variables that measure money the values are the total dollar amount spent in each county in each year, divided by the county population in that year; units are $1000 per person. For the variables that measure employment, the values are the total number of jobs, per capita, with units being jobs per person. In light of the fact that many Federal grants that are ultimately disbursed by local governments are passed through state governments, we analyze, separately, transfers to local governments from state governments as well as transfers from the Federal government.

*** Table 1 about here ***

The estimated targeting function polynomials are plotted in Figures 1 and 2.[13] The values represent partial LFE levels (net of congressional influences and fixed effects), plotted against the support scores p_{sP} and $\hat{p}_{sM}$. The ranges of values for p_{sP} and $\hat{p}_{sM}$ used in the figures are the values that occur for the counties in the NES data. Figure 1 shows the pre-midterm polynomials and Figure 2 shows the post-midterm polynomials. Table 2 shows the point estimate and 95% confidence interval for the local maximum of each curve on the $[0, 1]$ interval, when such exists.

*** Figure 1, Figure 2, and Table 2 about here ***

The estimates suggest that targeting was induced by patronage delegation for most kinds of LFEs in the pre-midterm period. Recall that for elite-induced targeting we expect to see the most spending in local areas where the president received about 50–70% of the votes. The

[12]The area-specific effect in equation (1) should also help account for congressional influences.

[13]Estimates were computed using quasi-likelihood methods, using the `glm` function of S-PLUS (Statistical Sciences 1991).

figures and Table 2 show the expected pattern during the pre-midterm period for eleven kinds of LFEs. For two of those LFEs—military procurements and Federal highways transfers—the local maximum of the polynomial is not determined very precisely; the 95% confidence intervals are wide. So perhaps they should not be counted as strongly matching the elite-oriented pattern. The other five LFEs do not show the expected pre-midterm pattern. Whether one counts the number of LFEs that match the predicted pattern as eleven or nine, the number is substantially larger than the number of LFEs that exhibit the elite-oriented pattern after the midterm election. During the post-midterm period only one LFE—transfer payments—comes close to showing the pattern, and that one estimate is not a strong match: while the point estimate for the polynomial's local maximum (.74) is not far above the upper end of the elite-oriented range, the 95% confidence interval covers virtually the entire unit interval.

To check for voter-oriented targeting we need to measure the changes that occur over time in each kind of LFE as a function of the president's support in each local area. We use the targeting polynomial estimates for this purpose by computing the difference between the predicted post-midterm and pre-midterm levels of each LFE in an idealized circumstance where the president's support remains constant at some level throughout the term. That is, we compute the difference $\hat{\mathcal{S}}_{Lk}(\tilde{y}^*) - \hat{\mathcal{S}}_{Ek}(\tilde{y}^*)$ for a range of $\tilde{y}^*$ values. For voter-oriented targeting we expect to see local maxima of the simulated changes in spending occur for support values between roughly .3 and .5.

The simulated differences plotted in Figure 3 and the 95% confidence intervals for local maxima shown in Table 3 suggest that voter-oriented targeting occurred for almost all of the LFEs we rated as relatively low in institutional complexity but occurred for at most half of the LFEs we rated as high in institutional complexity. Among the institutionally less complex LFEs, only civilian employment does not have a local maximum in the voter-oriented range. For military procurements, military salaries and transfer payments the local maxima are global maxima. Among institutionally complex LFEs the voter-oriented pattern occurs for three of the four Federal transfers. The pattern is only weakly matched for Federal highways transfers, for which the 95% confidence interval spans virtually the entire unit interval. For state highways transfers both the point estimate and 95% confidence interval of the local maximum take values that seem a bit too low to support a voter-oriented targeting interpretation.

*** Figure 3 and Table 3 about here ***

Conclusion

The distribution of LFEs is consistent with the president's electoral interests, and generally, his interests in preserving a policy legacy through the support of the electoral interests of his party's successor candidate. We find evidence of both voter-oriented and elite-induced targeting of LFEs for electoral purposes. Voter-oriented targeting occurs more often for LFEs that are relatively low in institutional complexity and occurs later in the president's term. Voters can much more readily trace such LFEs back to the president than they can LFEs that are institutionally complex. But the elite-induced targeting pattern occurs for both not-so-complex and highly complex LFEs, including six of the eight kinds of intergovernmental transfers. Targeting in these cases follows the pre-midterm pattern to be expected if elites who are interested in returning benefits to their local areas in the form of LFEs are appointed to the administration according to the converted-loss strategy.

Our findings imply an important correction to work that has demonstrated how strongly members of Congress can influence bureaucratic decisions regarding the geographic allocation of federal expenditures. Any theory of influence that neglects the president's role and interests in determining geographic spending outcomes is incomplete.[14] But our results do not necessarily contradict existing Congress-centered analyses because the patterns we estimate are net of congressional influences. One possible extension of the current analysis is to examine more closely the conflicts and complementarities between the LFE targeting

[14]Granted, some Congress-centered studies of the distribution of LFEs acknowledge the limited scope of their analyses (e.g., see Arnold 1979, 19).

strategies of the president and members of Congress.

We have not emphasized some issues that have received a good deal of attention in discussions of pork barrel politics in Congress, most notably the role of organized interests and the potential importance of logrolling (Ferejohn 1974; Shepsle and Weingast 1981; Stein and Bickers 1995). We assume that organized interests are important in many ways in interactions between the president and local elites. Logrolling is not a concern as long as expenditures result from discretionary actions by appointed elites who act in isolation and without substantial constraints. But it becomes more important when officials or agencies must coordinate—with one another or with Congress—to produce expenditures, or when spending is subject to budget constraints. Nonetheless, it is reasonable to speak of *presidential* pork barrel politics. The president is often viewed as a national leader who represents the entire country and is far less concerned than are members of Congress with local matters such as where federal dollars get spent. However, the analysis in this paper indicates that presidential politics surrounding federal expenditures, like congressional politics surrounding such expenditures, is substantially local.

Appendix

To produce the probabilities $\hat{p}_{isM}$ used in equation (2), we estimate an individual-level probit regression equation using NES data from the preceding presidential election, at time $P =$ 1984 (Miller and the National Election Studies 1986), based on $y^*_{isP} = a_0 + \tilde{\mathbf{w}}'_{isP}\mathbf{a} + \upsilon_{isP}$, where $\tilde{\mathbf{w}}_{isP}$ denotes a vector of survey opinion variables and the disturbance is assumed to satisfy $\upsilon_{isP} \sim N(0,1)$. To measure vote choices we used self-reports (1984 NES var. 787, 788), omitting those validated not to have voted (var. 1130). $\tilde{\mathbf{w}}_{isP}$ contains seven variables. Four variables count the number of mentions for each of the open-ended party likes and dislikes items: number of likes about the Democratic party (var. 266–271); number of dislikes about the Democratic party (var. 272–277); number of likes about the Republican party (var. 278–

283); number of dislikes about the Republican party (var. 284–289). Two variables measure retrospective economic evaluations, referring respectively to the nation's economy over the past year (var. 227) and to family finances now compared to a year ago (var. 139); values of DK or NA are treated as missing. The seventh variable is the feeling thermometer for Republican presidential candidate Reagan (var. 290); values of NA are treated as missing but responses of "doesn't recognize name" or "don't know where to rate" are assigned the middle value of 50. An observation missing data on any variable is omitted from the analysis. We use the estimated parameters with data for the same variables from the midterm ($M = 1986$) NES to compute $\hat{p}_{isM} = \Phi(\hat{a}_0 + \tilde{\mathbf{w}}'_{isM}\hat{\mathbf{a}})$. The variables from the 1986 NES data are var. 72–95 (likes and dislikes), var. 372, 355 (economic evaluations) and var. 130 (Reagan feeling thermometer) (Miller and the National Election Studies 1987).

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Table 1: Types of local federal expenditure

Variable[a]	Description	Institutional complexity
transfer payments[b,e]	transfer payments to individuals	low
civilian employment[b,f]	Federal government civilian employment	low
military employment[b,f]	Federal government military employment	low
civilian salaries[c,e]	salaries and wages, all civilian and Postal Service employees	low
military salaries[c,e]	salaries and wages, all military personnel	low
civilian procurements[c,e]	procurement contracts, all except Defense Department	low
military procurements[c,e]	procurement contracts, Defense Department	low
direct payments[c,e]	direct payments other than for individuals	low
education transfers[d,e]	transfers to local governments for education	high
highways transfers[d,e]	transfers to local governments for highways	high
social welfare transfers[d,e]	transfers to local governments for public welfare, employment security, health and hospitals, housing	high
other transfers[d,e]	all other transfers to local governments	high

Notes:
[a] All variables are used per capita, based on county population[b].
[b] source, Bureau of Economic Analysis (1990).
[c] source, Bureau of the Census (1984–90).
[d] source, Bureau of the Census (1986–91) and Bureau of the Census (1991); county totals are estimated as in Mebane (1993).
[e] units, $1000 per person.
[f] units, jobs per person.

Table 2: Point Estimates and 95% Confidence Intervals of Support Values in the Open Interval (0,1) That Maximize Local Federal Expenditures

Pre-Midterm

Maximum is an elite-oriented targeting value			Maximum is not in the elite-oriented range		
civilian procurements	.61	(.61, .61)	civilian employment	.96	(.00, 1.00)
military procurements	.68	(.18, .97)	military salaries	—	no max[a]
military employment	.71	(.71, .71)	transfer payments	—	no max[a]
civilian salaries	.68	(.67, .68)	Federal other transfers	.18	(.02, .56)
direct payments	.52	(.46, .58)	State welfare transfers	.29	(.24, .35)
Federal highways transfers	.67	(.00, 1.00)			
Federal welfare transfers	.64	(.63, .65)			
Federal education transfers	.56	(.52, .59)			
State highways transfers	.67	(.67, .67)			
State education transfers	.55	(.53, .57)			
State other transfers	.71	(.68, .74)			

Post-midterm

Maximum is an elite-oriented targeting value			Maximum is not in the elite-oriented range		
transfer payments	.74	(.00, 1.00)	civilian procurements	—	no max[a]
			military procurements	.44	(.32, .57)
			civilian employment	.85	(.00, 1.00)
			military employment	.04	(.02, .06)
			civilian salaries	—	no max[a]
			military salaries	—	no max[a]
			direct payments	.90	(.43, 1.00)
			Federal highways transfers	.98	(.00, 1.00)
			Federal welfare transfers	.90	(.89, .90)
			Federal education transfers	.99	(.83, 1.00)
			Federal other transfers	—	no max[a]
			State highways transfers	.05	(.00, .87)
			State welfare transfers	.44	(.32, .57)
			State education transfers	—	no max[a]
			State other transfers	.84	(.23, 1.00)

Source: Confidence intervals are computed using normal approximations and asymptotic standard errors obtained by the delta method from the asymptotic covariance matrix of the coefficient estimates of the targeting polynomials.

[a] The polynomial does not have any local maximum values in $(0, 1)$.

Table 3: Point Estimates and 95% Confidence Intervals of Support Values in the Open Interval (0,1) That Maximize Pre-midterm to Post-midterm Changes in Local Federal Expenditures

Institutionally less complex LFEs

Maximum is a voter-oriented targeting value			Maximum is not in the voter-oriented range		
military employment	.39	(.39, .39)	civilian employment	.98	(.00, 1.00)
civilian procurements	.33	(.32, .35)			
civilian salaries	.41	(.41, .41)			
military procurements	.42	(.34, .51)			
military salaries	.39	(.26, .53)			
transfer payments	.38	(.14, .67)			
direct payments	.32	(.27, .38)			

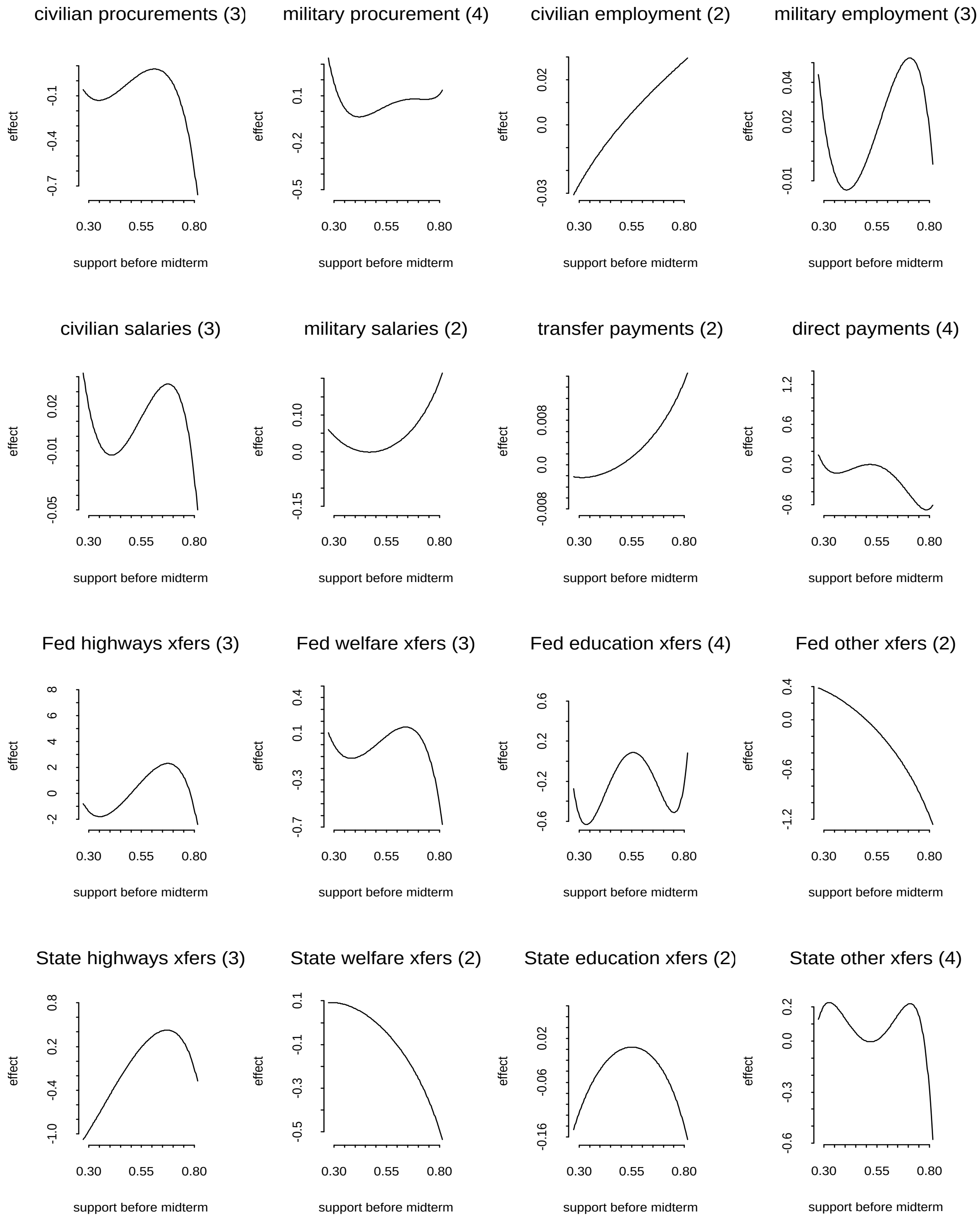
Institutionally complex LFEs

Maximum is a voter-oriented targeting value			Maximum is not in the voter-oriented range		
Federal welfare transfers	.46	(.42, .51)	Federal other transfers	—	no max[a]
Federal highways transfers	.35	(.00, 1.00)	State highways transfers	.17	(.07, .33)
Federal education transfers	.32	(.27, .38)	State welfare transfers	—	no max[a]
			State education transfers	—	no max[a]
			State other transfers	.53	(.49, .56)

Source: Confidence intervals are computed using normal approximations and asymptotic standard errors obtained by the delta method from the asymptotic covariance matrix of the coefficient estimates of the targeting polynomials.

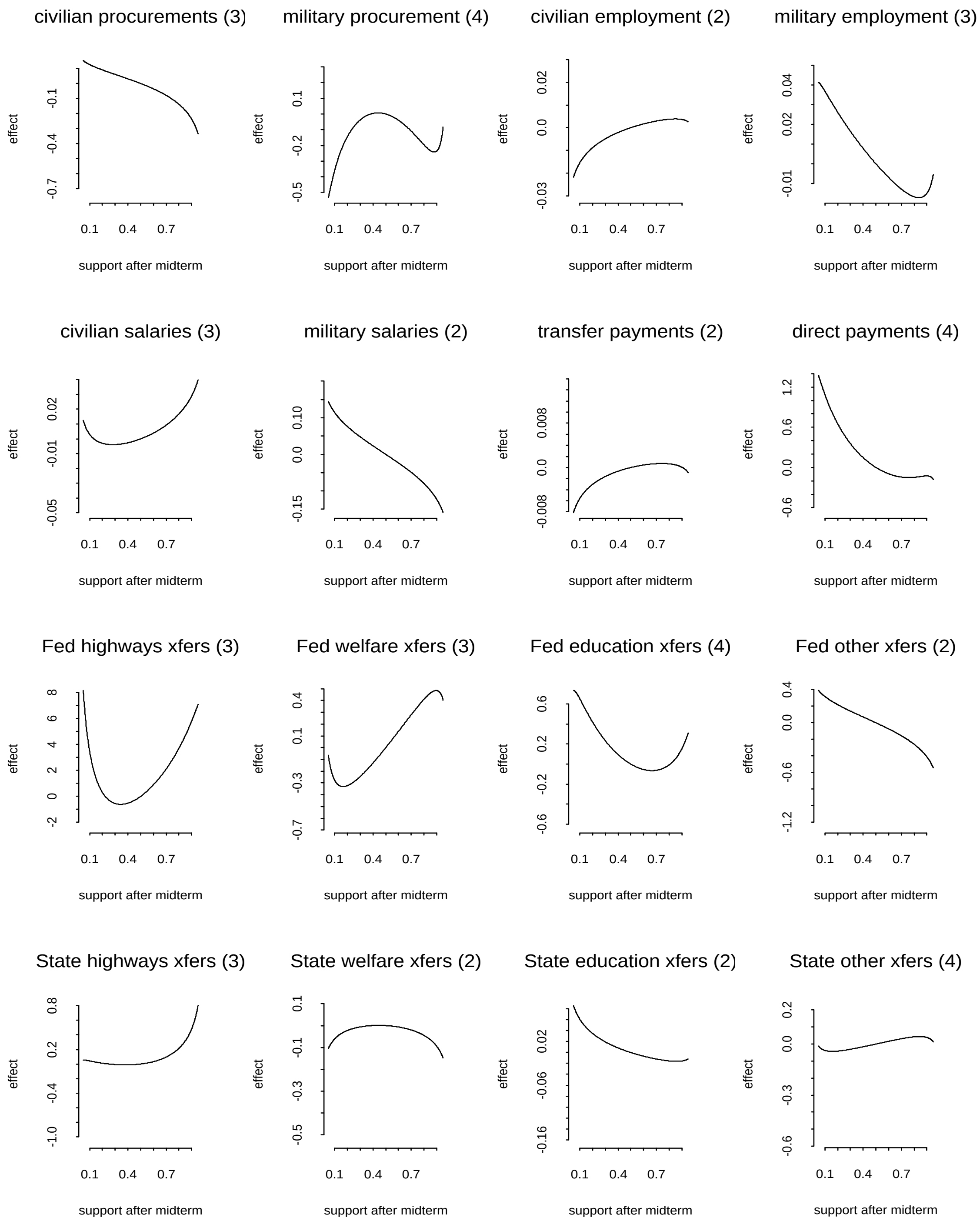
[a] The polynomial does not have any local maximum values in $(0, 1)$.

Figure 1: Effects of Support on Federal Local Expenditures, Pre-midterm



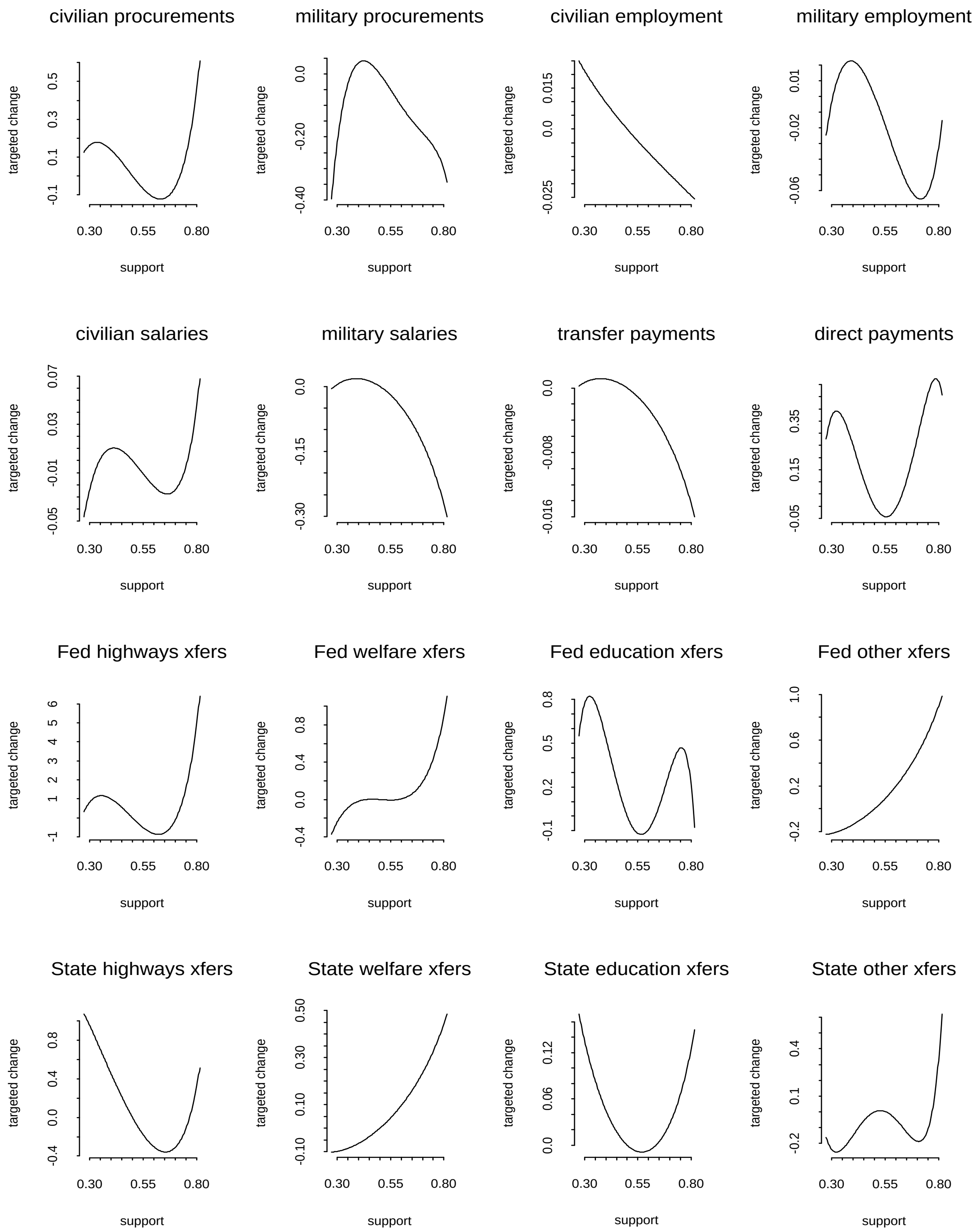
Notes: Quasi-likelihood estimates. The number in parentheses shows the degree of the targeting polynomial.

Figure 2: Effects of Support on Local Federal Expenditures, Post-midterm



Notes: Quasi-likelihood estimates. The number in parentheses shows the degree of the targeting polynomial.

Figure 3: Effects of Support on Pre-midterm to Post-midterm Changes in Local Federal Expenditures



Notes: Computed using the targeting polynomial estimates shown in Figures 1 and 2.