The Senate Electoral Cycle and Bicameral Appropriations Politics\textsuperscript{1}

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Abstract

We consider the consequences of the Senate electoral cycle and bicameralism for distributive politics, introducing the concept of contested credit claiming, i.e. that members of a state’s House and Senate delegations must share the credit for appropriations that originate in their chamber with delegation members in the other chamber. Using data that isolates appropriations of each chamber, we test a model of the strategic incentives contested credit claiming creates. Our empirical analysis indicates that the Senate electoral cycle induces a back-loading of benefits to the end of senatorial terms, and, more tentatively, that the House blunts this tendency. We also find that agenda setters within a chamber bias their chamber’s distribution of pork barrel projects in their favor, but these biases are partly counteracted by the other chamber. Our analysis informs our understanding of appropriations earmarking, and points a way forward in studying the larger consequences of bicameral legislatures.
1 Introduction

In terms of political agency in the United States, federal outlays to states and districts are where the rubber meets the road. Elected federal representatives – members of the House and Senate – scramble to deliver public dollars to their constituents. The motives of these agents are complex (Fenno 1973), but in the legislative field the stylized fact of which we are the most confident is the centrality of the desire for reelection (Mayhew 1974). As a consequence, politicians master the geographic, socioeconomic, and demographic complexion of their states and districts, as well as the profile of partisan, candidate, and policy preferences of various constituencies (Fenno 1978), in order to identify with and advance local interests and, as a by-product, their own careers.

The flow of federal outlays is orchestrated by constitutional procedures and institutional structures within which a variety of practices are at work. For our purposes, the most significant features are the bicameral arrangement of the legislature, the decentralized committee systems of the two chambers, and the electoral calendar. The two chambers have authorization, appropriation, revenue, and budget processes. Implementing these are structural units charged, first, with ex ante agenda and information-gathering responsibilities and, second, with ex post bargaining and oversight authority in order to direct the flow of fiscal largesse. Bicameralism means that these chamber-specific processes are not entirely insulated from their counterparts in the other chamber and, at the end of the day, must be synchronized and made compatible if a legislative product is to emerge.

There is a political tempo to these processes as well. The press of legislative business and the approach of a new fiscal year put logistical pressure on legislative leaders to complete spending decisions in a timely manner (though not always fully). The timing of elections, and the eagerness of those running to get home to their campaigns, bring additional “date-certain” pressures to bear. But there is another electoral rhythm of relevance – the term structure of representatives and senators. On the first Tuesday after the first Monday of November in even-numbered years, all 435 seats in the House are in play, while only a third
of those in the Senate are. Senate and House members differ in term length (six years versus two years) and constituency (states versus districts). But the Senate should not implicitly be thought simply a larger-constituency, longer-term version of the House. The Senate is a staggered-term legislative chamber. As established in Article I, Section 3 of the Constitution, Senate seats are partitioned into three classes (with the two seats of any state necessarily in different classes). In any election year, contests for a third of these seats occur, but those for the remaining two-thirds are two years or four years into the future. The electoral connection, then, implicates every district in every state in House elections, but only thirty-three (sometimes thirty-four) of the fifty states in Senate elections.

Putting these three things together – reelection ambition, the necessity for bicameral reconciliation on legislation, and chamber-specific electoral rhythms – suggests something that not even the authors of Article I, Section 3 anticipated. One important source of bicameral tension arises within state delegations as senators and members of Congress operate on different time horizons and with different intertemporal perspectives. The modest assumptions of retrospective voting (Fiorina, 1981, 2003) and recency bias, in which constituents assess past accomplishments giving greater weight to more recent performance – what Weingast, Shepsle, and Johnsen (1981) refer to as the “what have you done for me lately” principle (WHYDFML) – imply that reelection-conscious politicians, eager to make a maximal reputational impression on retrospectively inclined voters, will seek to deliver federal outlays to their states and districts just in time to be appreciated as their reelection campaigns kick into high gear. Thus, at the end of congress $t$, when a senator and his or her state-delegation

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1For the distribution of states across classes, and the time series of their initial assignments to classes, see http://www.thegreenpapers.com/Hx/SenateClasses.html. Table I gives the states in each class. Table II gives the order in which they were assigned, beginning with the first 22 Senators on May 15, 1789.

2See the miscellany of pamphlets, articles, letters, transcripts of debates in the Constitutional Convention and various state constitutional conventions, and diary entries assembled on each of the sections of the Constitution in the five-volume set, The Founders’ Constitution, edited by Philip B. Kurland and Ralph Lerner (Indianapolis: Liberty Fund Press, 1987). The materials on Article I, Section 3, discussing the structure of Senate terms, is found in volume 2 at pp. 182-239. No appreciation of bicameral tension within state delegations is in evidence in these materials.

3Experimental evidence consistent with WHYDFML, as well as a discussion of theoretical issues surrounding this hypothesis of voter behavior, are found in Patty and Weber (2006).
colleagues in the House are in reelection campaigns, their joint incentives are correlated—all want the skids to have been recently greased with federal outlays in the state so that all can claim some credit. Likewise, at the conclusion of congress \( t + 1 \), when the other senator from the state joins his or her House colleagues in a reelection campaign, joint incentives are correlated. In congress \( t + 2 \), however, there is no Senate election in the state, and the House delegation must plan reelection campaigns in the absence of a statewide (federal) race.

Why should this matter? The answer derives from the staggered-term feature of the Senate. With only a portion of the Senate absorbed in a contest at each election date, and with all senators eager to shine in the run up to reelection as a consequence of WHYDFML behavior by constituents, the membership of the staggered-term Senate can arrange things in a manner not available to the simultaneous-term House membership. Specifically, senators can implement an intertemporal deal, allocating a disproportionate share of (discretionary) federal outlays to just those senators who can benefit most from them, namely those facing a reelection campaign “this time.” Each senator will be in this privileged category at the end of his or her six-year cycle. Since every senator would, according to the WHYDFML logic, prefer concentrated benefits toward the end of the cycle to a smoothing of benefits throughout the cycle, it is a deal to which all senators, in principle, could subscribe. Shepsle, Dickson, and Van Houweling (2004) argue that this deal is an equilibrium with off-the-path behavior policed by a rather simple “punishment scheme” (deterring those who try to deviate by attempting to secure benefits when it is not “their” turn). Muthoo and Shepsle (2006) provide a rigorous demonstration of this result.

In this paper we introduce bicameralism to this model. To do so we build on a standard divide the dollar game in two ways. First, we add a simplified model of the conference bargaining process that allows us to illustrate basic inter-chamber dynamics. Second, we formalize the concept of contested credit claiming, i.e. that members of a state’s House and Senate delegations must share the credit for appropriations to their state even when they originate in the other chamber. This sets the stage for strategic interaction between
the chambers. We limit our attention here to the relatively simple question of how a non staggered-term House seeking a universalistic allocation of pork would best respond to the irregular appropriations that characterize the equilibrium distribution we identify for the staggered-term Senate. We also consider, but stop short of modeling, the bicameral tensions that may be created by another institutional feature that has received more scholarly attention – the agenda setting power of the committee system. Existing models suggest that this will influence the appropriations process in both chambers. Our approach adds the possibility that this will also create inter-chamber tensions to the extent that legislators from different states hold agenda setting power in the two chambers.

Finally, we use a data set of appropriations projects compiled by the Citizens Against Government Waste (CAGW) to examine hypotheses derived from our theoretical account. Along the way we draw on interviews of Appropriations Committee staff in both chambers to assist in framing the theory and interpreting the results of our analysis. Our findings uncover several new dynamics of appropriations politics driven by the institutional features of bicameralism and the staggered term structure of the Senate. Moreover, our approach points one way forward in the developing study of the consequences of bicameral legislatures.

2 Theoretical Argument

Much of the empirical research on discretionary federal spending has, like research on Congress generally, focused heavily on the House. With some major exceptions (e.g. Lee and Oppenheimer 1999; Ansolabehere, Snyder, and Ting 2003), it is almost as though bicameralism did not exist at all. And, when the Senate is taken on board, it is often treated as essentially “House-like” – in particular, as a parallel chamber of simultaneous-term legislators. We cannot take on the full-blown agenda of bicameral politics here. However, as

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4 In 2005 and 2006 we made trips to Washington, interviewing majority and minority Staff Directors, including former Directors, of Appropriations subcommittees in both chambers.

5 Theoretical work on bicameralism includes Tsebelis and Money (1997), Diermeier and Myerson (1999), Sin and Lupia (2005), and Gailmard and Hammond (2006).
a step in that direction we want to know whether the existence of an upper chamber with heterogeneous legislator time horizons arising from its staggered-term feature, and thus not synchronized with the tempo of the lower chamber, makes any difference for our models of pork barrel politics. In other words, does the fact of a Senate election (or its absence) in a given state at the end of a congress affect conventional wisdom about the allocation of federal outlays during that congress or the promise of future outlays?

If senators had a term length identical to that of representatives then we might expect no systematic effect of bicameralism (putting party and other institutional differences aside for the moment). Each chamber’s representatives would seek outlays for their states and districts in every congress. If senators had a term length different from representatives but all senators were up simultaneously, we might expect a bump in spending in all congressional districts in those years involving the Senate races. But if we have an arrangement like that ordained in Article I, Section 3, then we need to derive the implications of this for legislative pork-barrel preferences and politics.

There is considerable literature and lore outside of the pork-barrel context on how senators behave over the course of their term, and in particular on how they respond to constituent preferences that may display WHYDFML-like time biases. And there is accumulated, but contingent, evidence that suggests senators change some types of behavior as they prepare to confront the voters. One issue that has received substantial attention is whether senators take different positions on roll call votes as election approaches (see Matthews 1960, Wainer, 6

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6For example, one eighteen year Senate veteran told Richard Fenno:

We say in the Senate that we spend four years as a statesman and two years as a politician. You should get cracking as soon as the last two years open up. You should take a poll on the issues, identify people to run your campaign in different parts of the state, raise money, start your PR, and so forth. (Fenno 1982, 29)

And Donald Matthew’s relates Senator Alben Barkley’s account of confronting a constituent he had assisted many times over the year about his betrayal of Barkley at the ballot box:

“Surely,” Barkley said, “you remember all these things I have done for you?”

“Yeah,” said Farmer Jones sullenly. “But what in hell have you done for me lately?”

(Matthews, 1960, 218)
Gruvaeus, and Zill 1973, Jackson 1974, Amacher and Boyes 1978, Poole 1981, Elling 1982, Hibbing 1984, Thomas 1985, Wright and Berkman 1986, Shapiro et al. 1990, Bernstein 1991, Ahuja 1994). The conclusions are mixed – on many issues senators voting records display continuity over their terms. However, with respect to valence or "third-rail" issues, the evidence is unambiguous: senators avoid voting on the "wrong" side of these issues toward the end of their terms. (see Theriault 2005).7

Another question that has received significant scholarly attention is how senators spend their time as re-election approaches. Again, the case for behavioral cycles tracking electoral cycles is strongest for activities with clear electoral upsides and small electoral downsides. For example, senators can and do raise more money (Fenno 1982, Hall and Van Houweling 2006), travel back to their home state more often (Fenno 1982), and cosponsor more legislation (Campbell 1982) as election approaches. Theoretical expectations about how they will manage costly legislative activity are less easy to derive. Introducing and amending legislation in the year just prior to re-election, for example, might enhance their images, but as election approaches the opportunity cost of these activities is quite high given the alternatives of fund-raising and campaigning. Not surprisingly, empirical evidence on this point is mixed.8 Overall, however, when the benefits are clear and the costs manageable, senators do seem to confirm the folk wisdom of altering their positions and activities as re-election approaches.

Roll-call voting and allocating one’s time and effort are individual choices entirely under a

7 For example, take the 1991 pay raise bill engineered through the Senate by Majority Leader Robert Byrd. Most senators were eager for the bill to pass, but wished not to be recorded in support. Byrd was able to secure passage by building a coalition that did not include most of those who faced re-election in 1992. Timothy Groseclose brought this example to our attention, which we developed in Shepsle, Dickson, and Van Houweling (2004).

8 Smith (1989, 136) studies amending activity and finds some suggestive evidence, although he does not focus on the issue of an electoral cycle. In four of the five Senates he examines, (84th, 88th, 92d, 96th, 99th) senators at the end of their first term are more likely to propose amendments than senators in the first four years of their first term. This same relationship does not regularly exist in the House. This finding can be explained by an apprenticeship norm in the Senate but it also fits a cyclical pattern. Smith’s analysis combines all senators in their second term and above making any further inference about cycles difficult. Relatedly, Shiller (1995) finds that senators up for reelection are slightly more likely to introduce bills, but coefficients fall far short of traditional thresholds of statistical significance.
senator’s control. A senator can shift action and emphasis as the election calendar requires. Earmarks and pork barrel projects are a different matter. They introduce a different dynamic because senators cannot single-handedly satisfy the WHYDFML bias of their voters by simply changing their behavior. While a senator may devote effort to get distributive projects awarded to his or her state at election time, this effort may not be sufficient to secure them. To get more means to take from other senators, and given the formally equal parliamentary status of senators there is no reason to assume, a priori, that this is possible even if a senator is willing to expend additional effort in the cause. In short, a model of the collective decision process inherent in passing appropriations legislation becomes necessary. Elsewhere we have addressed this puzzle of how a standard divide-the-dollar game might play out when senators have preferences driven by a WHYDFML effect (Shepsle, Dickson, and Van Houweling, 2004; Muthoo and Shepsle, 2006). In the next section, we provide a brief overview of the argument and then extend it to the bicameral setting.

2.1 Divide the Dollar in the WHYDFML Senate

Imagine three classes of senators \( \{t, t+1, t+2\} \). One type faces reelection now (class \( t \)), another type faces election in the following congress (class \( t+1 \)), and the third faces reelection in the congress after that (class \( t+2 \)).\(^9\) In each congress there is a dollar of federal outlay to divide. We don’t tackle the revenue side of the equation, so the total amount of outlay is taken as fixed and exogenous. In effect, we have a repeat-play version of the Baron-Ferejohn (1989) divide-the-dollar game. The difference in our version is that the senators are of different types, and this difference affects their preferences over alternative outlay profiles.

A senator values reelection, and his or her probability of reelection is written in terms of the outlays delivered to the folks back home. (Of course, this probability may be affected

\(^9\)Here we describe the preferences of senators in a repeated divide-the-dollar game with different "types" of senators in a fictional unicameral context. We use this to explore strategic interaction in a bicameral context. In other work we assume there are \( l \) senators of each type, though we will walk through the argument with \( l = 1 \) without loss of generality.
by other things as well.) A senator of class $t$, for instance, is re-elected with probability $\pi(s_{t-2}, s_{t-1}, s_t)$, where $s_i$ is the share of the dollar he or she secured for the state in congress $i$. Two assumptions about $\pi$ are made. The first, weak monotonicity, says that in any congress more is no worse than less, i.e., the probability of reelection is weakly increasing in the amount of federal outlays in each of the three congresses of the electoral cycle. The second, the whydfml (or weak recency bias) principle, says that voters assess performance retrospectively, giving more weight to outlays in congress $i$ than in congress $i - 1$.\footnote{This is a slightly stronger statement of recency bias than we require. The assumptions are precisely formulated in Muthoo and Shepsle (2006).}

Each congress an exogenously provided dollar is divided among the senators by majority rule. The closed-rule version of the congress $t$ stage game is as follows. A senator is randomly recognized to make a proposal taking the form of an allocation of the dollar to the three senators in congress $t$. This proposal is immediately put to a vote. If a majority supports the proposal then it is implemented; if not then outlays are set to zero for each senator that congress.

As a technical game theory matter, it may be shown that if each play of the stage game is history-independent, then the only equilibrium is one in which whoever is recognized to make a proposal proposes to take essentially the entire dollar for his or her own state. If, however, players may condition their behavior in congress $t$ on what has transpired in earlier congresses, then an equilibrium exists in which the senator recognized to make a proposal offers a portion of the dollar to the class $t$ senator – the one who will face reelection at the conclusion of the present congress. The optimal portion cannot be described in general without further assumptions about $\pi$, but if this function is concave, then the optimal portion going to the class $t$ senator is disproportionately large. In equilibrium, each senator is re-elected with probability $\pi(s^*_t, s^*_{t-1}, s^*_t)$, where $s^*_t$ is the amount specified in the optimal distribution for a senator of class $t$ in congress $i$.

The specifics of this argument are developed elsewhere. The important point for present purposes is that this equilibrium characterizes an intertemporal norm that in the congress
just before his reelection campaign a senator receives a disproportionate share of what there is to get (and/or bears disproportionately less of the burdens others bear.) Senators engage in an intertemporal trade, foregoing some of their “fair share” of outlays in congresses more distant from their reelection date in exchange for getting more than this share close to reelection. Their staggered terms enable this.

Given the monotonicity assumption – $\pi$ is weakly increasing in all its arguments – there is often a temptation to defect from this norm. This may occur if a senator early in her term of office is recognized and proposes to keep "too much" of the dollar for herself, giving a smaller than optimal amount to the senator about to face his voters. In effect, there is a temptation to secure extraordinary outlays even when it is not a senator’s "turn." A simple punishment regime deters this temptation. If a senator should secure outlays for her state out of turn in violation of the norm, then the other senators punish her by not allowing outlays to her state in the congress in which she faces reelection. It may be shown that this punishment is credible and is sufficient to deter norm-violating behavior.

In summary, we have a simple theoretical argument – stripped of many real-world features to be sure – that suggests a preference of senators to concentrate outlays in the latter congresses of a senator’s electoral cycle (back loading). In contrast, in many economic contexts the tendency is the opposite of back loading, pressing instead toward smoothing payoffs across all periods (concave utility function), or even front loading (positive discount factor). Retrospective voting and recency bias, however, promote this back loading of benefits – in particular, the extra weight voters give to the recent past relative to the more distant past induces senators to support an institutional arrangement that concentrates their share of outlays into the congresses that do them the most good. One contribution of this article is providing the first empirical test of the claim of senatorial back loading. Before doing so, we embed our simple model of the staggered-term Senate in a broader context of contested credit claiming and bicameralism.
2.2 Contested Credit-Claiming and Bicameralism

A pork barrel project is earmarked to a geographic destination allowing the two senators and at least one member of the House delegation from the state to claim credit in principle for the project. When funds for such a project are appropriated, they often have an unambiguous state-and-district address. In other cases, the project affects many districts in a state. A legislator may try to provide direct and verifiable evidence to constituents of the lengths to which he or she has gone to secure the result. But often legislators engage in cheap talk (effectively competing with other potential credit-claimants in a "press release game").

We know of no attempt, in the more than three decades since Mayhew (1974) coined the concept, to provide micro-foundations for credit claiming. This is a problem inasmuch as many elected officials are potentially in a position to claim credit for a particular project.

Here we initiate an analysis of how contested credit-claiming might influence pork barrel politics in a legislature with a staggered-term upper chamber. To do so we develop an illustrative three state example of how a lower chamber whose members face re-election in each period and prefer a universal distribution of pork would optimally respond to an upper chamber that maximally back loads appropriations.

To begin we assume that in each congress each chamber divides $1 among three states generating chamber specific pork vectors with elements $s_{ij}$ and $h_{ij}$, which identify Senate and House allocations in congress $i$ to state $j$.

We assume that the final bill simply adds up elements of these vectors to reach a conference pork vector, with elements $c_{ij} = s_{ij} + h_{ij}$.

\footnote{Many of the staff members we interviewed commented on the competition over credit-claiming through press releases. For example, a Senate Appropriations subcommittee staff director told us that he would only tell members of one particularly quarrelsome Senate delegation what projects they received in the subcommittee markup when representatives from both offices were present in his office to hear the news.}

\footnote{We assume that each House delegation has one at-large member. This leads to the same conclusions as the assumption that states have an identical number of districts that split the House pork vector evenly. However, it eliminates variation in state size from the model, which is one well understood source of bicameral tension (see Lee and Oppenheimer 1999). We have explored a model that incorporates states of different sizes and it suggests that Senate will typically exaggerate the allocations it gives to small states and the House will veer from a universalistic distribution to counteract this Senate bias.}

\footnote{Our interviews suggest that this simplification is surprisingly close to reality. One House Appropriations staff member described an account that was explicitly divided into four with each partisan delegation in each chamber having authority over its share. Other interviews suggested this was the implicit norm for many}
At the end of each congress, all House members face reelection (one at-large from each state). Of the six senators (two from each state) only one from each of two different states faces re-election; neither senator form the third state is up.

We develop our example by considering senators driven by a strong WHYDFML effect that leads them to prefer an allocation that splits the dollar equally between the two states with senators standing for re-election and gives nothing to the other state. In this context, the Senate pork vector is $(0, \frac{1}{2}, \frac{1}{2})$. For maximum contrast we will assume that members of the House prefer universal distribution of the dollar, making the preferred House pork vector $(\frac{1}{3}, \frac{1}{3}, \frac{1}{3})$. If the members of each chamber retain full credit for the appropriations made by their chamber (and are not able to claim credit for the appropriations made by the other chamber) then the actions of the other chamber would be irrelevant to them. They would simply implement their preferred chamber specific pork vectors each period.

However, we want to consider what happens when members of one chamber can claim credit for a share of the allocations to their electoral jurisdiction authored by members of the other chamber. We formalize this with a single parameter $\gamma \in [0.5, 1]$, where members of the originating chamber receive credit for $\gamma$ of the allocations going to their states and the members of the other chamber receive $1 - \gamma$. Thus in congress $i$ a House member from state $j$ would receive credit for $\gamma h_{ij} + (1 - \gamma) s_{ij}$ of the conference pork vector $c_{ij}$, while the senators from state $j$ would jointly receive credit for $(1 - \gamma) h_{ij} + \gamma s_{ij}$. The table below provides illustrations of how the House can adjust its House pork vector to generate a conference pork of the most heavily earmarked accounts, although it was typically not explicitly codified. When we asked whether the House adopts the strategy of using excessive appropriations to stake out bargaining positions, the House staff member who describe the explicitly divided account informed us that this does not typically happen. One problem he noted with this strategy is that it creates a situation in which a member may lose an appropriation in conference for which he or she has already claimed credit. It is also worth noting that adding up the chamber specific vectors has the same consequences in our model as assuming the chambers split the difference on their allocation to each state.

\[\]In this example, we do not treat how Senate delegations share credit for allocations made to their state. The senate allocation identified in the example is consistent with the assumption that a senator up for re-election from a state at the end of a congress gets full credit for any allocation to her state in that congress.
vector that smooths payoffs for House members given various values $\gamma$.\footnote{The House best response allocates $h_j = \frac{3\gamma s_j - 3s_j + 1}{3\gamma}$ to the two states that have senators standing for re-election and $\frac{1}{3\gamma}$ to the state that does not have a senator standing for re-election and thus was allocated nothing by the Senate. The payoffs for the senate delegation are prior to any sharing within the delegation or WHYDFML discounting.}

There are three things to note about these allocations. First, the House is always able to identify a pork vector that counteracts the Senate’s strong WHYDFML-induced bias and allows House members to enjoy equal payoffs. Second, as we mentioned above, when credit is not shared across the chambers ($\gamma = 1$) the House need not anticipate or react to the Senate allocation because it is by definition irrelevant to the House payoffs. Finally, the total allocation to the states will be more lopsided when the chambers retain more credit for their pork vectors. This is most evident when considering the extreme values of the sharing parameter. If the members of each chamber retains all of the credit for the chamber’s allocations, then the bicameral allocations that states receive in the fattest congress in a cycle will be almost three times as large as what they receive in the leanest congress ($\frac{1}{3}$ vs. $\frac{5}{6}$). At the other extreme, when the two chambers share credit equally the allocation to states will not vary because the House must fully compensate for the Senate WHYDFML bias to ensure smooth payoffs to its members. Thus, the ability of the Senate to satisfy the WHYDFML preferences of its members declines as members of each chamber manage to claim credit for the allocation made by the other chamber.\footnote{We have not yet formally demonstrated that the Senate back-loading pork vector and the House best response to it are in equilibrium. To do so requires us to give consideration to the issue of how senators not up for reelection from a state claim credit for pork received by the state in those years they are not up. This adds a complication to our analysis that is not relevant to the empirical work to follow (it concerns intra-state issues for a senatorial delegation), so we defer resolving it here.}

In sum, our model adopts strong assumptions about the WHYDFML effect, the Senate electoral cycle, and a preference for universalism to develop one example of how contested-credit claiming might affect interchamber pork allocation. Below we develop hypotheses that apply the basic insights to the real-world appropriations process, taking into account

Table 1 here
the likely importance of agenda setters and other considerations that are excluded from our simple formal example.

2.3 Hypotheses

Our first hypothesis grows from our previous theoretical work on the Senate electoral cycle. The illustrative example above adopts a version of the whydfml effect that induces maximal back loading – to the point that the focal allocation in the Senate would give nothing to a state in which neither member is standing for re-election. Our other theoretical treatments (Shepsle, Dickson, Van Houweling 2004, Muthoo and Shepsle 2006) do not depend on such a strong recency bias and allow the possibility of a more muted cycle. Thus, cautioning that the degree of back loading depends on the degree and nature of the whydfml bias, our first hypothesis is:

Hypothesis 1 (Electoral Cycle): The Senate appropriations process will favor states with incumbent senators standing for reelection.

Our illustrative model explores the potential for the Senate electoral cycle to create bicameral tensions in the appropriations process. One conclusion we reach is that the incentive for the House to take into account actions of the Senate depends on the degree to which House members are able to claim credit for appropriations that are initiated in the Senate and vice-versa. Other factors not accounted for in our simple model, such as strength of the cycle itself and the vagaries of the process of bicameral reconciliation, might also inflate or deflate the reaction of the House. On the whole, however, we expect that if there is a cycle in Senate appropriations there will be countercycle evident in the House, so our second hypothesis is:

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17 Even voters with a recency bias might, for example, remember and punish their senators if they actually left the cupboard bare for an entire congress. It also does not account for the possibility that their is a lag between when congress makes an appropriation and when a member of congress can claim credit. For example, the credit a legislator gets from building a bridge may come when the bridge opens rather than when funds are allocated to begin construction. If this is the case, then we might see senators pursuing longer time-horizon projects earlier in their terms and instant-hits later. More generally, we might also see the House consistently allocating money to instant-hits and the senate taking a more measured approach.
Hypothesis 2 (Countercyclical Response): The House appropriations process will partially compensate for the cyclical biases inherent in the Senate process.

Our third hypothesis does not flow from our analysis directly, but instead from the Baron-Ferejohn framework that we adopted as the basis for our model of the bargaining process. In this setting players with agenda setting power can often gain a disproportionate share the dollar being divided. In the context of the appropriations process, agenda setting power rests primarily in the hands of Appropriations Committee members. Among this select group, subcommittee members, and particularly the ranking members of party subcommittee delegations, have even greater agenda prerogatives (Fenno 1973). Party leaders may also enjoy unusual agenda setting powers as they shepherd legislation through the legislative process. This leads to our third hypothesis:

Hypothesis 3 (Agenda Effect): The appropriations process in each chamber will favor states that have legislators in key agenda setting positions.

Not only do we expect agenda setting power to be an important feature of the appropriations process in each chamber, but we also think it has potential to create interesting bicameral tensions when legislators from different geographic units hold the power in the two chambers. Our simplified contested credit claiming model does not incorporate agenda-setting effects, but it is easy to conceive of how one chamber could preemptively respond to any known bias of the other chamber to reach a pre-determined allocation.

Hypothesis 4 (Bicameral Effect): The allocations in each chamber will compensate for the biases inherent in the allocations of the other chamber.

Another potential effect of agenda-setting power is reflected in the prospect that members of the majority party will exploit their numerical advantage, enabling them to take a disproportionate share of the discretionary pie. The appropriations process is notoriously
bipartisan, but it is possible that partisan comity has broken down in the increasingly polarized atmosphere in Congress in recent years. Our interviews were informative on this point. The majority and minority staff on Appropriations subcommittees in the Senate to whom we talked all claimed that the majority party did not regularly take a disproportionate share of appropriations. At the same time, they emphasized how the mechanics of the process are structured in very partisan ways: Democratic senators who desire an appropriation make the request to the Democratic delegation on the subcommittee of jurisdiction and similarly for Republicans. The partisan committee delegations, in turn, make decisions about whether to fund these requests independently. Thus, while we do not expect a bias towards the majority, the mechanics of the request process allow for the two parties to adopt different internal strategies for appropriating discretionary monies. Thus in the empirical analyses that follows we examine whether there is a majority bias or other partisan differences in pork barrel appropriations, at the same time that we test our four central hypotheses.

3 Data and Analysis

3.1 CAGW Data

Our empirical analysis is based on a data set of appropriations compiled by the Citizens Against Government Waste (CAGW). On its website the CAGW identifies pork that the Congress added to appropriations legislation for each year since 1995. The list is compiled by CAGW researchers who examine appropriations bills for the projects that meet at least one, and usually two, of seven criteria.¹⁸ In practice, most of the pork consists of projects not in the administration’s budget request and added by only one chamber or in conference. The CAGW identifies the state that benefits from each project (if possible) as well as the stage in the appropriations process where it was added. This allows us to evaluate our hypotheses

¹⁸These are: requested by only one chamber of Congress; not specifically authorized; not competitively awarded; not requested by the President; greatly exceeds the President’s budget request or the previous year’s funding; not the subject of congressional hearings; or serves only a local or special interest.
about how the appropriations process operates in the Senate as well as how the chambers strategically interact.

There are at least two possible concerns about these data. The first concern arises because the data set only includes projects that survived in the final bill. Thus it does not, for example, allow us to observe whether the House succeeds in removing projects that originated in the Senate bill and favored senators facing election. This cuts against our finding an in-cycle effect in the Senate and might also make it difficult to observe strategic interaction between the chambers – in this sense the data we are using offer a conservative test of our hypotheses.

The second concern arises from the fact that CAGW uses the initial presidential budget request as a baseline. If this budget request itself is shaped strategically, then we may be misestimating the total impact of biases in the congressional appropriations process on the distribution of pork across states. Despite these reservations, we believe the CAGW data is well-suited to addressing our chamber-specific hypotheses. Also, as we will discuss in more detail below, it allows us to conduct a time-series analysis that circumvents a variety of potential inferential problems inherent in assessing the influence of agenda setting power on appropriations.

We should be clear that we are not examining the full blown budget-authorization-appropriation cycle in Congress; that is a much larger task. Rather we want to see whether traces of the effects our theoretical analysis implies are evident in the data on appropriations. We are skimming the cream off of the appropriations process and this limits the generality of our empirical analysis. However, our goal is to assess a fundamental intuition about how the chambers interact in this restricted setting, with an eye toward the possibility that sim-

\[19\] If, on the one hand, the administration attempts to mute the cyclical and agenda setting biases in the two chambers with its initial budget request, then the CAGW data might capture an over-reaction from the two chambers. This could lead us to overestimate the strength of the chamber specific biases, but only because the administration is already responding to these very biases. If, on the other hand, the administration request seeks to curry favor with powerful institutional agenda agents, as well as to assist in-cycle senators, then the CAGW data could understate the chamber specific biases. Either way, the CAGW data are unlikely to lead us to infer that the cyclical or agenda setting effects exist if they do not.
ilar dynamics may be present in legislative contexts that are more complex, contingent, and difficult to analyze empirically.

Table 2 displays the average number per state in the period 1995-2004 of CAGW pork projects added by the House, the Senate, or in conference, and classified by Appropriations subcommittee jurisdiction. There are five subcommittees that the CAGW almost never identifies as adding particularized benefits to appropriations bills: District of Columbia, Foreign Operations, Homeland Security, Legislative, and Treasury. For the purposes of the remaining analysis we exclude these subcommittees. In the remaining nine jurisdictions the average number of CAGW coded additions per state from the Senate ranges from a low of 1 project per state for the Defense subcommittee to a high of 5.9 for the Veterans Affairs and Housing and Urban Development subcommittee. The range across jurisdictions is slightly wider in the House and in conference. One notable outlier in conference is the Labor & HHS jurisdiction which relies almost exclusively on the conference venue to earmark bills. Overall, this table suggests that it is necessary to control for fixed differences between jurisdictions in our subsequent analysis.

Table 2 here

Table 3 displays the average number of CAGW coded additions per subcommittee-state in each year in our data set. There is a strong trend over time in the average amount of pork per state. In the Senate, for example, the average number of projects per subcommittee for each state grows from less than one to around four over the ten-year period of analysis. The growth in the amount of CAGW pork added in the House and, particularly, in conference is even more substantial.\textsuperscript{20} The CAGW claims that this trend is due to an increase the number of projects added to bills that meet their criteria rather than a change in data gathering criteria or methods. This is broadly consistent with our interviews and press

\textsuperscript{20}The growth of CAGW pork added in conference might be the consequence of the trend of bundling bills from multiple jurisdictions into omnibus appropriations bills. Our interviews suggest that this offers more opportunities for altering bills in ways that might not be possible if they had to stand alone after conference.
accounts of a notable increase in appropriations earmarks. Regardless of its cause, however, we will need to account for the strong trend in the data in our statistical models.

Table 3 here

3.2 Tabular Analysis of the Electoral Cycle

We examine the effects of the electoral cycle using a bivariate analysis before adopting an analytical framework intended to estimate and control for a variety of institutional factors. The constitutionally defined electoral cycle is largely exogenous to the fiscal needs of states and the institutional positions their representatives hold.\footnote{The place of a state in its electoral cycle in a particular year is clearly not caused by the number of appropriations the state receives. However, the choices of incumbents whose terms expire about whether to seek re-election or retire might be partly determined by their ability (due to committee positions, hard work, etc.) to secure their electoral futures through appropriations (Hall and Van Houweling 1995). This selection effect could lead us to overstate the advantages that accrue to states in years when their incumbents stand for re-election. We cannot rule out the possibility of this bias, although it is probably small because appropriations success should have only a marginal effect on career decisions. One way to avoid this problem would be to compare CAGW additions to states based solely on their place in the electoral cycle rather than based on whether they are in-cycle and have an incumbent that has chosen to seek re-election. Our interviews suggest, however, that this would understate the advantages of the electoral cycle because appropriators sometimes reduce spending on states with retiring incumbents.} This allows us to use a simple tabular analysis to infer the effect that being "in-cycle", i.e. having an incumbent seeking reelection, has on a state’s ability to secure projects. As Table 4 shows, states that have an incumbent of either party seeking reelection do better in the Senate appropriations process than states that do not. The advantage amounts to an average increase of 20% (2.27 to 2.74) in the amount of CAGW pork per subcommittee in the years prior to an election and of 34% (2.26 to 3.03) in election years. The House displays the opposite bias, giving on average 12% (2.36 to 2.08) fewer pieces of pork to states with incumbent senators running for reelection in the years prior to an election and 15% (2.79 to 2.38) fewer pieces in election years, although neither of these differences reaches standard thresholds of statistical significance. Similar cyclical patterns are not evident in conference. Thus, we find a bias of the Senate that is consistent with our Electoral Cycle hypothesis and a pattern in the House consistent
with our *Countercyclical Response*, which reduces by almost half the number of additional appropriations that states enjoy when Senate incumbents are running for reelection.

Table 4 here

Table 5 presents the average cost of the additions identified by CAGW. The overall patterns are very similar with states that have Senate incumbents standing for re-election receiving more than states that do not, and with the House taking some measure of compensatory action. We choose to focus the rest of our analysis on the number of CAGW projects added at each stage rather than their costs. While the costs are of inherent interest, we are concerned about the undue influence of very large projects that are certain to catch the eye of CAGW coders and might obscure more regular patterns. Crespin and Finocchiaro (2006) offer a careful analysis of CAGW project costs, and find that states represented by senators of the majority party fare better than others. As they find, and we will discuss later, this same pattern does not hold as clearly with respect to the number CAGW projects states secure. Overall, we believe that the number of projects rather than their cost is the appropriate metric with which to assess our hypotheses about electoral-cycle patterns in the Senate and strategic interaction between the chambers.

Table 5 here

Before proceeding to a more complex analysis, it is worth examining the consequences of the Senate electoral cycle by subcommittee jurisdiction. The cells in Table 6 display the percentage difference in the average number of CAGW projects added between states that had incumbent senators standing for reelection and states that did not. For example, the upper leftmost cell indicates that in non-election years, in the Agriculture jurisdiction, the Senate gave on average 51% more CAGW projects to states that had incumbent senators standing for reelection in the electoral cycle than states that did not. The upper rightmost cell, by contrast, indicates that in election years the House gave on average 27% fewer agricultural
pork projects to states that had sitting senators standing for election than those that did not. In general, the data presented in the table confirms that the electoral cycle influences the appropriations process in both chambers, with the Senate adding more projects for states that have a senator seeking reelection and the House partially counteracting this bias. The only notable exception is the Labor and HHS jurisdiction, which, in the years preceding elections approved fewer projects for states of incumbent senators that were running in the election than other states. However, the Labor and HHS subcommittees in both chambers typically wait until conference to earmark, and this exception is based primarily on data from a single cycle in which the committee broke this pattern in the Senate. Otherwise the patterns of thrust and counter-thrust by the Senate and House across all of the jurisdictions are remarkably consistent, although they often do not reach standard levels of statistical significance in each individual jurisdiction.

Table 6 here

In sum, the lottery-determined placement of states in the Senate electoral cycle allows us to conclude with reasonable degree of statistical certainty that there is a causal relationship between a state having a Senate incumbent standing for re-election and the level of CAGW appropriations that the state receives from the Senate. The countercyclical allocations we observe in the House have two implications. First, they help dismiss concerns that the patterns in the Senate are due to a chance coincidence of Senate electoral cycles with the appropriation needs and desires of states. If these patterns were due to chance characteristics of the in-cycle states then we would expect them to be echoed in the House rather than to disappear or reverse. Second, they are consistent with our theoretical expectation that the House should respond to the cyclical biases in the Senate by making up some but not all of the differences across states. In the next section, we develop a multi-variate model to further investigate the consequences of additional variables that are not clearly exogenous with respect to the appropriations process.
3.3 Statistical Model

The time-series structure of our data allow us to control for unobserved characteristics of states and estimate the causal effects of electoral cycle and institutional variables. There is an observation for each subcommittee-state-year. Thus, the data set initially contains 6500 observations (13 subcommittees x 50 states x 10 years), 4700 of which remain when we eliminate jurisdictions that almost never add CAGW identified pork to appropriations bills. We estimate models with fixed effects for state-subcommittee pairs so our coefficient estimates are identified exclusively by variation within states and particular jurisdictions. This is essential for assessing the effects of potentially endogenous institutional variables. For example, without the fixed effects we might overestimate the value of subcommittee membership if legislators seek assignment to jurisdictions that already appropriate disproportionately to the state they represent (Shepsle 1978).

The dependent variables, CAGW pork additions for each chamber, are integer counts. In the case of the Senate, this variable ranges from zero to seventy-four additions from a single subcommittee to a state in a year. The conditional variance of CAGW additions for each venue is likely to be larger than the conditional mean, causing the standard Poisson count model to estimate artificially small standard errors. We instead adopt the more flexible negative binomial model with fixed effects (Wooldridge 2002, Allison and Waterman 2002).

The independent variables in the model include the now familiar electoral cycle variables. We also add a measure of whether a state has a senator assigned to the Appropriations

\footnote{Even with state-subcommittee fixed effects we cannot answer the question of how much membership on a particular subcommittee would benefit the average member. For instance, assignment to the DC subcommittee probably would not bring additional pork to the home state of a South Dakota Senator. But we can accurately estimate how much the average state gains (or loses) in the average jurisdiction when its Senator is assigned to (or departs from) a subcommittee of jurisdiction.}

\footnote{We estimated two models. The results we present are from a negative binomial with dummy variables to account for the fixed effects associated with each state-jurisdiction pair and robust standard errors. This is the most straightforward approach suggested by Allison and Waterman (2002) to address the fact that the conditional fixed-effects negative binomial model implemented in Stata is not a true fixed effects method. However, we also estimated our model using this latter method and find that our central results hold regardless of which approach we take. In both settings we were easily able to reject the standard poission dispersion assumption in favor of the conclusion that the dependent variable is overdispersed.}
Committee or the subcommittee of jurisdiction. Finally, we account for relevant agenda setting/institutional leadership variables in the Senate: whether a state has a senator serving as a party floor leader or chair or ranking member of the Appropriations Committee or one of its subcommittees. In the initial model that we report, we further divide these Senate institutional variables by majority status to examine whether such distinctions are important. We also include dummy variables to control for whether states have a unified majority delegation or a split delegation in the Senate, leaving states with a unified minority delegation as the reference category. Finally, we include variables that record how many members of a state’s delegation hold important institutional positions in the House of Representatives.

Table 7 presents four separate models of CAGW pork. The first model for the Senate allows us to assess whether the effects of the Senate institutional and electoral variables in the model depend on whether a senator belongs the majority party. The staff we interviewed claimed that neither Democratic nor Republican majorities took a disproportionate share of appropriations projects, and the model generally supports this claim, as the dummy variables for majority and split delegations are small and statistically insignificant. When we discuss the additional models we will offer a substantive interpretation of the estimates, but for now we are simply interested examining what variables we should include in our final model. The estimates indicate that senators who hold any of the institutional positions bring their states advantages in the appropriations process, although this finding falls short of statistical significance for the party leader and subcommittee member variables (Of course, subcommittee members are also full committee members, so this result simply indicates that there is no significant bump associated with being on the relevant subcommittee, unless the senator is senior.) However, judging from the statistically insignificant coefficients on nearly all of the majority party interaction terms, this effect seems to hold regardless of whether

\[^{24}\text{See Crespin and Finnichiaro (2006) for an analysis that suggests the majority party does enjoy a disproportionate share of the dollar value of CAGW appropriations. One difficulty with assessing this claim is that the effect of being the majority party is identified in our model by the fact that the Republican party held the Senate majority from 1995-2000, lost it to the Democratic party in 2001-2002, and regained it in the 2002 election. One could reach more certain conclusions either way if there were more reversals of which party held majority status.}\]
the senators have majority status.25

The model generally confirms out tabular evidence in favor of the Electoral Cycle hypothesis, although the consequences of the electoral cycle for Senate pork allocation is unexpectedly mediated by majority status. The estimates indicate that states get a statistically significant increase in CAGW projects in both appropriations cycles—election year and the year before—in a Congress when they have a majority party senator standing for re-election in the Congress. The estimated substantive consequence for these states is that they receive around 14% more pork in election years and 10% more in the years prior to elections than they would have received if they did not have senators standing for re-election.26 The gains are much smaller for states with senators from the minority party standing for re-election (8% and 2% respectively) and fall short of statistical significance.27

Neither our theoretical account or interviews led us to anticipate this finding. In fact, 11 of the 14 Senate staff members we interviewed, Democrats and Republicans alike, volunteered that they prioritized requests from members in cycle.28 One could conjecture that the majority party is willing to share earmarks with the minority, but is not willing to see the minority exploit its allocation to contribute to the re-election efforts of members of its caucus standing for re-election in a particular cycle. There is reason to be cautious about this interpretation, however, as our interview evidence suggests that in the Senate the majority party does not interfere with the earmarking decisions of the minority.29

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25Three of the majority status interaction variables * committee position interaction variables are negative but fall short of statistical significance. The one exception is the interaction between majority status and membership on the appropriations committee, which is positive and statistically significant. However, the interaction only adds around 30% to magnitude of the main effect.

26The negative binomial coefficients do not have an intuitive interpretation. The substantive effects we report are calculated by transforming the coefficients into incidence rate ratios.

27When we estimate the models in a way that mimics the tabular analysis by combining all senators running for re-election, we find that the variable has a statistically significant (p<.05 one-tailed) effect.

28In the House, where all members are up each cycle, our interview evidence suggests that the parties try to favor members who are electorally vulnerable. For example, one House Republican staffer reported to us that House leadership maintained a "Retain Our Majority Party (ROMP)" list of all endangered members for whom favorable treatment was expected from the committee. The state-level structure of our data does not allow us to test this hypothesis about the effects of electoral politics on House appropriations.

29In the House, in contrast, one senior Republican staff member noted that the Republican leadership at times pressured the committee to reduce funding for vulnerable Democrats, but that the committee resisted these efforts.
Further caution is warranted because, as we noted above, the effect of being the majority party is identified in our model by one fleeting period in which the Democrats held a Senate majority. Thus, if we estimate the model with variables indicating the party of senators rather than their majority status we arrive at nearly identical results – there seems to be a strong cycle for states with Republican senators and a weak cycle for states with Democratic senators. This difference could be due to the fact that either the Democrats were more often in the minority or that as a party they gave less priority to the electoral cycle in allocating their appropriations. The second account is feasible because our interviews indicate that the actual process of securing earmarks is explicitly partisan, with Democrats working through Democrats on the committee and Republicans working through Republicans. Thus, even though the appropriations staff members in both parties spontaneously mentioned that they prioritize "in-cycle" senators, it is certainly possible that one party places more emphasis on this priority than the other. Despite this ambiguity, we retain the majority/minority distinction in the electoral cycle variables, while collapsing the other partisan and institutional positions that had much more muted effects in the statistical models that follow.

The dependent variables in the additional models presented in Table 7 are CAGW additions in the Senate, House, and Conference. These streamlined models are intended to allow us to assess our hypotheses about how each chamber will respond to the biases of the other. Before turning to this particular concern, however, it is worth noting that the models for all three venues confirm our Agenda Effect hypothesis. The variables House agenda setter and Senate agenda setter are the sum of the disaggregated committee and subcommittee variables in the initial model for the Senate. The models of the House and Senate indicate that when a member of a state’s delegation transitions into one of these agenda setting positions in a chamber that chamber allocates significantly more pork to the state. The model for the House estimates a 19% increase in the number of CAGW projects for each additional member holding one of the specified positions and the model for the Senate estimates an analogous gain of around 44%. The larger marginal effect in the Senate is probably the
result of the fact that Senate delegations cannot hold as many positions as House delegations given their size and, relatedly, the number of agenda-setting positions in the Senate.

Our estimates also imply that when a state has a member of the Senate leadership it enjoys 44% more CAGW projects than it otherwise would, while an analogous leadership effect is not present in the House. This agenda setting advantage is also evident conference, where our estimates indicate that for each additional agenda setter a state has in either chamber the state secures about 20% more pork than it otherwise would. All of these patterns seem sensible given the key role that committee and subcommittee members typically play in their chambers as well as in conference (Shepsle and Weingast, 1987). It is also worth noting that these findings are consistent with our interview evidence. Well over half of the 14 staff members we spoke with volunteered that they prioritized earmark requests from members of the Appropriations Committee or party leadership. As one Senate Democratic staffer noted when discussing this, “Not all members are created equal.” However, we emphasize that our modeling strategy minimizes an obvious inferential problem of alternative approaches to assessing this conventional wisdom. By using state-subcommittee fixed effects these estimates avoid the inferential problems that could be caused by senators self-selecting onto subcommittees that already appropriate substantial monies to their states. Our estimates are identified by transitions in and out of institutional leadership positions and thereby isolate their causal effects on appropriations.

The models provide mixed but supportive evidence concerning our more novel Bicameral Response hypothesis. The House, and to some extent the Senate, appear to act strategically to blunt the biases of the other chamber. The most supportive evidence is provided by the model of House allocations. Judging from the estimates the House gives 10% less pork to a state for each additional increment of agenda power the state has in the Senate (p<.025), and 28% (p<.10) less pork if the state is represented by a party leader in the Senate. These reactions fall short of fully compensating for the strong Senate biases we identified, but they are consistent with what we would expect if the House shares some credit for Senate actions.
Our model of Senate appropriations also indicates that the Senate is somewhat less generous to states with agenda setting power in the House, but the effect does not reach standard levels of statistical significance. Interestingly, our interviews also led us to expect that the House might be more likely to engage in this sort of strategic behavior. One Senate Democratic staffer claimed that the House routinely provided no funding for projects important to the chairman and ranking member of the subcommittee under his jurisdiction. This practice was also confirmed by a House staffer from a different jurisdiction, who volunteered that the committee would “nick and cut” funding for Senate chairmen.\(^\text{30}\)

Our *Countercyclical Response* hypothesis is not supported by the full fixed-effects House model, which does not estimate that the House gives less to states when they have senators standing for re-election. One alternative approach is to estimate the model with subcommittee jurisdiction and year fixed-effects, while controlling for cross-state heterogeneity with state population rather than fixed-effects. Using this method, the model estimates that the House provides fewer earmarks to the states of senators standing for re-election. As with the tabular analysis, this is consistent with our Countercyclical Response hypothesis, but the estimates do reach standard levels of statistical significance. However, they do suggest that the fully saturated model might conceal this small but persistent counter-cyclical tendency. It is also noteworthy that, when we use this more limited fixed-effects estimation strategy, all of the findings concerning the electoral cycle, agenda setting, bicameral response effects we find in our full fixed-effects model persist and some become stronger.

Combined with other evidence this leaves the verdict on the regularity of a countercyclical House response positive, but the case is not overwhelming. Our staff interviews provided some anecdotal support for this hypothesis. For example, a House Republican subcommittee

\(^\text{30}\)Theoretically this is unexpected, because historically (and through most of the period that we analyze) the Senate acted second. One might anticipate that this would give the chamber the strategic advantage of knowing the House allocations before it acts, and fully compensating for the House biases evident in the bill. This hypothetical advantage was not mentioned in the interviews, and does not seem to be born out in our data. One possibility is that individual Senators have more parliamentary tools (e.g. holds) to fight reductions in their Senate allocations when their states happen to be advantaged in the House process than House members have in the opposite situation.
staffer observed that in a recent appropriations cycle, House appropriators knew Patty Murray, the Democratic senator from Washington, was up for reelection, so the House funded fewer Washington projects in anticipation that the Senate would be more than helpful to her. The tabular evidence provides further qualified support for a small but regular House response to the cyclical biases of the Senate. This inference is reasonably reliable because it leverages the largely exogenous variation in whether a state has a senator standing for re-election in any particular year. It is not particularly surprising that the highly saturated fixed-effects model does not bear out this weak but consistent finding; the model does cast some doubt on the robustness of this effect, however. Overall, then models offer modest evidence that the chambers partially compensate for the biases of their counterparts, and that the compensation is more evident for the more dramatic agenda setting biases.

4 Conclusion

Our analysis provides strong though qualified support for our Electoral Cycle hypothesis that the electoral cycle shapes some aspects of the Senate appropriations process. The tabular analysis relies on the exogenous electoral cycle to conclude that the Senate allocates about 34% more CAGW projects to states in years when they have an incumbent senator standing for election. Our statistical model for Senate appropriations supports this conclusion, but adds the caveat that it is mainly states with in-cycle majority party senators that receive more CAGW pork than they otherwise would. This cyclical pattern is less evident for states with minority senators seeking reelection. This partisan distinction raises the possibility that the Republicans are exploiting their majority to provide electoral assistance to their incumbents. Our interviews and further analysis suggest, however, that the difference may be due to the independent internal decision processes of the two parties rather than inter-party dynamics.

The Countercyclical Response hypothesis receives some support from our tabular analy-
sis which suggests that for nearly every jurisdiction the House appropriates a somewhat smaller number of projects to states that have senators standing for re-election. One might suspect that these cyclical pattern simply result from senators being more active in seeking appropriations in election years and their counterparts in the House taking note of this. Our interviews suggest otherwise. Subcommittee staff relate that senators actively push for earmarked pork-barrel projects all the time because the marginal cost of doing so is quite small with the existing staff apparatus and routinized request process. However a majority of appropriations subcommittee members told us that they differentiate whose projects will get support on the basis of who is “in cycle.”

One Senate subcommittee staff director, for example, reported that the staffs of senators who are "out of cycle" will often complain about not receiving a marginal earmark, but will typically accept the explanation that their requests were denied in order to prioritize those "in-cycle." He explained that there were some Senate offices that were well known for nevertheless elevating their complaints to the "member-to-member" (i.e. senator to ranking Senate subcommittee member) level. In his jurisdiction the subcommittee staff tried to anticipate which Senate offices would take this route and "shorted" them even further in the initial mark-up so the ranking member would have something to offer when the inevitable complaint came. Overall, this process makes requesting appropriations earmarks easy, putting the onus of evaluating their relative policy and political merits across members on the subcommittees and their staff. This conveniently allows senators to claim credit publicly and continuously for going to bat for home-state constituents, while actually delivering at the right time—in the run-up to election.

The *Agenda Effect* hypothesis, that states with senators who hold institutional agenda setting positions are advantaged in the appropriations process, is also supported by our

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31Staff on each Appropriations subcommittee routinely survey members early in the process, encouraging them to submit project requests in a timely manner. In the House, the committee has instituted an automated process with a web-form that Representatives’ offices complete online. In both chambers, members typically submit a substantially longer list of requests than can be funded. This allows them to inform their constituents and other interested parties that they have made formal request. However, the subcommittees require the offices to prioritize their serious requests. These prioritizations are closely guarded secrets.
analysis. The effect of holding key positions in the appropriations process appears to be fairly substantial and does not depend on the party of the senator holding the position. This is not a novel hypothesis or finding, but our estimation strategy confirms that it is not caused by legislators simply seeking and receiving assignment to appropriations subcommittees that would always favor their states. Instead, there appears to be a real and measurable causal impact of holding an agenda setting position in the appropriations process. The *Bicameral Response* hypotheses, that the chambers will act strategically to blunt the tendencies of each other, receives qualified support. The compensatory tendency is most apparent when examining how each chamber treats states that have legislators in key agenda setting roles in the other chamber. The House, in particular, is quite consistent in adding less pork for states that are institutionally advantaged in the Senate process.

Put together our theoretical and empirical analyses suggest that the chamber-specific appropriations processes have marked biases that echo across the Capitol. The interplay between the electoral motive of legislators and the WHYDFML preferences of voters pulls Senate appropriations away from the smooth flow that members of the House would prefer. The good fortune of having representatives or senators on committees of jurisdiction also gives states a substantial advantage in the appropriations process while costing other less fortunate states and distorting the flow of federal outlays. Yet our theoretical model suggests that the bicameral structure of the legislature blunts these chamber-specific tendencies, and our empirical analysis provides qualified support for this hypothesis.

Our study is of course restricted to the most malleable of appropriations—those for earmarks and other relatively minor discretionary programs. One reason to care about these small-beer spending measures is that they have been exploding over the past decade, as seen in our data and in other indicators. One of these indicators that we encountered face-to-face is the number of former appropriations staff (a few of whom we interviewed) that now make a healthy living in a cottage industry that hardly existed 15 years ago—lobbying for earmarks. Although most of the money the government spends is not yet within the reach
of those who seek earmarks, they are managing to claim a growing share of programmatic, discretionary spending. To hear the more veteran Appropriations staffers tell it, the part of the sky they hold up is now falling. However, our analysis also uncovers compensating forces at work that may have more general implications for policy produced by bicameral legislatures. One insight from our theoretical analysis is that these strategic interactions and their consequences should depend substantially on the degree to which credit for legislative products is shared across the two chambers.

From a modeling perspective, we introduce the concept of contested credit claiming to a model with simple, and admittedly heavy-handed, assumptions. We anticipate that it will prove important as we move toward examining more complex theoretical settings. It is remarkable that so little progress has been made in theoretically unpacking and modeling (as well as empirically examining) the concept of credit claiming given the central role it plays in our understanding legislator incentives for individual and collective action and the institutions that are shaped by these incentives. The empirical payoffs from our preliminary efforts to elaborate this concept suggest that it potentially provides broad and fruitful line of research.

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Table 1. Optimal House Responses to Senate Backloading

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Table 2. CAGW Pork by Appropriations Subcommittee

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<td>Legislative</td>
<td>0.00</td>
<td>0.01</td>
<td>0.01</td>
<td>0.02</td>
</tr>
<tr>
<td>Military Construction</td>
<td>1.42</td>
<td>1.33</td>
<td>0.08</td>
<td>2.83</td>
</tr>
<tr>
<td>Transportation</td>
<td>4.65</td>
<td>6.11</td>
<td>5.44</td>
<td>16.20</td>
</tr>
<tr>
<td>Treasury</td>
<td>0.15</td>
<td>0.08</td>
<td>0.05</td>
<td>0.28</td>
</tr>
<tr>
<td>V.A. &amp; H.U.D</td>
<td>5.90</td>
<td>6.99</td>
<td>5.39</td>
<td>18.28</td>
</tr>
</tbody>
</table>

Note: The averages do not include pork that CAGW could not be assign to a single state.
Table 3. CAGW Pork by Year

<table>
<thead>
<tr>
<th>Year</th>
<th>Senate</th>
<th>House</th>
<th>Conf.</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>0.72</td>
<td>0.60</td>
<td>0.07</td>
<td>1.39</td>
</tr>
<tr>
<td>1996</td>
<td>0.67</td>
<td>0.70</td>
<td>0.14</td>
<td>1.51</td>
</tr>
<tr>
<td>1997</td>
<td>0.88</td>
<td>0.98</td>
<td>0.32</td>
<td>2.18</td>
</tr>
<tr>
<td>1998</td>
<td>1.35</td>
<td>0.96</td>
<td>0.90</td>
<td>3.21</td>
</tr>
<tr>
<td>1999</td>
<td>1.62</td>
<td>1.51</td>
<td>1.79</td>
<td>4.92</td>
</tr>
<tr>
<td>2000</td>
<td>3.65</td>
<td>1.52</td>
<td>3.81</td>
<td>8.98</td>
</tr>
<tr>
<td>2001</td>
<td>4.40</td>
<td>2.48</td>
<td>4.67</td>
<td>11.55</td>
</tr>
<tr>
<td>2002</td>
<td>3.83</td>
<td>4.22</td>
<td>5.17</td>
<td>13.22</td>
</tr>
<tr>
<td>2003</td>
<td>4.43</td>
<td>5.14</td>
<td>6.65</td>
<td>16.22</td>
</tr>
<tr>
<td>2004</td>
<td>3.93</td>
<td>5.80</td>
<td>12.80</td>
<td>22.53</td>
</tr>
</tbody>
</table>

Note: Averages exclude subcommittees that almost never add CAGW Pork (D.C., Foreign Ops., Homeland Security, Legislative, and Treasury)

Table 4: CAGW Pork and the Electoral Cycle

Average # of additions per state by subcommittee (1995-2004)

<table>
<thead>
<tr>
<th>Incumbent Running</th>
<th>Non-Election Years</th>
<th>Election Years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Senate</td>
<td>House</td>
</tr>
<tr>
<td>No</td>
<td>2.27</td>
<td>2.36</td>
</tr>
<tr>
<td>Yes</td>
<td>2.74</td>
<td>2.08</td>
</tr>
<tr>
<td>Difference</td>
<td>0.47</td>
<td>* -0.28</td>
</tr>
</tbody>
</table>

Note: Averages exclude subcommittees that almost never add CAGW Pork (D.C., Foreign Ops., Homeland Security, Legislative, and Treasury)

*p < .025 two-sided, ** p < .01 two-sided
Table 5: Cost of CAGW Pork and the Electoral Cycle

Average cost of additions per state by subcommittee (1995-2004)

<table>
<thead>
<tr>
<th>Incumbent Running</th>
<th>Senate</th>
<th>House</th>
<th>Conf.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Election Years No</td>
<td>$4,931,682</td>
<td>3,699,010</td>
<td>2,170,605</td>
</tr>
<tr>
<td>Yes</td>
<td>5,747,906</td>
<td>3,203,602</td>
<td>2,039,741</td>
</tr>
<tr>
<td>Difference</td>
<td>816,224</td>
<td>-495,408</td>
<td>-130,864</td>
</tr>
<tr>
<td>Election Years</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>4,339,728</td>
<td>3,828,880</td>
<td>3,649,523</td>
</tr>
<tr>
<td>Yes</td>
<td>5,951,082</td>
<td>3,449,465</td>
<td>3,671,384</td>
</tr>
<tr>
<td>Difference</td>
<td>1,611,354</td>
<td>*-379,415</td>
<td>21,861</td>
</tr>
</tbody>
</table>

Note: Averages exclude subcommittees that almost never add CAGW Pork (D.C., Foreign Ops., Homeland Security, Treasury, and Legislative)

*p<.05 two-sided

Table 6. Difference in CAGW Pork between States with Senate Incumbents Seeking Reelection vs. States without

<table>
<thead>
<tr>
<th></th>
<th>Senate</th>
<th>House</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Non-Election</td>
<td>Election</td>
</tr>
<tr>
<td></td>
<td>Years</td>
<td>Years</td>
</tr>
<tr>
<td>Agriculture</td>
<td>51.0% **</td>
<td>44.4% *</td>
</tr>
<tr>
<td>Commerce</td>
<td>8.3%</td>
<td>30.4%</td>
</tr>
<tr>
<td>Defense</td>
<td>38.3%</td>
<td>106.1% *</td>
</tr>
<tr>
<td>Energy and Water</td>
<td>27.0%</td>
<td>26.5%</td>
</tr>
<tr>
<td>Interior</td>
<td>29.0%</td>
<td>19.9%</td>
</tr>
<tr>
<td>Labor and HHS</td>
<td>-28.7%</td>
<td>57.7%</td>
</tr>
<tr>
<td>Military Construction</td>
<td>27.3% *</td>
<td>20.8%</td>
</tr>
<tr>
<td>Transportation</td>
<td>20.0%</td>
<td>24.4%</td>
</tr>
<tr>
<td>VA and HUD</td>
<td>21.5%</td>
<td>38.2% **</td>
</tr>
</tbody>
</table>

Note: The Labor and HHS subcommittee typically earmarks in conference. However, it is included in this table because there are two years in which the substantial earmarks were added in the Senate.

*p<.10 two-sided, **p<.05 two-sided
Table 7: Models of CAGW Pork added in the Senate, House, and Conference

<table>
<thead>
<tr>
<th></th>
<th>Senate 1</th>
<th>Senate 2</th>
<th>House</th>
<th>Conference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>coeff.</td>
<td>coeff.</td>
<td>coeff.</td>
<td>coeff.</td>
</tr>
<tr>
<td>Majority seek elec. year</td>
<td>0.13</td>
<td>0.12</td>
<td>0.03</td>
<td>-0.02</td>
</tr>
<tr>
<td>Minority seek elec. year</td>
<td>0.07</td>
<td>0.06</td>
<td>0.05</td>
<td>-0.04</td>
</tr>
<tr>
<td>Majority seek off year</td>
<td>0.10</td>
<td>0.08</td>
<td>0.02</td>
<td>-0.06</td>
</tr>
<tr>
<td>Minority seek off year</td>
<td>0.02</td>
<td>0.00</td>
<td>0.00</td>
<td>-0.05</td>
</tr>
<tr>
<td>Senate party leader</td>
<td>0.26</td>
<td>0.37</td>
<td>-0.32</td>
<td>0.14</td>
</tr>
<tr>
<td>Majority leader</td>
<td>0.12</td>
<td>0.89</td>
<td>-1.76</td>
<td>0.66</td>
</tr>
<tr>
<td>Senate agenda setter</td>
<td>0.37</td>
<td>9.50</td>
<td>-0.11</td>
<td>-2.42</td>
</tr>
<tr>
<td>Subcommitte member</td>
<td>0.14</td>
<td>1.36</td>
<td>-0.03</td>
<td>0.20</td>
</tr>
<tr>
<td>Maj. subcomm. member</td>
<td>-0.03</td>
<td>-0.03</td>
<td>-0.11</td>
<td>3.05</td>
</tr>
<tr>
<td>Subcommittee senior</td>
<td>0.82</td>
<td>0.00</td>
<td>0.00</td>
<td>-0.05</td>
</tr>
<tr>
<td>Appropriations member</td>
<td>0.33</td>
<td>0.00</td>
<td>0.18</td>
<td>-0.05</td>
</tr>
<tr>
<td>Maj. Appropriations member</td>
<td>0.14</td>
<td>0.14</td>
<td>0.18</td>
<td>0.19</td>
</tr>
<tr>
<td>Appropriations senior</td>
<td>0.98</td>
<td>0.98</td>
<td>6.48</td>
<td>5.01</td>
</tr>
<tr>
<td>Maj. Appropriations senior</td>
<td>-0.06</td>
<td>-0.06</td>
<td>6.48</td>
<td>5.01</td>
</tr>
<tr>
<td>House leader</td>
<td>0.03</td>
<td>0.01</td>
<td>0.01</td>
<td>-0.06</td>
</tr>
<tr>
<td>House agenda setter</td>
<td>-0.03</td>
<td>-0.03</td>
<td>0.18</td>
<td>-0.05</td>
</tr>
<tr>
<td>Majority delegation</td>
<td>0.01</td>
<td>0.08</td>
<td>0.01</td>
<td>-0.06</td>
</tr>
<tr>
<td>Split delegation</td>
<td>0.00</td>
<td>0.01</td>
<td>0.01</td>
<td>-0.06</td>
</tr>
</tbody>
</table>

|                                |          |          |       |
| n                               | 4700     | 4700     | 4700  |
| log likelihood                  | -6961    | -6978.4  | -5537 |

Note: The dependent variable is the number of projects the Senate added to appropriations bills for each subcommitte-state-year. The estimates are from a negative binomial regression model with fixed effects for each subcommitte-state pair. The panel identification variable was defined by state-subcommitte pairs. The regressions also included fixed-effects for fy1996 - fy2004.

* p<.10, ** p<.05, ***p<.01