Party Discipline and Government Spending: Theory and Evidence*

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Abstract

This paper studies the relationship between party discipline and discretionary spending with theory and data. We propose a theoretical model in which a politician faces a conflict between her constituents' interests and the party line. Party loyalty is electorally costly for the politician and is therefore rewarded by the party leader with greater amounts of discretionary spending allocated to the politician's constituency. The more intense the conflict between the voters' and the party's interests, the more grants the district receives. Using panel data on party discipline in the U.S. House of Representatives and federal grants to congressional districts between 1984 and 2010, we provide evidence that districts represented by loyal legislators receive greater amounts of discretionary spending. This effect holds only for legislators in the majority party, who may enjoy a legislative advantage. Districts represented by loyal legislators who face a greater conflict of interest between following the party and serving their constituents (e.g., Republican legislators representing liberal-leaning districts) are rewarded to a larger extent.

JEL classification: D72, H41.

Keywords: Party discipline; discretionary spending; party line.

*The authors are grateful to James Snyder, seminar and conference participants at several institutions for helpful comments and suggestions, and Lutz Brückner and Alina Gaisbauer for excellent research assistance. Zudenkova acknowledges financial support from Karin-Islinger-Stiftung. An earlier–and very different–version of this paper circulated under the title "Party Discipline in Congress." The usual disclaimer applies.

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1 Introduction

Party discipline commonly refers to the ability of party leaders to influence their party members to support the party line on the floor of the legislature.[1] In modern democracies, party discipline is often difficult to achieve because legislators have to respond to local needs that are sometimes not aligned with the party's interests. Excessive party loyalty, therefore, may be electorally costly for legislators. To soften electoral punishment and foster party discipline, party leaders may reward loyalty. Such rewards can include "favorable committee assignments and leadership positions, campaign funds, district visits by party notables, federal projects targeted to a member's district, expedited treatment for a member's favorite bills, and invitations to serve as speaker pro tem" (Snyder and Groseclose 2000, p. 194). Narrowly targeted projects may be particularly effective in influencing legislators' voting behavior. In 1964, for instance, American President Lyndon Johnson persuaded Arizona Democrat Carl Hayden to vote in favor of the Civil Rights Act in exchange for the Central Arizona Water Project that Hayden's constituents demanded. Some argue that "without a little pork, Johnson would have been unable to obtain his [Hayden's] support."[2]

Although several studies have identified party discipline, a great deal of uncertainty remains regarding the relationship between party discipline and the allocation of discretionary spending.[3] The present paper contributes to this line of research by proposing and testing empirically a novel theory that identifies the condition under which party discipline is likely to influence government spending. In our model, voters condition a politician's reelection on the policy outcome she decides to implement, as well as on the amount of funds she attracts for her constituency. If the politician (who is purely office-motivated) follows the party line instead of voters' interests, the potential electoral punishment can be partly (or totally) offset by larger spending targeted to her constituency. The party leader, who is in charge of allocating government spending, offers a contract to the politician conditioning the allocation of spending on the politician's loyalty to the party line. In this context, the closer the policy outcome to the party line, the more loyal the politician is. Our model predicts that higher levels of party loyalty are associated with greater amounts of targeted spending. Most importantly, this effect is greater the more intense the conflict of interest between the party leader's preferences and the voters' interests.

To investigate empirically the relationship between party discipline and discretionary

[1] Henceforth, we use the terms party discipline and party loyalty interchangeably.

[2] http://edition.cnn.com/2014/05/12/opinion/zelizer-the-case-for-earmarks/

[3] Discretionary spending refers to non-formula grants that have a partisan bias and are targeted to certain constituencies. Henceforth, we use the terms discretionary spending and pork-barrel spending interchangeably.

spending, we use a panel data set of congressional districts in the United States that includes information on representation and party discipline in the House of Representatives and federal grants between 1984 and 2010. We focus on party loyalty in legislative voting and use as a measure of discipline the *party unity scores* published yearly by *Congressional Quarterly*. These scores are based on roll-call votes in which the majority of Democrats oppose the majority of Republicans, also known as unity votes. Unity scores are calculated as the percentage of unity votes in which a representative voted along her party line. As for the type of federal grants, we restrict our main analysis to spending programs that have a large variation over time within districts and are likely to be allocated according to discretionary rules instead of objective formulas. Thus, this type of expenditure is more susceptible to political manipulation and targeting.

The empirical analysis is based on a panel data model that controls for observable characteristics, such as the representatives' seniority and partisanship, and includes year and district fixed effects, to reduce the potential omitted-variables bias. The fixed-effects estimates suggest that districts represented by loyal representatives with unity scores above the party median receive greater amounts of discretionary spending. This effect exists only for legislators affiliated with the majority party and not for those in the minority. This pattern might be due to the legislative advantage of the majority party that has greater proposal power than the minority party.[4] According to our results, districts represented by loyal legislators who belong to the majority party receive on average 7% more grants than disloyal legislators in the same party, or $74.66 per capita more.

We also find empirical support for the hypothesis that legislators whose party line is not strongly aligned with constituents' interests are rewarded with funds to a larger extent. Estimates reveal that conservative-leaning districts represented by loyal Democrats and liberal-leaning districts represented by loyal Republicans receive nearly $300 per capita more (or about 25.3% additional funding) than districts where no such conflict exists.

The findings are robust to the inclusion of legislator fixed effects, regional trends, and several political factors that may be correlated at the same time with the degree of conflict faced by a legislator and the amount of funds her district receives. In addition, we run placebo tests that include lags and leads of party loyalty, and we show that only contemporaneous loyalty significantly influences the allocation of discretionary spending.

The remainder of the paper is organized as follows. The next section describes the related literature. Section 3 outlines the theoretical model and derives its empirical implications.

[4] Although the theoretical model abstracts from such legislative advantage, there is empirical evidence that provides support for this kind of bias in the U.S. Congress (Albouy 2013).

Section 4 describes the data and illustrates the empirical strategy. Section 5 presents the estimation results and robustness checks. Finally, Section 6 concludes the paper.

2 Related Literature

Our theoretical model contributes to the formal literature on party discipline, which comprises several approaches. Some researchers have elaborated on informational arguments, pointing out that strong party discipline informs voters about the future policy of a candidate who, once elected, cannot deviate from the party's official platform (Ashworth and Bueno de Mesquita 2004; Castanheira and Crutzen 2010; Cox and McCubbins 1993; Snyder and Ting 2002). In a similar vein, Grossman and Helpman (2008) defined party discipline as a party's ability to induce ex-post adherence to a pre-announced position. Party discipline, therefore, is a valuable asset for the party leaders because it signals cohesion and thus helps build a political brand (Cox and McCubbins 1993). In several other studies, party discipline has been modeled as the ability of the party leadership to control its members in the legislature such that they vote in line with the party's ideological position (Colomer 2005; Eguia 2011; Iaryczower 2008; McGillivray 1997; Patty 2008; Volden and Bergman 2006). In these models, the party leader's objective is to discipline party members who might have different ideological preferences. Diermeier and Feddersen (1998a,b) provided an institutional explanation for cohesive voting of legislators in parliamentary systems. The authors showed that the vote-of-confidence procedure common in parliamentary democracies creates an incentive for cohesion in voting.

Although these studies formally analyzed party discipline, little research has been conducted on the impacts of party loyalty on the allocation of discretionary spending. We are aware of only one formal study that addresses this question. Grossman and Helpman (2008) investigate how differences in party discipline affect national spending on local public goods. In the study's setting, however, party discipline is modeled as an exogenously given institutional variable—an "extent of commitment to party platforms" (p. 330). In the present paper, we endogenize party discipline by modeling explicitly the politician's and the party leader's problems.

This paper also contributes to the empirical literature on party discipline, which has mostly focused on the political consequences of party discipline. There is evidence of loyal legislators incurring electoral punishment in the polls (Carson et al. 2010). Some studies have shown that party lines affect legislators' voting behavior on the floor of the legislature (Heller and Mershon 2008; Krehbiel 2000; McCarty and Rosenthal 2001; Rohde 1991; Snyder and

Groseclose 2000). Barber and Godbout (2014) also found that, in the US, majority party leaders reward loyalty in roll-call voting with campaign contributions to run in upcoming elections.

Our paper is also related to the studies on the relationship between legislative representation and the geographic distribution of public spending. Atlas et al. (1995) find that per-capita federal spending is correlated with per-capita representation in the U.S. Senate. Using data on U.S. transportation projects, Knight (2004) finds that legislators are more likely to support federal spending the higher their own-district spending and the lower the tax burden borne. Knight (2008) analyzed the relationship between legislative representation and the geographic distribution of federal spending. He finds that small U.S. states receive more funding in the Senate, while large U.S. states receive more funding in the House. In turn, Albouy (2013) finds that U.S. states represented by the majority party members receive more federal funds than those represented by members in the minority. More broadly, this paper contributes to the literature on distributive politics that focuses on the political distribution of public goods. Most of this literature focuses on four main political factors that influence the distribution of government spending: core and swing districts (Lindbeck and Weibull 1987; Dixit and Londregan 1996), partisan favoritism (Arulampalam and Dutta 2009; Brollo and Nannicini 2012), clientelism (Stokes and Brusco 2013), and political budget cycles (Shi and Svensson 2016).[5]

Although these studies have empirically investigated party loyalty and the allocation of federal funds as unrelated topics, evidence for the relationship between party discipline and discretionary spending is scarce. To the best of our knowledge, only two studies have addressed this issue, and the results are mixed. Primo and Snyder (2010) find that, for the years 1957-1970, U.S. states with strong party organizations received less federal spending than states with weaker parties.[6] However, the result is no longer statistically significant once state fixed effects are included. A negative relationship between legislative party strength and federal grants would be at odds with the fact that since the early 1990s, the U.S. has experienced an increase in party cohesion and pork-barrel spending. This pattern is more consistent with the idea of pork as a reward for party loyalty. Pearson (2008) suggests that this may be the case: "When party leaders in both chambers finalize the details of major legislation, they have opportunities to reward loyalty. The increasing number of earmarks

[5]See Golden and Min (2013) for an extensive review.

[6]Their measure of party strength is an index constructed by Zeller (1954), who classifies states as those with strong party organizations and those with weak party organizations. The classification is based on the results of a survey conducted among experts.

added in conference committee or during budget summit negotiation may provide limited opportunities to reward loyalty" (p. 113). This observation is in line with the findings of Cann and Sidman (2011) who report a positive correlation between party loyalty and government spending for U.S. representatives in 2002-2009.

We depart from Cann and Sidman's analysis in several ways. First, our model identifies the conditions under which party discipline is likely to be highly rewarded (i.e., in the districts with conflict between the constituents' interests and the party line). If no conflict of interest exists, then legislators vote along party lines simply because the constituents' preferences are aligned with the party's. In this case, a positive relationship between spending and discipline is just a spurious correlation. Second, we expand the time period to the years 1984-2010. This is important because in the 1980s and 1990s, there was a larger number of Republican representatives in liberal-leaning districts and Democrat representatives in conservative-leaning districts. Third, to address to the greatest possible extent the potential bias due to omitted variables, we employ different fixed-effects strategies in contrast to Cann and Sidman's random-effects model.

3 Model

Consider a politician who decides on policy x. The set of feasible policies is taken to be the closed interval $[0, l]$, $l > 0$. The politician is assumed to be purely office-motivated and to maximize her reelection probability denoted by $\Pr(\cdot)$.

There is a representative voter with bliss point 0 who cares about the policy outcome x according to the quadratic loss function $l^2 - x^2$. Therefore, the voter prefers the policy to be as close as possible to his bliss point 0. The voter also values discretionary spending s that enters linearly into his utility function

$$u_V(x, s) = l^2 - x^2 + s.$$

One can think of s as specific projects or public goods.

The voter decides on the politician's reelection. He realizes that the politician wants to be reelected. Therefore, the politician can be held accountable for the policy outcome and discretionary spending at the moment of the election. We assume that the voter conditions the politician's reelection on the voter's utility $u_V(x, s)$ from policy x and spending s. The higher $u_V(x, s)$, the more likely the voter is to reelect the incumbent. The probability of reelection is given by

$$\Pr(x, s) = F(u_V(x, s)),$$

where $F(\cdot)$ denotes the cumulative function of a well-behaved continuous distribution with $F'(\cdot) > 0$.

The politician is affiliated with a political party. The party leader with bliss point l is policy-motivated. He cares about the policy outcome x according to the quadratic loss function

$$l^2 - (l - x)^2 .$$

The party leader thus wants the politician to choose a policy as close as possible to the party leader's own bliss point l, which we refer to as the party line.[7] However, supporting the party line is electorally costly for the politician as the voter wants the politician to implement a policy sufficiently close to his bliss point 0. This implies that there exists a conflict of interest between the voter's interests (i.e., his bliss point 0) and the party line (i.e., the party leader's bliss point l). A larger l makes this conflict between the voter's and the leader's interests more intense.

We assume that the party leader controls the allocation of discretionary spending $s \geq 0$ that he can channel to the politician's constituency (for example, via earmarks).[8]

The party leader's utility function is therefore given by

$$u_L(x, s) = l^2 - (l - x)^2 - s.$$

The party leader knows that the politician maximizes her reelection probability $\Pr(x, s)$, which depends on the policy outcome x and on the amount of spending s. Therefore, the party leader can somehow compensate the politician with spending for supporting the party line instead of following her constituency's interests. In other words, the party leader can reward the politician's loyalty and discipline with spending channeled to her constituency. We measure the politician's loyalty to the party line (i.e., her party discipline) with x. A larger x means that the politician implements a policy closer to the party line l (and so is more loyal and disciplined).

The party leader wants the politician to internalize her losses $l^2 - (l - x)^2$ from the implemented policy and so will condition discretionary spending s on these losses. This is

[7] The assumption that the voter's and the leader's bliss points are at the opposite extremes of the policy space $[0, l]$ is made without loss of generality.

[8] In the U.S. Congress, party leaders decide when to place bills for consideration and therefore have opportunities to add a number of earmarks when finalizing the details of major legislation. This suggests that party leaders have a certain level of power to allocate discretionary spending in their (or their party's) interests.

modeled as an explicit contract that maps any possible policy to the spending allocation:

$$s(x) = \max\left[l^2 - (l-x)^2 + \alpha, 0\right], \tag{1}$$

where $\alpha \in \mathbb{R}$ is a constant chosen optimally by the party leader. The more loyal the politician (i.e., the closer x to the party line l), the larger the amount of spending is allocated to her constituency.

The timing of events is as follows. The party leader chooses α and offers $s(x)$ to the politician, giving a binding promise of spending conditional on the chosen policy level x. The politician either accepts or rejects this offer (she is assumed to accept if she is indifferent).[9] Finally, she chooses policy x. If she is indifferent between several policies, she picks the policy preferred by the party leader.[10]

We analyze this game backwards and turn now to the politician's policy choice and her decision whether to accept or to reject the party leader's offer.

Politician's policy choice Suppose first that the politician rejects the party leader's offer $s(x)$. This corresponds to the case with zero spending in which the probability of the politician being reelected to her office is equal to

$$\Pr(x, 0) = F\left(l^2 - x^2\right).$$

The politician chooses $x \in [0, l]$ to maximize this probability. Given that $F'(\cdot) > 0$, she maximizes $l^2 - x^2$ and thus picks the voter's preferred policy 0. Her probability of reelection is equal to $F\left(l^2\right)$ in this case.

Suppose next that the politician accepts the party leader's offer $s(x)$ given by (1). Her reelection probability is then

$$\Pr(x, s(x)) = F\left(l^2 - x^2 + \max\left[l^2 - (l-x)^2 + \alpha, 0\right]\right).$$

The politician maximizes $\Pr(x, s(x))$ with respect to x. We denote with $x(\alpha)$ the politician's policy choice that depends on the party leader's choice of α. $\Pr(\alpha)$ denotes the corresponding reelection probability. The politician's maximization problem is analyzed in the Appendix. The results are summarized in the following lemma.

[9] Alternatively, one can assume that the party leader offers the politician a small positive compensation $\varepsilon > 0$ in exchange for her accepting the spending offer when she is indifferent.

[10] Alternatively, one can assume that the party leader offers the politician a small positive compensation $\varepsilon > 0$ in exchange for her selecting his preferred policy among the policies to which she is indifferent.

Lemma 3.1. *Suppose that the politician has accepted the party leader's offer $s(x)$ given by (1). Then she chooses policy*

$$x(\alpha) = \begin{cases} \frac{l}{2} & \text{if} \quad \alpha \geq -\frac{1}{2}l^2, \\ 0 & \text{if} \quad \alpha < -\frac{1}{2}l^2, \end{cases} \tag{2}$$

and gets reelected with probability

$$\Pr(\alpha) = \begin{cases} F\left(\frac{3}{2}l^2 + \alpha\right) & \text{if} \quad \alpha \geq -\frac{1}{2}l^2, \\ F\left(l^2\right) & \text{if} \quad \alpha < -\frac{1}{2}l^2. \end{cases} \tag{3}$$

Lemma 3.1 suggests that a higher α (i.e., a higher amount of discretionary spending) makes the politician pick a policy closer to the party leader's bliss point l, $\frac{l}{2}$ instead of 0. Even though the voter prefers policy 0 to $\frac{l}{2}$, in the case of a higher α he gets compensated with discretionary spending and so reelects the politician with higher probability. For $\alpha \geq -\frac{1}{2}l^2$, $F\left(\frac{3}{2}l^2 + \alpha\right) \geq F\left(l^2\right)$.

We next consider the politician's decision whether to accept or to reject $s(x)$. Comparing her reelection probability in the case of rejecting, $F\left(l^2\right)$, with that in the case of accepting, (3), yields that she has weakly higher chances of being reelected in the latter case. Note that for the case of $\alpha < -\frac{1}{2}l^2$, she is indifferent between accepting and rejecting $s(x)$. However, for the case of $\alpha \geq -\frac{1}{2}l^2$, she strictly prefers to accept $s(x)$. Therefore, for all $\alpha \in \mathbb{R}$, she decides to accept the spending offer of the party leader given by (1). In what follows, we turn to the party leader's decision about α that defines the reward for the politician's loyalty and discipline.

Party leader's choice of α The party leader realizes that the politician will accept his offer and will implement policy $x(\alpha)$ given by (2). The party leader's utility $u_L(\cdot)$ is then equal to

$$u_L(\alpha) = l^2 - (l - x(\alpha))^2 - s(x(\alpha)) = \begin{cases} -\alpha & \text{if} \quad \alpha \geq -\frac{1}{2}l^2, \\ 0 & \text{if} \quad \alpha < -\frac{1}{2}l^2. \end{cases}$$

The party leader chooses α to maximize $u_L(\alpha)$ and so picks $\alpha^* = -\frac{1}{2}l^2$. His utility is then equal to $u_L(\alpha^*) = \frac{1}{2}l^2$ and is higher than his utility when he makes no spending offer to the politician (which is 0). The politician gets utility $\Pr(\alpha^*) = F\left(l^2\right)$ while the voter gets utility $u_V(\alpha^*) = l^2$, which are exactly equal to their utilities when no spending offer was made by the party leader. Therefore, in equilibrium, the party leader gets all the gains from the spending contract and just has to ensure that the politician's participation constraint binds. The spending contract is presented in the following Proposition.

Proposition 3.2. *The party leader proposes the following spending contract to the politician*

$$s(x) = \max\left[\tfrac{1}{2}l^2 - (l-x)^2, 0\right]. \tag{4}$$

The politician's discipline and the resulting spending allocation are determined in equilibrium, and, thus, both are endogenous. However, the model suggests that the two are correlated. According to (4), the party leader will condition the allocation of discretionary spending on the politician's loyalty to the party line x, as well as on the intensity of conflict between the constituency's and leader's policy preferences l. We turn now to the model's predictions which are tested in the following empirical analysis.

Prediction 1: The more loyal the politician is to the party line, the larger the amount of spending is allocated to her constituency: $\frac{\partial s}{\partial x} \geq 0$ for $x \in [0, l]$.

Intuitively, the model suggests that the party leader opts for the loyalty reward that maps a policy to a spending allocation. The closer the chosen policy to the party line (i.e., the more disciplined the politician), the higher the spending is channeled to the politician's constituency. Therefore, we expect a positive association between the politician's loyalty to her party and the discretionary spending allocated to her home district.

Prediction 2: The effect of the politician's loyalty on discretionary spending is larger the more intense the conflict of interest between the voter's and the party leader's preferences: $\frac{\partial^2 s}{\partial x \partial l} \geq 0$.

This interaction effect between party discipline and conflict intensity reflects the innate nature of party loyalty. The politician's support for the party line does not necessarily imply she is being loyal to the party. In particular, in the absence of conflict between the voter's and the party leader's interests, the politician would face no trade-off. Then, supporting the party line would be a by-product of following her constituency's interests rather than a sign of party discipline and so does not have to be rewarded by the party leader. In turn, a conflict between the voter's and the party leader's preferences leads to a trade-off for the politician. In this case, there is room for party discipline that has to be rewarded by the party leader. The more intense the conflict of interest, the larger the trade-off is faced by the politician and thus the more she will be rewarded for a given level of party loyalty. As a result, not only does more party loyalty increase the amount of spending allocated to the politician's constituency, but it also does so to a larger extent if the conflict between the voter's and the party leader's interests deepens.

4 Empirical Analysis

In the empirical analysis, we study the relationship between party discipline and the allocation of public spending using district-level data on members of the U.S. House of Representatives and federal expenditures for the 1984-2010 period. We restrict the analysis to the House of Representatives because the Senate is composed of multi-member districts, and it is therefore hard to clearly relate the behavior of a legislator to the amount of spending her district receives. In contrast, the House of Representatives is composed of single-member districts. In what follows, we describe the data and methodology, and then present our results.

4.1 Data

This section reports the data sources and descriptive statistics. Data on federal spending in congressional districts for the years 1984-2010 come from Dynes and Huber (2015) who assembled and cleaned the information provided by the Federal Assistance Awards Data System (FAADS) to examine another issue—namely, the affiliation with the president's party and the allocation of federal grants. This information accounts for approximately half of the federal budget.[11] The data we use in this study are at the district-fiscal year level, and the fiscal years included in our analysis are 1984-2010, with the exception of fiscal years 1993 and 2003, which are excluded from the sample due to congressional reapportionment.[12] We focus our analysis on spending that is susceptible to political manipulation and follow previous work that classifies spending into high-variance and low-variance programs based on their coefficient of variation (see, e.g., DeBacker 2011; Levitt and Snyder 1995; Dynes and Huber 2015; Berry, Burden and Howell 2010).[13] High-variance spending is commonly associated with discretionary spending as high-variance spending is usually not formula-based, and it tends to fund smaller programs that are more susceptible to targeting. All programs with a

[11] An alternative source, which contains most of the federal budget, is the Consolidated Federal Funds Report (CFFR). However, CFFR information is at the state level, and this does not allow us to identify with precision the recipients of federal funds.

[12] After each decennial census, the number of congressional districts per state is adjusted using the new population counts while ensuring that each state has at least one district. This process is known as reapportionment.

[13] The coefficient of variation of each program is computed as follows. The standard deviation of the program's outlays across all districts in fiscal year t is divided by the mean of its outlays across all districts in t and then the mean of this across all years is computed. We exclude from this computation the districts that cross boundaries with state capitals. The reason is that spending allocated to state capitals is often spread among several districts. See Dynes and Huber (2015) for further details.

coefficient of variation greater than or equal to one are classified as pork-barrel spending.[14] This is arguably not a perfect measure of pork-barrel spending. However, pure distributive spending (i.e., earmarks in appropriation bills) is available only at the state level. Aggregating party discipline at that level would dismiss important information as there is a big divergence within states. Table 1 shows the five largest programs classified as high-variation spending.

Table 1: Largest high-variation programs in FAADS.

Program code	Program name	% total outlays
14.856	Low Income Housing Assistance	1.05%
93.560	Family Support Payments to States-Assistance Payments	0.87%
10.055	Production Flexibility Payments for Contract Commodities	0.66%
93.770	Medicare-Prescription Drug Coverage	0.55%
84.268	Federal Direct Student Loans	0.49%

The federal budget of a certain fiscal year (FY) is approved during the previous year. This means, for instance, that the pork-barrel expenditures of FY1993 were passed in 1992 by legislators elected in the 1990 election. In our sample, discretionary spending to congressional districts is, on average, $1,066 per capita (in 2010 dollars) per year, and the standard deviation is $2,062. Federal spending in districts that include state capitals may be noisy, and for this reason, in our model we include a control variable (*Capital*) that is one if a district crosses boundaries with the state capital.

We collect population figures from the U.S. Census to express federal outlays in per-capita terms. Population at the district level is available only in decennial censuses (i.e., in 1980, 1990, and 2000).[15] However, we can obtain an estimate of the district population using the state population estimates provided yearly by the U.S. Census and dividing them by the number of congressional districts in each year.[16] We then include the population logarithm as a control variable in all specifications.

We combine the data on federal spending with information on party discipline in the House of Representatives. Following the previous literature (e.g., Cantor and Herrnson 1997; Carson et al. 2010), we use party unity scores as an indicator of party loyalty in policy voting.

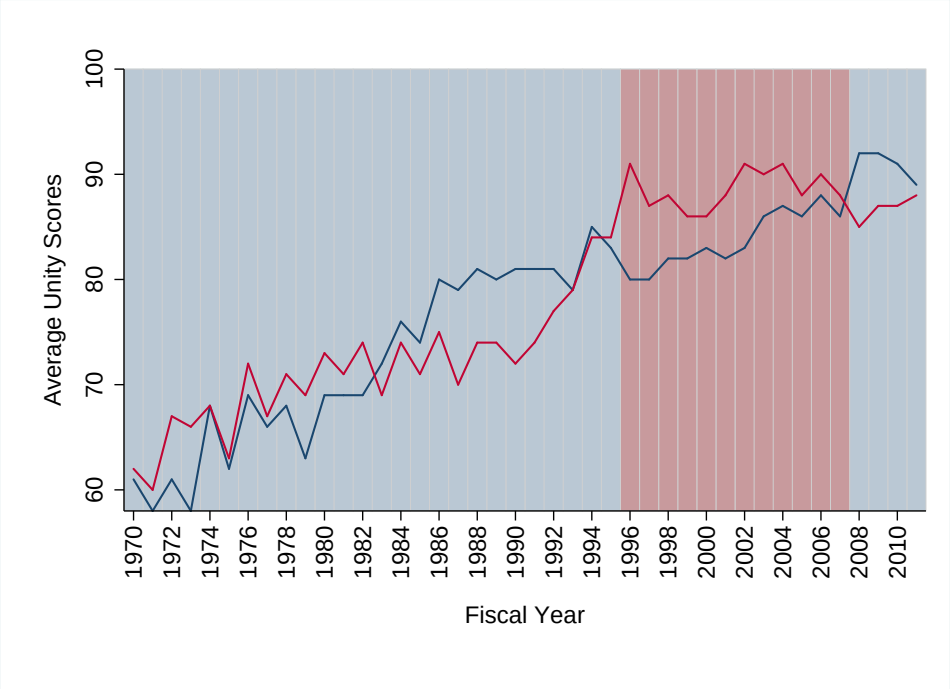
[14] This cutoff corresponds to a natural break observed at the lower end of a histogram of the coefficients of variation. The cutoff used by Dynes and Huber (2015) is 1.0, that used by Levitt and Snyder (1995) is 0.67, and that used by DeBacker (2011) is 1.2. Moving this cutoff does not significantly change our results.

[15] http://www.census.gov/prod/www/decennial.html.

[16] We can make this imputation because all congressional districts within a state are meant to have similar population sizes.

These scores are available for each legislator in any given year. They are computed as the percentage of roll-call votes in which a representative voted "yea" or "nay" in agreement with her party when the majority of one party voted against the majority of the other party.[17] Data on party unity scores are collected from the *Congressional Quarterly Almanac*. As shown in Figure 1, this score was, on average, around 60% by the early 1970s, but it increased significantly during the following decades and today totals 90%. The blue (red) horizontal lines in Figure 1 represent the years of a Democrat (Republican) majority. Our main explanatory variable (*Loyal*) is a binary variable that equals one for legislators with unity scores above the median unity score of their party, and zero otherwise. In our sample, 47% of legislators are classified as loyal.

Figure 1: Party discipline and party control in the House of Representatives



Notes: Congressional Quarterly Annual Report, January 2011. Blue (red) vertical bars correspond to Democratic (Republican) control. The solid blue lines represent the average unity score of the Democratic (Republican) party.

One of the main predictions of our theoretical model is that the effect of loyalty on discretionary spending is larger the more intense the conflict of interest between the voters'

[17]Party discipline becomes especially visible in this context of confrontation. During the years 1984-2010, Democrats and Republicans voted against each other, on average, in 51% of all roll-call votes in the House of Representatives.

Table 2: Percentage of representatives who face a conflict of interest

Election year	Whole sample	Majority party members
1982	28%	38%
1984	24%	33%
1986	25%	34%
1988	25%	35%
1990	26%	36%
1992	28%	37%
1994	22%	18%
1996	20%	14%
1998	17%	10%
2000	17%	10%
2002	14%	11%
2004	14%	9%
2006	16%	25%
2008	18%	29%

preferences and the party line. This should be the case for Republican representatives in liberal-leaning districts and Democratic representatives in conservative-leaning districts. To identify such settings of conflict, we first construct a measure of district partisanship. We do so using presidential election outcomes and computing for each district the average vote shares of the presidential candidates for the Democratic and Republican parties across each decennial census. Similarly, we compute national averages.[18] Then, our measure of *Conflict* is a binary variable that equals one if a Republican legislator represents a district in which the average vote share of the Democratic party in the presidential elections is above the national average, or if a Democrat represents a district in which the average support for the Republican in the presidential elections is above the national average. In our dataset, 21% of legislators are in this setting. However, this figure varies considerably over the years and across the parties. Table 2 shows that the percentage of representatives who face such conflict decreases over time. The percentage of majority party members facing conflict drops from 37% in 1992 to 18% in 1994, when the Republicans took control of the House.

Our econometric specification also includes a broad set of observable political factors.

[18]Each decennial census (1980, 1990, and 2000) comprises three presidential elections, which we used to calculate the vote share averages.

The following variables help identify whether a representative held a leadership position that could help her attract more funding: *Committee Chair*, *Appropriations Committee*, *Ways and Means Committee*, and *Majority party leadership*. These are binary variables that equal one if the representative is a chair of a committee, a member of the Appropriations Committee, a member of the Ways and Means Committee, or a member of the majority party leadership, respectively.

Further, we add two variables to take into consideration the possibility that members with a certain partisanship have an agenda-setting advantage that helps them secure funding. This would be the case for members affiliated with the president's party (Berry, Burden and Howell 2010).[19] In addition, to account for different spending preferences across the Democratic and Republican parties (Ferreira and Gyourko 2009), we include in our regressions a binary variable that equals one if a representative is *Republican*.

Seniority may also be an important determinant of the fund distribution as junior members are expected to be in a worse position to attract grants (see, e.g., DeBacker 2011). Thus, we include a dummy variable that indicates whether a representative is in her *First term* as well as a *Seniority* variable that accounts for the number of terms in office.

The political economy literature also suggests that electoral competition influences fiscal policies (Besley and Case 2003; Besley, Persson and Sturm 2010; Trounstine 2006). In line with this argument, we include the difference in the vote shares between the winning and losing candidates in a corresponding state in the last presidential election (*State presidential margin*). Moreover, to account for close races, we also add a dummy that indicates whether the vote margin in the last congressional election was lower than 5% (i.e., the representative faced a *Close election*). All these variables (including the unity scores) are constructed using data from the legislative session in which the budget for a fiscal year is passed (namely, the preceding year).

Table A.1 in the Appendix summarizes the descriptive statistics of these variables.

4.2 Empirical Strategy

In our baseline specification, we employ a fixed-effects (FE) model of the following form:

$$y_{it} = \beta Loyal_{it} + X_{it}^{'}\Omega + \mu_i + \delta_t + u_{it}, \tag{5}$$

where i denotes congressional districts and t denotes fiscal years. The dependent variable y_{it} is high-variance spending per capita, in 2010 dollars (inflation adjusted); δ_t represents year

[19] Members of the House majority may also have a legislative advantage. We address this question in Section 4.2.

fixed effects, and μ_i refers to district fixed effects, where districts are constant units within each decennial census to address the complex issue of redistricting. The error term u_{it} is clustered at the congressional district level to provide consistent estimates; $Loyal_{it}$ is equal to one if a legislator's unity score is above her party median. Recall that the budget of a certain fiscal year t is approved the previous year (t-1). Therefore, the unity scores used to construct the variable $Loyal_{it}$ correspond to t-1. We aim to estimate the relationship between party discipline and government spending. Therefore, the coefficient of interest is β, which we expect to be positive according to our theoretical model.

The vector $X_{it}^{'}\Omega$ includes a set of district-level variables to control for the political factors described in the previous section: *President's party*, *State presidential margin*, *Majority party leadership*, *Committee chair*, *Appropriations Committee*, *Ways and means Committee*, *Close election*, *Republican*, *First term*, and *Seniority*. The only demographic factor for which we have variation over time within districts is population, and we include it in the logarithms. Other socioeconomic data (such as unemployment, percentage of elderly people, etc.) are available only at the district level from the decennial censuses. As these data do not vary within districts, they are captured by μ_i.

Further, to test *Prediction 2*, we include in equation (5) the following interaction term:

$$y_{it} = \beta Loyal_{it} + \eta Conflict_{it} + \gamma Loyal_{it} \times Conflict_{it} + X_{it}^{'}\Omega + \mu_i + \delta_t + u_{it}, \qquad (6)$$

where $Conflict_{it}$ equals one when a liberal-leaning district is represented by a Republican legislator or when a conservative-leaning district is represented by a Democrat. Our model predicts that loyal legislators who have *a priori* higher incentives to deviate from the party line are rewarded with pork-barrel spending to a greater extent. Therefore, we expect γ to be positive.

Congressional politics studies argue that majority party members have more proposal power than minority party members (Cox and McCubbins 1993). Albouy (2013) finds that this translates into larger amounts of spending allocated to the majority party members' constituencies.[20] This result suggests that the capacity to reward loyalty is very likely to differ across the majority and minority party leaders. To address this issue, we base our main specifications on a sample that includes only majority party districts. In addition, we run a robustness check in which we consider only minority party districts.

[20]Berry, Burden and Howell (2010) also find that, under certain circumstances, majority party members receive larger amounts of federal funds.

5 Empirical Results

5.1 Party Discipline and Discretionary Spending

Table 3 presents the fixed-effects estimates for the panel data model in equation (5). We include year and district fixed effects in all specifications.[21] In columns 3 and 6, we add regional trends that are interaction terms between a linear time trend and dummies for each of the four regions established by the U.S. Census.[22] By including the regional trends, we can account to a certain extent for the shifts in voters' preferences that are specific to a certain region (e.g., some southern regions have become more conservative over the years, while the Northeast has become more liberal).

The results in columns 1-3 suggest that the districts represented by loyal legislators receive more discretionary spending. All coefficients are statistically significant at the 5% level, and the size of the effect remains stable across the three specifications. According to the estimates in column 3, the districts represented by loyal legislators receive, on average, $74.66 more spending per capita (3.5% of the standard deviation in the outcome variable). This corresponds to a 7% increase for the average majority district, which receives $1057.97 per capita. The results in column 3 reveal that most of the control variables have no statistically significant impact on discretionary spending. The exceptions include districts with contested congressional elections, districts represented by Appropriations Committee members, and districts represented by Republicans. They all attract more discretionary spending. Note that in the case of the districts represented by Republicans, the sign of the coefficient changes once the regional trends are included.

As a placebo test, we estimate the same model for low-variance spending. This type of spending is usually formula-based and thus is more difficult to manipulate. Therefore, we expect no significant relationship between party discipline and spending. The results for this placebo test are reported in columns 4-6 of Table 3. According to the results, there is no significant association between party loyalty and low-variance spending, as we expected.

Table 4 presents the heterogeneous effects of party loyalty conditional on the conflict intensity between the voters' preferences and the party line. The estimates correspond to equation (6).

The results in columns 1-3 suggest that districts with loyal legislators receive, on average, $278.39 per capita more if they are conservative-leaning districts represented by a Democrat or liberal-leaning districts represented by a Republican. To obtain a meaningful economic

[21] Recall that by "district" we mean district by census.

[22] The four regions are the Northeast, South, West, and Midwest.

Table 3: Party discipline and spending in U.S. congressional districts, 1984-2010.

	(1)	(2)	(3)	(4)	(5)	(6)
Loyal	77.31**	75.49**	74.66**	-12.49	-10.82	-10.91
	(38.09)	(37.29)	(36.51)	(9.85)	(9.83)	(9.85)
Log population	-983.02*	-925.78*	-147.43	-1974.36***	-1961.77***	-2052.66***
	(529.67)	(530.12)	(749.46)	(292.51)	(288.44)	(334.33)
Capital	260.05	272.47	284.10	245.36	241.31	250.74
	(245.93)	(248.11)	(247.02)	(180.91)	(180.92)	(180.66)
President's party		497.14***	99.57		-46.83	-535.61***
		(83.64)	(106.94)		(82.60)	(105.21)
State presidential margin		221.82	166.30		-236.73*	-298.11*
		(274.71)	(283.12)		(141.20)	(156.05)
Majority party leadership		-53.21	-67.71		-24.31	-21.36
		(76.18)	(76.72)		(61.06)	(51.78)
Committee chair		-35.12	-37.83		11.41	12.33
		(54.02)	(53.67)		(27.89)	(28.35)
Appropriations Committee		300.06	297.83*		-22.30	-24.26
		(182.41)	(179.60)		(25.37)	(24.53)
Ways and Means Committee		-41.27	-46.45		-29.17	-29.92
		(104.67)	(104.34)		(51.52)	(51.54)
Close election		141.74**	143.57**		-3.74	-8.34
		(54.96)	(56.62)		(18.62)	(18.24)
Republican		-735.55***	470.62**		-1801.86***	-330.26**
		(149.12)	(198.84)		(68.45)	(129.62)
First term		-12.00	-12.79		-30.69*	-30.54*
		(35.51)	(35.79)		(18.01)	(17.93)
Seniority		-12.28	-11.96		-3.59	-3.12
		(10.46)	(10.40)		(2.52)	(2.45)
Regional trends	No	No	Yes	No	No	Yes
Adj. R^2	0.104	0.111	0.112	0.445	0.446	0.447
Observations	5803	5803	5803	5803	5803	5803
Mean outcome in sample	1057.97	1057.97	1057.97	3682.22	3682.22	3682.22

Notes: Standard errors clustered at the district level in parentheses, ***p<0.01, **p<0.05, *p<0.1. All specifications include year and district by census fixed effects. Dependent variable in columns 1-3 = High-Variance (i.e., discretionary) spending per capita. Dependent variable in columns 4-6 = Low-Variance spending per capita. *Loyal* = 1 if the legislator's unity score is above her party median. Districts represented by minority party members and districts with multiple occupants are not included.

Table 4: Party discipline and federal spending: heterogeneous effects.

	(1)	(2)	(3)	(4)	(5)	(6)
Loyal	28.90	24.05	24.29	-8.06	-6.21	-6.03
	(33.79)	(33.04)	(33.03)	(11.09)	(11.14)	(11.12)
Conflict	-75.05	-88.95	-85.68	-2.03	0.63	1.25
	(84.88)	(83.76)	(84.92)	(27.96)	(28.08)	(28.17)
Loyal × conflict	271.28*	283.15**	278.39**	-29.07	-28.76	-30.30
	(152.51)	(140.59)	(137.16)	(24.54)	(25.06)	(24.72)
Log population	-919.55*	-856.85	-116.72	-1980.74***	-1968.58***	-2056.61***
	(539.70)	(539.43)	(759.35)	(289.42)	(285.58)	(331.56)
Capital	260.51	271.47	282.30	245.31	241.46	250.98
	(247.50)	(250.20)	(248.94)	(180.79)	(180.75)	(180.47)
President's party		502.17***	107.17		-47.21	-536.30***
		(83.84)	(107.27)		(82.68)	(105.28)
State presidential margin		215.26	169.76		-236.33*	-298.41*
		(275.06)	(283.23)		(141.14)	(155.95)
Majority party leadership		-77.26	-90.98		-21.99	-18.95
		(68.73)	(68.08)		(62.16)	(53.10)
Committee chair		-38.14	-40.71		11.19	12.13
		(53.93)	(53.47)		(27.95)	(28.45)
Appropriations Committee		292.26*	290.42*		-21.22	-23.16
		(173.51)	(170.99)		(25.43)	(24.62)
Ways and Means Committee		-43.34	-48.34		-28.51	-29.27
		(103.77)	(103.61)		(51.23)	(51.25)
Close election		154.05***	155.74***		-4.54	-9.22
		(53.75)	(55.35)		(18.62)	(18.20)
Republican		-756.31***	441.73**		-1803.01***	-330.28**
		(147.84)	(201.29)		(70.28)	(130.50)
First term		-9.04	-9.94		-30.96*	-30.82*
		(35.28)	(35.59)		(18.02)	(17.92)
Seniority		-12.61	-12.35		-3.51	-3.04
		(10.49)	(10.42)		(2.54)	(2.47)
Regional trends	No	No	Yes	No	No	Yes
Adj. R^2	0.107	0.114	0.115	0.445	0.445	0.447
Observations	5,803	5,803	5,803	5,803	5,803	5,803
Mean outcome if *Loyal=1*	1,098.86	1,098.86	1,098.86	3,658.47	3,658.47	3,658.47

Notes: Standard errors clustered at the district level in parentheses, ***p<0.01, **p<0.05, *p<0.1. All specifications include year and district by census fixed effects. Dependent variable in columns 1-3 = High-Variance (i.e., discretionary) spending per capita. Dependent variable in columns 4-6 = Low-Variance spending per capita. *Loyal* = 1 if the legislator's unity score is above her party's median. Districts represented by minority party members and districts with multiple occupants are not included. *Conflict* = 1 for Republican legislators in liberal-leaning districts or Democrat legislators in conservative-leaning districts.

impact, this figure should be compared to the average amount of discretionary spending that loyal legislators in the House majority receive ($1,098.86 on average in our sample). Thus, the effect of loyalty on spending is increased by 25.3%, which is a large effect that remains significant across different specifications. It is remarkable that despite the inclusion of district fixed effects and regional trends, which remove considerable variation, the coefficients of interest are statistically significant and meaningful. In columns 4-6, we examine the effects of party loyalty on non-discretionary spending. As expected, they are not statistically significant.

The result that rewards for party discipline depend on the conflict intensity between the constituency's interests and the party line is a novel finding. In our sample, only 21% of the districts can be classified as districts in which legislators face a large conflict of interest. During the initial years, the share of districts with such conflict is 23%, while in 2010 this totals 18%. These figures are smaller if we consider only majority party members. This finding implies that even though party loyalty is associated with larger amounts of pork-barrel spending, this effect is mainly observed in districts with conflict between the constituency's interests and the party line.

The results presented in Tables 3 and 4 correspond to a sample that includes only the districts represented by majority party members. Minority party leaders are likely to have a lower (or null) capacity to affect federal spending. Table A.2 in the Appendix suggests that there is no statistically significant relationship between party discipline and federal spending in the districts represented by minority party members.

5.2 Additional Results

Introducing district fixed effects in our specifications helps attenuate the potential bias due to omitted variables. Some electoral variables may be quite stable over time within a district. However, other determinants (e.g., the legislator's ability) may vary once the constituency elects a new representative. To reduce further the omitted-variable bias, we examine the relationship between party discipline and discretionary spending holding fixed the legislator who represents a particular district. Introducing legislator fixed effects drastically reduces the variation in our main explanatory variable (*Loyal*) as individual loyalty levels are very stable over time. Nevertheless, the capacity of loyal legislators to attract federal spending is likely to change once they switch from the minority to the majority status. Thus, we study whether the districts represented by loyal legislators are affected to a larger extent by the switch from minority to majority status.[23] To address this issue, we restrict the sample to

[23]Between 1984 and 2010, there were two changes in the control of the House of Representatives. In 1994, there was a switch from a Democratic to a Republican majority, while in 2006, there was a switch back to

representatives who were in both the majority and the minority during their terms in office. We estimate the following equation

$$y_{it} = \beta Loyal_{it} + \psi Majority_{it} + \rho Loyal_{it} \times Majority_{it} + X_{it}^{'}\Omega + \nu_i + \delta_t + u_{it}, \qquad (7)$$

where ν_i are *District by Census by Legislator* fixed effects, and our coefficient of interest is ρ. Moreover, we split the sample based on the conflict intensity and run separate regressions for representatives who face a conflict of interest between the constituency's preferences and the party line ($Conflict = 1$) and those who do not ($Conflict = 0$).

This estimation strategy mitigates the omitted-variable problem, but the strategy comes at a cost. The results have less external validity as we rely on a sample of senior representatives and discard information from marginal districts in which the incumbents were not reelected. Moreover, if unobservable factors influenced the spending and the control of the House, then the results would be biased.

The estimates presented in Table 5 reveal that there is a positive association between party loyalty and discretionary spending allocated to congressional districts represented by the majority members. This relationship is positive only for the districts in which representatives face a conflict of interest and thus have higher incentives to deviate from the party line (see the interaction term $Loyal \times Majority\ party$ in columns 1 and 2). In contrast, the interaction term $Loyal \times Majority\ party$ is no longer statistically significant once we restrict the sample to districts with no conflicts of interest (columns 3 and 4).

Regarding the economic significance of the effects, the coefficient in the first column of Table 5 is imprecisely estimated. Still, the coefficient has a similar size and the same sign as the statistically significant coefficient in column 2, which includes regional trends. The estimates presented in column 2 suggest that a shift from the House minority to the majority increases discretionary spending by \$1,347 per capita when the district is represented by a loyal legislator who faces a conflict of interest. Since the districts represented by loyal legislators who face a conflict of interest receive, on average, \$2,150 per capita, switching to majority status increases their resources by 37%.[24]

The model estimated in equation (7) is very conservative, and very little variation is left to exploit. Finding statistically significant estimates in such a conservative model suggests

the Democratic majority. The majority switches can be considered exogenous to u_{it} given that the electoral results in one district are unlikely to cause a national shift.

[24]The estimates of the baseline model without legislator dummies but with district and year fixed effects are presented in Table A.3 in the Appendix. The coefficient associated with the interaction Loyal × Majority party is half the size of the estimates in Table 5 because the sample used in the regressions in Table A.3 is not restricted only to legislators who serve under a majority and a minority.

Table 5: Party discipline and spending: legislator fixed effects.

	Conflict=1		Conflict=0	
	(1)	(2)	(3)	(4)
Loyal	-131.23	-120.61	13.54	16.49
	(413.01)	(422.02)	(33.72)	(34.30)
Majority party	0.50	2.16	53.39	56.48
	(55.06)	(57.05)	(40.71)	(41.43)
Loyal × Majority party	1312.35	1346.64*	-29.30	-32.86
	(815.94)	(792.62)	(45.63)	(46.15)
Regional trends	No	Yes	No	Yes
Mean outcome if *Loyal=1*	2,150.15	2,150.15	1,036.59	1,036.59
Adj. R^2	0.134	0.151	0.093	0.093
Observations	716	716	3394	3394

Notes: Standard errors clustered at the district level in parentheses, ***p<0.01, **p<0.05, *p<0.1. All specifications include year and district by census by member fixed effects. Dependent variable = High-Variance (i.e., discretionary) spending per capita. *Loyal* = 1 if the legislator's unity score is above the party median. Districts with multiple occupants and legislators who serve only either under majority or minority are excluded. *Conflict* = 1 for Republican legislator in liberal-leaning districts or Democrat legislators in conservative-leaning districts. Additional controls added in all models: log(population), capital, president's party, state presidential margin, majority party leadership, committee chair, Appropriations Committee, Ways and Means Committee, first term, and seniority (as in Table 4).

that these effects exist and that party discipline plays an important role in the distribution of the federal budget.

5.3 Robustness

The estimates reported in the previous sections provide clear evidence that party loyalty is associated with larger amounts of discretionary spending allocated to the corresponding districts. Moreover, this effect is more pronounced in the districts with conflict between the constituency's interests and the party line. In what follows, we perform two additional robustness checks to validate our previous findings.

First, we check whether the heterogeneous effects of party loyalty arise because of the different levels of conflict intensity and not because of other factors that are correlated with such conflict. To test this, we include in equation (6) the variable *Loyal* interacted with

different potential confounding factors that are correlated with the variable *Conflict* and may impact the allocation of public spending. The results are presented in Table 6. A representative elected in a district with low support for her party is likely to have faced intense electoral competition and therefore to have been elected in a close election. Thus, in column 1 we add an interaction term between party loyalty and close congressional elections (those with a vote margin below 5%). Moreover, Republican-leaning districts are less likely to elect a representative affiliated with the Democratic party. To control for this fact, in column 2 we add an interaction term between loyalty and the Republican party affiliation. Last, in column 3 we include an interaction term between loyalty and the legislator's vote margin in the last congressional election. We do so to account for the legislator's popularity or competence as it could be that a Republican legislator elected in a Democratic-leaning district is regarded as a very competent politician, and in this case, her party affiliation matters less (the same argument holds for a Democratic legislator elected in a Republican-leaning district).

The interaction terms $Loyal \times Close\ election$ and $Loyal \times Republican$ in columns 1 and 2 of Table 6 are statistically significant. Therefore, loyal representatives elected in close elections attract less discretionary spending to their home districts than those elected in less competitive elections. Moreover, loyal Republicans bring more pork-barrel spending to their home districts than do loyal Democrats. Importantly, our interaction effect of interest $Loyal \times Conflict$ remains statistically significant in all specifications, and its magnitude is similar to the previous results presented in Table 4.

Second, we introduce one lead and one lag of the variable *Loyal* in addition to the contemporaneous effect of loyalty. The results are presented in Table 7. Neither the lag nor the lead variable has a statistically significant effect. Most importantly, the contemporaneous effect of loyalty is statistically significant at the 10% level. The result that the lagged variable has no effect on spending discards the possibility of any anticipatory effects. In turn, the null effect of the lead variable reveals that party loyalty influences the distribution of discretionary spending and not the other way around.

Table 6: Party discipline and spending: potential confounding factors.

	(1)	(2)	(3)
Loyal	31.96	90.27**	69.68
	(32.64)	(44.12)	(54.95)
Conflict	-99.31	-85.00	-79.77
	(84.18)	(84.31)	(85.86)
Loyal × Conflict	302.68**	237.40*	262.04*
	(144.23)	(136.48)	(133.98)
Close election	218.82***	153.53***	145.89***
	(66.48)	(55.21)	(56.40)
Loyal × Close election	-171.11*		
	(97.45)		
Republican	455.82**	470.32**	436.76**
	(200.28)	(202.01)	(202.68)
Loyal × Republican		-126.35**	
		(61.47)	
Vote margin			-0.23
			(0.67)
Loyal × vote margin			-1.18
			(0.80)
Regional trends	Yes	Yes	Yes
Adj. R^2	0.115	0.115	0.138
Observations	5803	5803	5803

Notes: Standard errors clustered at the district level in parentheses, ***p<0.01, **p<0.05, *p<0.1. All specifications include year and district by census fixed effects. Dependent variable = High-Variance (i.e., discretionary) spending per capita. *Loyal* = 1 if the legislator's unity score is above the party median. Districts represented by minority party members and districts with multiple occupants are not included. *Conflict* = 1 for Republican legislators in liberal-leaning districts or Democrat legislators in conservative-leaning districts. Additional controls added in all models: log(population), capital, president's party, state presidential margin, majority party leadership, committee chair, Appropriations Committee, Ways and Means Committee, first term, and seniority (see Table 4).

Table 7: Robustness: lagged and lead loyalty.

	(1)	(2)	(3)	(4)	(5)	(6)
$\text{Loyal}_{\text{t-1}}$	34.23	33.98	33.78	12.56	12.52	10.94
	(29.65)	(29.67)	(28.96)	(8.59)	(8.55)	(8.68)
Loyal_{t}	52.65*	53.55*	51.87*	-6.13	-4.84	-4.86
	(31.67)	(31.50)	(30.59)	(9.21)	(8.98)	(9.09)
$\text{Loyal}_{\text{t+1}}$	35.51	32.30	32.12	-6.08	-5.57	-5.60
	(22.17)	(21.37)	(21.48)	(21.87)	(21.88)	(22.03)
Regional trends	No	No	Yes	No	No	Yes
Adj. R^2	0.064	0.068	0.069	0.512	0.513	0.514
Observations	4117	4117	4117	4117	4117	4117

Notes: Standard errors clustered at the district level in parentheses, ***p<0.01, **p<0.05, *p<0.1. All specifications include year and district by census fixed effects. Dependent variable = High-Variance (i.e., discretionary) spending per capita. *Loyal* = 1 if legislator's unity score is above her party median. Districts represented by minority party members and districts with multiple occupants are not included. Additional controls added in all models: log(population), capital, president's party, state presidential margin, majority party leadership, committee chair, Appropriations Committee, Ways and Means Committee, first term, and seniority (see Table 4).

6 Conclusions

In this paper, we investigate theoretically and empirically the impact of party discipline on the distribution of discretionary spending. In our context, party discipline refers to the ability of party leaders to ensure that party members support the party line. Following the party line might be electorally costly for legislators as it may go against their constituents' interests. In these instances, the party leaders might have to reward the legislators. One of such reward is discretionary spending targeted to the legislators' constituencies. Discretionary grants are often viewed as unproductive federal spending used to fund targeted projects, which are sometimes referred to as "bridges to nowhere." However, the party leaders have certain levels of power to allocate discretionary grants and thus can use them to influence legislators to vote along the party line.

We develop a theoretical model in which a politician faces a conflict between the constituents' preferences and the party's interests. Following the party line (i.e., being loyal) is electorally costly for the politician. To offset electoral punishment, the party leader rewards

the politician's loyalty with discretionary spending allocated to her constituency. Our model predicts that party discipline leads to larger amounts of targeted spending. Moreover, this effect is more pronounced the larger the conflict between the party's interests and the voters' preferences.

We test the predictions of our model using district-level data on U.S. federal spending and party discipline in the House of Representatives over the 1984-2010 period. Our findings suggest that districts with loyal legislators receive, on average, per year, $75 more per capita in discretionary spending (about 7% more). This effect is present only for the majority party members, which is in line with the previous work showing that control of the Congress gives legislative advantages (Albouy 2013). We also find that the rewards for discipline are larger (by 25%) in the districts in which the constituents' preferences are not aligned with the party line, in particular, in conservative-leaning districts represented by Democrats and in liberal-leaning districts represented by Republicans. These findings are in line with our theoretical model, according to which representatives face a tougher trade-off in those districts and thus demand higher rewards for supporting the party line.

From a more general perspective, our study emphasizes the impacts of party loyalty on federal spending while the existing literature has mainly focused on the political consequences of party discipline. This emphasis allows us to disclose additional sources of uneven distribution of federal grants, namely, representatives' loyalty to party lines and conflict between constituents' and party interests. Therefore, our findings complement the existing literature and suggest that various studies on federal spending may benefit from taking party discipline and conflict intensity into account.

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Appendix

A Additional tables

Table A.1: Descriptive statistics (only majority party members).

Variable	Mean	St.Dev.	Min	Max
High-variation spending per capita	1057.98	2079.73	0	29414.13
Low-variation spending per capita	3682.22	1135.51	182.19	20474.98
Loyal	0.46	0.50	0	1
Conflict	0.25	0.43	0	1
President's party	0.32	0.47	0	1
State presidential margin	0.12	0.09	0.00	0.50
Majority party leadership	0.01	0.09	0	1
Committee chair	0.09	0.29	0	1
Appropriations committee	0.15	0.36	0	1
Ways and means committee	0.10	0.30	0	1
Close election	0.05	0.23	0	1
Republican	0.41	0.49	0	1
First term	0.15	0.35	0	1
Seniority	5.47	4.13	1	28
Log(population)	13.32	0.12	12.90	13.87
Capital	0.21	0.41	0	1

Table A.2: Party discipline and spending: minority party districts.

	(1)	(2)	(3)	(4)
Loyal	9.05	8.61	9.38	9.04
	(19.95)	(20.12)	(19.86)	(20.06)
Conflict		126.09		134.91
		(122.69)		(126.76)
Loyal x conflict		51.11		49.67
		(101.79)		(103.30)
Log population	-553.92	-565.93	-755.88*	-733.96
	(361.89)	(362.64)	(449.29)	(454.45)
Capital	-85.55	-85.73	-78.14	-77.82
	(146.80)	(147.06)	(145.21)	(145.38)
President's party	-33.17	-73.84	-45.76	-87.29
	(88.78)	(92.78)	(97.84)	(98.97)
State presidential margin	-55.49	-56.67	-183.76	-193.54
	(211.58)	(210.50)	(232.12)	(230.68)
Ranking minority member	70.94	71.49	75.32	75.71
	(66.17)	(66.27)	(65.91)	(66.03)
Committee chair	15.94	15.96	35.36	35.62
	(110.81)	(111.05)	(101.02)	(101.68)
Appropriations committee	-8.55	-5.03	-4.92	-1.34
	(34.59)	(34.95)	(33.13)	(33.48)
Ways and Means committee	-12.78	-12.92	-6.85	-6.54
	(54.86)	(56.28)	(53.51)	(55.09)
Close election	98.53***	94.78***	101.66***	97.74***
	(35.65)	(33.32)	(35.80)	(33.36)
Republican	-136.68	-202.81	-151.60	-222.33
	(106.08)	(152.25)	(112.09)	(158.28)
First term	-15.40	-15.89	-8.75	-9.08
	(29.42)	(29.35)	(28.83)	(28.76)
Seniority	1.10	1.19	1.75	1.83
	(4.42)	(4.43)	(4.21)	(4.21)
Constant	8767.26*	8972.06*	-591777.61***	-506865.55**
	(4824.46)	(4833.19)	(228627.92)	(231061.11)
Regional trends	No	No	Yes	Yes
Adj. R^2	0.095	0.095	0.098	0.099
Observations	4582	4582	4582	4582

Notes: Standard errors clustered at the district level in parentheses, ***p<0.01, **p<0.05, *p<0.1. All specifications include year and district by census fixed effects. Dependent variable = High-Variance (i.e., discretionary) spending per capita. *Loyal* =1 if legislator's unity score is above the party median. *Conflict* =1 for Republican legislators representing liberal-leaning districts or Democrat legislators representing conservative-leaning districts. Districts with multiple occupants and districts represented by members in the majority are excluded.

Table A.3: Party discipline and discretionary spending in majority versus minority districts.

	Conflict=1		Conflict=0	
	(1)	(2)	(3)	(4)
Loyal	-260.84	-281.54	-1.58	-1.55
	(201.98)	(203.09)	(26.44)	(26.44)
Majority party	41.39	42.60	92.92**	93.57**
	(51.76)	(51.06)	(38.68)	(38.96)
Loyal × Majority party	550.64*	560.53*	22.62	22.67
	(304.84)	(299.63)	(37.77)	(37.82)
Regional trends	No	Yes	No	Yes
Restricted sample	No	No	No	No
Adj. R^2	0.095	0.101	0.126	0.126
Observations	2185	2185	8200	8200

Notes: Standard errors clustered at the district level in parentheses, ***p<0.01, **p<0.05, *p<0.1. All specifications include year and district by census fixed effects. Dependent variable = High-Variance (i.e., discretionary) spending per capita. *Loyal* = 1 if legislator's unity score is above the party median. Districts with multiple occupants are excluded. *Conflict* = 1 for Republican legislators who represent liberal-leaning districts or Democrat legislators who represent conservative-leaning districts. Additional controls added in all models: log(population), capital, president's party, state presidential margin, close election, majority party leadership, committee chair, appropriations committee, ways and means committee, first term, and seniority (see Table 3).

B Politician's Maximization Problem and Proof of Lemma 3.1

Given that $F'(\cdot) > 0$, the politician chooses policy $x \in [0, l]$ to maximize

$$l^2 - x^2 + \max\left[l^2 - (l-x)^2 + \alpha, 0\right],$$

which for $\alpha \geq 0$ amounts to

$$l^2 - x^2 + l^2 - (l-x)^2 + \alpha;$$

for $-l^2 \leq \alpha < 0$ amounts to

$$\begin{cases} l^2 - x^2 + l^2 - (l-x)^2 + \alpha & \text{if} \quad x \geq l - \sqrt{l^2 + \alpha}, \\ l^2 - x^2 & \text{if} \quad x < l - \sqrt{l^2 + \alpha}; \end{cases} \tag{8}$$

and for $\alpha < -l^2$ amounts to

$$l^2 - x^2.$$

We consider first the case of $\alpha \geq 0$. In this case, the politician chooses the policy

$$x(\alpha) = \arg\max_{x \in [0,l]} \left[l^2 - x^2 + l^2 - (l-x)^2 + \alpha\right] = \tfrac{l}{2}$$

and gets reappointed with probability

$$F\left(l^2 - \left(\tfrac{l}{2}\right)^2 + l^2 - \left(l - \tfrac{l}{2}\right)^2 + \alpha\right) = F\left(\tfrac{3}{2}l^2 + \alpha\right).$$

We turn next to the case of $-l^2 \leq \alpha < 0$. In this case, (8) is decreasing in x if $\frac{l}{2} \leq l - \sqrt{l^2 + \alpha}$ (which amounts to $-l^2 \leq \alpha \leq -\frac{3}{4}l^2$). It follows that $x(\alpha) = 0$ for $-l^2 \leq \alpha \leq -\frac{3}{4}l^2$. However, if $\frac{l}{2} > l - \sqrt{l^2 + \alpha}$ (which amounts to $-\frac{3}{4}l^2 < \alpha < 0$) there are two candidates for maximum, $x = \frac{l}{2}$ and $x = 0$. Evaluating (8) in $x = \frac{l}{2}$ and $x = 0$ yields $\frac{3}{2}l^2 + \alpha$ and l^2, respectively. It follows that the politician chooses $x(\alpha) = \frac{l}{2}$ when $\frac{3}{2}l^2 + \alpha \geq l^2$ (which amounts to $-\frac{1}{2}l^2 \leq \alpha < 0$), and $x(\alpha) = 0$ when $\frac{3}{2}l^2 + \alpha < l^2$ (which amounts to $-\frac{3}{4}l^2 < \alpha < -\frac{1}{2}l^2$). Her reelection probability is equal to $F\left(\frac{3}{2}l^2 + \alpha\right)$ and $F\left(l^2\right)$, respectively.

Finally, we analyze the case of $\alpha < -l^2$. In this case, the politician chooses the policy

$$x(\alpha) = \arg\max_{x \in [0,l]} \left[l^2 - x^2\right] = 0$$

and gets reelected with probability $F\left(l^2\right)$.

It follows that the politician picks the following policy:

$$x(\alpha) = \begin{cases} \frac{l}{2} & \text{if} \quad \alpha \geq -\frac{1}{2}l^2, \\ 0 & \text{if} \quad \alpha < -\frac{1}{2}l^2. \end{cases}$$

Her reelection probability is equal to

$$\Pr(\alpha) = \begin{cases} F\left(\frac{3}{2}l^2 + \alpha\right) & \text{if} \quad \alpha \geq -\frac{1}{2}l^2, \\ F\left(l^2\right) & \text{if} \quad \alpha < -\frac{1}{2}l^2. \end{cases}$$