Money, Reputation, and Incumbency in U.S. House Elections, or Why Marginals Have Become More Expensive

HENRY A. KIM   *University of Arizona*
BRAD L. LEVECK   *University of California, San Diego*

Since 1972, campaign spending by House incumbents has skyrocketed, particularly in those districts with marginal support for the incumbent's party. At the same time, parties in the House have become much more cohesive in the way they vote, producing more precise and informative party brands. We argue that these two phenomena are fundamentally linked. As parties have developed more precise reputations, incumbents in these districts must spend much more to attract voters in "marginal" districts, who would be willing to vote for a candidate with the particular incumbent's legislative record, but not the average member of his party. Increasingly precise party reputations provide voters with stronger priors that incumbents are just like the rest of their party, and incumbents in marginal districts must spend more to overcome these beliefs. We demonstrate this using a simple formal model and test it empirically using campaign-spending data from 1972 to 2008.

INTRODUCTION

The traditional view in electoral research holds that Congressional election campaigns are principally aimed at highlighting the virtues of the individual candidates (Jacobson 1978). This is particularly important in the case of incumbents, who tend to be higher quality candidates and thus able to elicit greater affinity from the voters regardless of their party affiliation (Cover 1977; Jacobson 2009). This emphasis on the role of the individual rather than the party in Congressional elections is consistent with the once-dominant view that largely downplayed the significance of party reputations in shaping voter decisions (Mayhew 1974a; Stokes and Miller 1962).

More recent research, however, assigns a much greater electoral significance to the parties' collective reputations. Numerous studies point to the presence and significance of partisan electoral tides (e.g., Brady, D'Onofrio, and Fiorina 2000; Clagget, Flanigan, Zingale 1984; Kawato 1987). Others have examined how partisan tides shape the strategies of different political actors (Jacobson and Kernell 1983), or how polarization in Congressional party politics drives electoral outcomes (Jones 2010). Various theories of Congressional parties are also motivated by the premise that the parties' collective reputations have a significant electoral effect (Aldrich 1995; Cox and McCubbins 1993). The implication of these studies is that the personal characteristics of candidates have come to exert a smaller influence on electoral outcomes relative to the collective reputations of the parties (Jacobson 1998).

The increasing electoral significance of parties has been accompanied by an underlying shift in the informativeness of parties' collective reputations relative to the reputations of individual legislators, and voters today are far more aware of what the parties stand for than they were in the past (Hetherington 2001). These findings fit with the logic of studies in voting behavior, which argue that voters act as Bayesian learners who use the record of candidate's party to form their prior beliefs about the candidate himself (Bartels 2002; Bartels and Achen 2006; Green and Gerber 1999; Grynaviski 2006). Greater intraparty homogeneity in legislative behavior makes party labels more informative and provides voters with stronger priors about their candidates (Snyder and Ting 2002). Consequently, the individual actions of legislators have less influence in changing voters' minds.

The increase in the informativeness of party labels has changed not only the way voters view candidates, but also the pattern of effort that individual incumbents in different electoral environments must put into campaigning. We argue that the increasing importance of party reputations has significantly contributed to the patterns of growth in campaign expenditures over the past four decades. The increase in campaign spending has been particularly large in "marginal" districts, where support for the incumbent's party is weak. This is because stronger party reputations have made it much more expensive to court voters in marginal districts, who will not vote for the average member of an incumbent's party, but would choose the incumbent based on his[1] individual record. Even though these voters would be willing to vote for the incumbent on the basis of his own legislative record, the party's reputation increasingly dominates voters' prior beliefs about him and makes it harder for the incumbent to efficiently communicate his record to voters.

In order to counter voters' unfavorable prior beliefs about him, the incumbent must engage in additional

Henry A. Kim is Assistant Professor, University of Arizona (h27kim@email.arizona.edu).

Brad L. LeVeck is Postdoctoral Research Fellow, University of California, San Diego (bleveck@ucsd.edu).

[1] Throughout the rest of this article, we will use pronoun "he" to refer to the incumbent candidate and "she" to refer to the voter.

campaigning at a greater monetary expense. Additional campaigning serves to better inform voters about the incumbent's more favorable record, and shifts voters away from their prior assumption that the incumbent is just like the rest of his party. Therefore, the earlier argument that incumbent spending is primarily aimed at informing voters about their own virtues, rather than their parties' (Jacobson 1978, 2009), remains largely applicable. However, the stronger collective reputation of the parties demands that incumbents in marginal districts spend more to highlight the parts of their record that set them apart from their parties.

To derive testable hypotheses based on our argument, we develop a simple formal model that describes the joint effect of party and personal reputations on the campaign spending of congressional incumbents. We model each type of reputation as composed of two parts: substance and clarity, analogous to the mean and the variance in statistics. We show that these variables interact with one another to generate three main predictions. First and foremost, when a party has a clearer reputation, incumbents in marginal districts must spend more. Second, a different relationship holds for the incumbents in safer districts, where a clearer party reputation can be advantageous. Last, as party brands become clearer, incumbents in marginal districts find it increasingly costly to maintain a voting record that is too close to their party's. We evaluate and find empirical support for each of these arguments based on electoral and campaign spending data for House elections from 1972 through 2008.

Taken together, these findings should change how scholars think about the role of party brands. Party brands are often treated as public goods that aid the electoral prospects of party members (Aldrich 1995; Cox and McCubbins 1993). By contrast, we show that party brands are simply externalities that help members in relatively safe districts, but can harm the electoral prospects of incumbents in more marginal districts. Both the positive and negative effects of the party's brand become more intense as party brands become more precise. Not only do campaigns become more expensive for incumbents in marginal districts, but it also becomes more expensive for these incumbents to vote with their party. Both findings should encourage new research on how (and whether) parties can compensate marginal incumbents for the increasing cost of party polarization.

A MODEL OF REPUTATIONS AND CAMPAIGN EXPENDITURES

Following a number of previous articles (Bartels 2002, Bartels and Achen 2006, Green and Gerber 1999, Grynaviski 2006), we model the manner in which voters respond to information about parties and incumbents as a Bayesian learning problem. We use the model to show how the reputation of the incumbent's party affects voters' prior beliefs about his record, and how this in turn affects how much an incumbent needs to spend in order to communicate his record to the voters in his district.

We model the reputations of both the party and the individual incumbent as probability distributions.[2] The reputation of the incumbent party is assumed to be the voter's prior belief about where the incumbent stands relative to the voter. This assumption is consistent with a substantial body of research in voting behavior, which observes that party affiliation of candidates constitutes a heuristic or "information shortcut" that furnishes voters with useful information about the candidates themselves (Brady and Sniderman 1985; Popkin 1995; Snyder and Ting 2002). We assume that this belief is normally distributed with mean μ_i, and variance s_i^2.

We model the new information provided by an incumbent's campaign as being drawn from his own reputation (which we assume to be based on his legislative record). This assumption is consistent with work by Coleman and Manna (2000), who show that the more campaign expenditures an incumbent incurs, the more knowledgeable voters become about his own legislative record in the past. We also assume that the incumbent is closer to the district median than his party. This is consistent with what Erikson and Wright (2008) have found. The incumbent's personal reputation is assumed to be a normal distribution with the mean x and the variance σ^2.

Voters in our model evaluate the perceived position of the incumbent relative to the perceived location of his challenger. As challengers typically have no record to campaign on, we model the challenger's reputation as simply being the reputation of the challenger's party, which is distributed normally with mean μ_c and variance s_c^2. The assumption that the challenger does not run on an individual record is consistent with much of the empirical literature on Congressional campaigns (Jacobson 2009).

To keep the model tractable, we do not model the challenger's spending decision. We therefore do not account for any indirect effect that parties' reputations might have on incumbent spending through their effect on challenger spending. The existing literature suggests that challenger spending increases as a function of incumbent spending (and vice versa) (Erikson and Palfrey 2000). So, the most likely risk of this simplifying assumption is that we are underestimating the effect of polarization on incumbent spending.[3]

The incumbent is, of course, campaigning in an attempt to win over the median voter in his district. In modeling the voter choice, we assume a standard unidimensional policy space. We label a district's median voter V and assume that she is located somewhere

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[2] For the sake of computational simplicity, we assume a normal distribution, although the model applies to any single-peaked distribution.
[3] In the empirical section of this article we account for challenger spending by making the standard assumption that incumbent spending increases linearly in challenger spending (Erikson and Palfrey 2000). We are also able to show that in districts where spending is mostly unaffected by a challenger's *ex ante* threat (Erikson and Palfrey 2000), all testable hypotheses still hold true. Some results are available in the online appendix at http://www.journals.cambridge.org/psr2013013 and others are available upon request.

FIGURE 1. Diagram of the Model
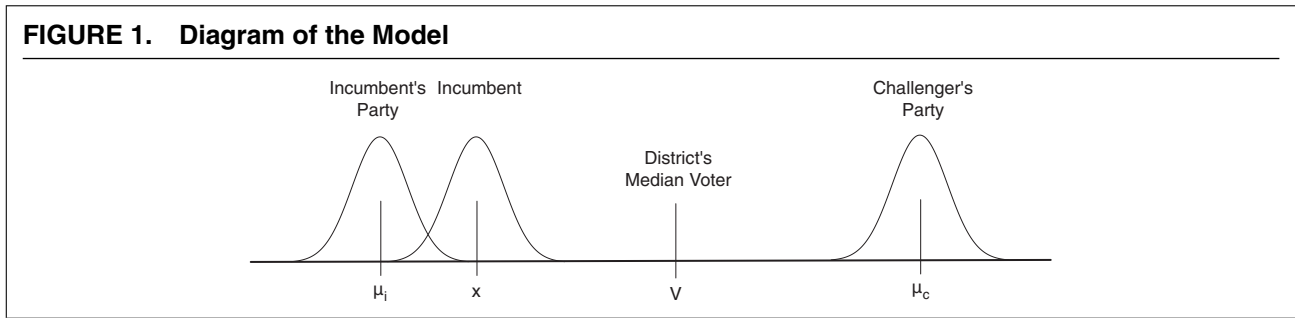
between the mean locations of the incumbent's party and the challenger's party. In any given election, the outcome is a function of the relative distance between the candidates' perceived locations. This allows us to simplify the model by assuming that the incumbent's party is located at 0 and the challenger's party is at 1, i.e., $\mu_i = 0$ and $\mu_c = 1$, without loss of generality. This also has the useful consequence of allowing V to be interpreted as the district's partisanship, or the degree to which the district leans towards the challenger's party relative to the incumbent's.

The model, as we have described it so far, is shown in Figure 1 above.

Campaigning consists of the incumbent drawing the voter's attention to his record, which we model as the voter observing random draws from the distribution of the incumbent's individual reputation.[4] This means that, after a single draw, the posterior belief of the voter regarding the position of the incumbent is characterized by a normal distribution with the following expected mean and variance:

$$E[(\mu_1|n = 1)] = \frac{x}{\sigma^2\left(\frac{1}{s_i^2} + \frac{1}{\sigma^2}\right)},$$

$$s_1^2 = \frac{1}{\frac{1}{s_i^2} + \frac{1}{\sigma^2}} \tag{1}$$

Campaigning costs the incumbent money. We model this as the incumbent paying for each observation drawn from the distribution that characterizes his own reputation, $N(x, \sigma^2)$. Let n be the number of draws from this distribution, so that a higher n represents greater campaign expenditures. The voter observes these draws and updates her belief accordingly. After n draws, μ_n, the perceived location of the candidate is

characterized by a normal distribution with the following expected mean and variance:

$$E[(\mu_n|n)] = \frac{nx}{\sigma^2\left(\frac{1}{s_i^2} + \frac{1}{\sigma^2}\right)},$$

$$s_n^2 = \frac{1}{\frac{1}{s_i^2} + \frac{n}{\sigma^2}} \tag{2}$$

The median voter, V, chooses the incumbent only if the utility she expects to obtain from voting for him is greater than the utility of voting for the challenger. For the sake of simplicity, we assume that the voter's expected utility is a linear function of the distance between her ideal point and the perceived locations of the two candidates.[5] Because the challenger's perceived location is the same as that of his party, at $\mu_c = 1$, the voter perceives the challenger's distance to be $1 - V$. The incumbent, however, can change the voter's perception of where he stands by showing the voter draws from his record. Therefore, the voter perceives the incumbent's distance to be $V - \frac{nx}{\sigma^2\left(\frac{1}{s_i^2} + \frac{n}{\sigma^2}\right)}$.

In order to account for the possibility that the voters' utility is affected by uncertainty, we incorporate the term $-\frac{\lambda}{2}s^2$ in the voter's utility function. Here, s^2 is the appropriate variance and λ is the Arrow-Pratt index of absolute risk aversion. Risk aversion means that greater uncertainty in a candidate's location lowers the voter's utility independent of any other factor. As λ approaches 0, the voter becomes risk neutral and the voter only cares about the distance between an incumbent and herself. For $\lambda > 0$ voters prefer candidates with records that they perceive as being less variable.[6]

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[4] The assumption that draws from an incumbent's record are random may be unrealistic because incumbents should want to highlight the most favorable information about themselves. However, this simplification is unlikely to fundamentally bias the model's conclusions. For instance, if we assume that incumbents only take draws from the half of their record that is closest to the voter then it is easy to show that none of the model's conclusions change qualitatively.

[5] We have opted for the simplest form of the utility function as its specific form has no substantive effect on our results as long as it is monotonic.

[6] We allow voters to be risk averse in order to make our model more comparable to previous models of party brands, such as that of Snyder and Ting (2002) as well as Woon and Pope (2008). These models show that risk aversion makes voters more tolerant of parties that are spatially distant from them if the party has a clearer reputation. Our model indicates that while risk aversion may make voters willing to vote for a party that is further away from them, it only helps out a very specific subset of incumbents—those in districts that are relatively safe. There remain districts whose voters, regardless of risk aversion, will find the party to be too distant. Incumbents in these districts will have a harder time being reelected when party

Risk aversion decreases the utility of voting for the incumbent by $\frac{\lambda}{2\left(\frac{1}{s_i^2}+\frac{n}{\sigma^2}\right)}$. Because the challenger is assumed to have no personal reputation of his own, risk aversion decreases the utility of voting for the challenger by $\frac{\lambda s_c^2}{2}$.

Therefore, V's expected utility of voting for the incumbent and the challenger after n draws is:

$$EU_i = -V + \frac{nx}{\sigma^2\left(\frac{1}{s_i^2}+\frac{n}{\sigma^2}\right)} - \frac{\lambda}{2\left(\frac{1}{s_i^2}+\frac{n}{\sigma^2}\right)}, \quad \textbf{(3)}$$

$$EU_c = -(1-V) - \frac{\lambda s_c^2}{2}$$

Given the substantial costs that an incumbent must incur for fundraising, in terms of time, policy compromises, and potential bad publicity (Baron 1989; Erikson and Palfrey 2000), we expect that the incumbent would seek to minimize campaign expenditure whenever possible. They will therefore only spend what is necessary to win over the voter V. This winning condition occurs when the voter expects to gain greater utility from voting for the incumbent, i.e., $EU_i > EU_c$, which leads to the following inequality:

$$-V + \frac{nx}{\sigma^2\left(\frac{1}{s_i^2}+\frac{n}{\sigma^2}\right)} - \frac{\lambda}{2\left(\frac{1}{s_i^2}+\frac{n}{\sigma^2}\right)} > -(1-V) - \frac{\lambda s_c^2}{2} \quad \textbf{(4)}$$

Because the left-hand side of the inequality (4) is linear in n, we need only to rearrange the terms and solve for n to find the minimum requisite campaign expenditure, $\bar{n}$. Solving this inequality for n provides the minimum number of draws that the incumbent needs to pay for from his own distribution to secure reelection, and is given by:[7]

$$n > \bar{n} = \max\left[\frac{\frac{\sigma^2}{s_i^2}\left(2V-1-\frac{\lambda s_c^2}{2}\right)+\frac{\lambda\sigma^2}{2}}{\left(x+1-2V+\frac{\lambda s_c^2}{2}\right)}, 0\right] \quad \textbf{(5)}$$

Having defined how an incumbent decides to spend money, we now define the conditions under which the reputation of the incumbent's party is harmful (increasing how much the incumbent has to spend) or helpful (decreasing the amount an incumbent must spend). Let

us define a positive parameter $K = \frac{1}{2}(1+\lambda s_c^2)$.[8] This permits us to rewrite Equation (5) as follows:

$$\bar{n} = \max\left[\frac{\frac{2\sigma^2}{s_i^2}(V-K)+\frac{\lambda\sigma^2}{2}}{[x+2(K-V)]}, 0\right] \quad \textbf{(6)}$$

In effect, K allows us to distinguish between the "marginal" and "incumbent-party friendly" districts, while accounting for effects of voter risk aversion.[9] If $V < K$, then the voter favors the mean reputation of the incumbent's party, and would be willing to vote for an incumbent located at the mean of his party. We call these districts "incumbent party-friendly." If $V > K$, then the voter disfavors the mean reputation of the incumbent's party, and would not vote for an incumbent located at the mean of his party. We call these districts "marginal."

We also define districts in terms of *how* marginal they are. The *marginality* of the district refers to how far the voter is from the incumbent's party. As we have fixed the incumbent's party's location at 0 and the challenger's party's location at 1, a district's marginality is simply defined by the location of the median voter, V. Therefore, a district is more marginal if the value of V is large, while it is less marginal—and more incumbent-party friendly—if V is small.

In practice, the campaign expenditures by incumbents are also impacted by additional factors outside of our simple model. Spending may depend on factors particular to a given district or to the national circumstances under which the election takes place. We capture this by incorporating a noise term $C_i(t)$ which has a positive nonzero mean that varies both across time t and across districts i within given any period, but is orthogonal to the parameters characterizing both party and candidate reputations. The revised expression for $\bar{n}$ then becomes:

$$\bar{n} = \max\left[\frac{\frac{2\sigma^2}{s_i^2}(V-K)+\frac{\lambda\sigma^2}{2}}{[x+2(K-V)]}, 0\right] + C_i(t) \quad \textbf{(7)}$$

We can now derive and prove two main propositions about how the incumbent's campaign spending

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brands are clearer, and will have to spend more to make their more favorable individual brand shine through.

[7] If the district is sufficiently friendly to the incumbent's party, indicated by a very small value of V, the equation implies a negative value of $\bar{n}$. This becomes especially apparent if risk neutrality is assumed, i.e., $\lambda = 0$, which simplifies the equation to $\bar{n} = \frac{\sigma^2(2V-1)}{s_i^2(x+1-2V)}$, which is negative for $V < 1/2$. Since a negative campaign spending cannot realistically take place, we impose the minimum campaign spending of 0.

[8] K is always positive since λ is positive by definition and s_c^2 is the variance of the challenger's party, which, again, must always be positive. In fact, $K \geq \frac{1}{2}$, with equality only if $\lambda = 0$.

[9] Introduction of the parameter K may also raise the question of how the challenger's party reputation shapes the incumbent's campaign expenditures. Our model shows that, if voters are risk averse, a clearer reputation on the part of the challenger's party would increase the campaign expenditures required of the incumbent. Incidentally, this provides the theoretical explanation for the empirical findings by Woon and Pope (2008) that a clearer party reputation aids the electoral prospects of its challengers, but not its incumbents. However, this effect applies everywhere independent of the district characteristics. As we are focused on examining how effects of party reputations vary across different types of districts, this question is not pertinent to our article. As the challenger's party reputation is both constant for each year (for all members of the same party) and there is no predicted interaction with district characteristics, we deal with this effect empirically by using a set of fixed effects, as described in more detail below.

is affected by the interaction between his own party's collective reputation and his district's characteristics.[10]

Proposition 1. *As the variance of an incumbent's party reputation becomes larger, his campaign spending decreases in marginal districts and increases in incumbent-party friendly districts.*

Proof. We can show this simply by differentiating Equation (7) with respect to s_i^2, the variance of the party reputation, which yields the following:

$$\frac{\partial \bar{n}}{\partial s_i^2} = -\frac{2\sigma^2 (V - K)}{s_i^4[x + 2(K - V)]} \qquad \textbf{(8)}$$

The parameters σ^2 and x are the variance of the incumbent's personal reputation and the incumbent's distance from his party, respectively. As such, these are always positive and do not affect the sign of the derivative. Indeed, the sign of the derivative depends only on the district's marginality: The derivative becomes positive if $V < K$, i.e., the district is incumbent-party friendly; it is negative, on the other hand, if $V > K$, i.e., the district is marginal.[11]

Our argument, that higher uncertainty in a party's reputation leads to an electoral advantage in a marginal districts, might appear to be at odds with some of the existing literature, most notably Shepsle (1972), who suggests that candidates might be harmed by higher uncertainty in their perceived position if voters are risk averse. It is not. In the existing literature, voters are aware of the distribution of an incumbent's own positions and evaluate him accordingly. In our model, prior to an incumbent's campaign, voters only know the reputation of the incumbent's party. Given this fact, the incumbent sometimes spends money to inform the voters that he is different from his party. Viewed through this lens, greater uncertainty in the party reputation is only advantageous in marginal districts, where the incumbent wishes to efficiently communicate that he is different from his party. However, in incumbent-party friendly districts, where incumbents don't need to distance themselves from the party, a more uncertain party reputation does hurt the incumbent if voters are risk averse.

Proposition 1 has an additional implication. Observe that the derivative $\frac{\partial \bar{n}}{\partial s_i^2}$ decreases as the district become more marginal (V increases). This means that, in very marginal districts, a higher variance in the incumbent's party reputation decreases spending a lot; while in less marginal districts, a higher variance in the

incumbent's party reputation only decreases spending a little. Likewise, in districts that are very incumbent-party friendly, a higher variance in the incumbent's party reputation increases spending a lot, while in less incumbent-party friendly districts, a higher variance in the incumbent's party reputation only increases spending a little. This implies the following corollary to Proposition 1.

Corollary 1. *The effect of variance in the incumbent's party reputation depends on how marginal or party-safe the incumbent's district is. Variance in the incumbent's party reputation decreases spending less when the district is less marginal.*

An incumbent's campaign spending also depends on the distance between the incumbent and his party.

Proposition 2. *As the incumbent's position becomes closer to his party's, his campaign expenditures will increase in marginal districts and decrease in incumbent-party friendly districts.*

Proof. To show this, we differentiate $\bar{n}$ with respect to x, the distance between the incumbent and his party:

$$\frac{\partial \bar{n}}{\partial x} = \frac{-\left[\frac{2\sigma^2}{s_i^2}(V - K) + \frac{\lambda\sigma^2}{2}\right]}{[x + 2(K - V)]^2} \qquad \textbf{(9)}$$

The sign of the derivative $\frac{\partial \bar{n}}{\partial x}$ depends, again, on the marginality of the districts. If the district is marginal, i.e., $V > K$, then this derivative is negative. A decrease in the value of x, the incumbent's distance from his party, leads to an increase in the value of $\bar{n}$. Therefore, in marginal districts, moving toward the party (and by assumption, away from the voter) always makes it more expensive for an incumbent to highlight his own record. On the other hand, in an incumbent-party friendly district, i.e., $V < K$, the derivative is positive, implying that the incumbent could decrease their spending by moving closer to the party.

Proposition 2 has an additional implication. Observe that the magnitude of the derivative $\frac{\partial \bar{n}}{\partial x}$ increases as the uncertainty of the party reputation, s_i^2, decreases. This means that, as the party reputation becomes clearer over time, being closer to the party leads to even greater spending in marginal districts, and leads to even less spending in incumbent-party friendly districts.[12] A more precise party brand helps the voter distinguish where the candidate stands, relative to his party. This means that the candidate's position has a larger effect on his spending. This leads to the following corollary:

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[10] The incumbent's spending is also shaped by the uncertainty in his own personal reputation, which affects his ability to successfully disassociate himself from his own party. As this effect, however, is less central to our argument and measurement of uncertainty in personal reputation of incumbents is potentially difficult, we address this separately in the Appendix.

[11] This derivative becomes negative again if $V > K + \frac{x}{2}$. We can exclude the third case from consideration, however, because that represents the subset of cases where the district's median voter is located so close to the challenger's party that the incumbent cannot win her over even if she knew the incumbent's position with certainty.

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[12] We expect the effect to be stronger in marginal districts, as incumbents in incumbent-party friendly districts already have a small incentive to highlight their own record when the record of their party is already popular. This implies that the average effect of adhering closer to the party is likely to be dominated by the effect in marginal districts, where it increases campaign costs.

Corollary 2. An incumbent's distance from his party has a greater effect on the incumbent's spending when his party's reputation becomes clearer.

EMPIRICAL EVALUATION OF THE MODEL

Our dependent variable is the inflation adjusted campaign expenditures of House incumbents, which we posit, reflects the effort of incumbents to inform voters about their own record (Coleman and Manna 2000; Jacobson 1978, 2009). Our formal model leads to two major predictions and two subsidiary predictions concerning how changes in an incumbent's party reputation shape his campaign spending.[13]

1. First, Proposition 1 indicates that the uncertainty of an incumbent's party reputation affects the incumbent's campaign spending, but this effect depends on the marginality of his district. In an incumbent-party friendly district, a more uncertain party reputation causes incumbent spending to increase. In a marginal district, a more uncertain party reputation causes incumbent spending to decrease. As indicated by Corollary 1, the magnitude of this effect depends on how marginal the district is.
2. Second, Proposition 2 shows that an incumbent's spending is affected by the distance between him and his party, but that this effect depends both on the marginality of a district and on the clarity of the incumbent's party reputation. First, being further from the party decreases incumbents' spending the most in the most marginal districts, and this effect attenuates as a district become less marginal. Second, distance from the party has the greatest effect on incumbent spending when the incumbent's party has a clearer (less uncertain) reputation.

In testing these hypotheses, we recognize that the political reputations of both individual legislators and parties are products of many sources that, most likely, cannot be accounted for in full. However, we follow the argument offered by Cox and McCubbins (1993; 2007) and Woon and Pope (2008) that a large proportion of these reputations is the product of various legislative activities that take place on record within Congress. The widely used DW-Nominate scores capture one important set of these reputation-shaping intralegislative activities: aggregate patterns of roll call votes cast by legislators (Poole and Rosenthal 2000). Therefore, we operationalize the pertinent reputations using the DW-Nominate scores as follows:

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[13] The model actually makes a third prediction. The ease with which an incumbent can highlight distinctiveness of his personal record from his party's depends on its clarity: if an incumbent has behaved consistently in the past, it is easier for him to show that he is different from the party. However, this is a relatively minor implication that merely complements Proposition 2 and we feel that too extensive a discussion of this topic distracts from our main argument that changes in party reputation has starkly different implications in different types of districts. As such, we leave the discussion of this topic to the Appendix.

Party Reputation and District Characteristics

In our formal model, we have normalized a median voter V's distance from the incumbent's party and the challenger's party to be between 0 and 1. We can therefore use a measure of district's partisanship to capture each district's normalized distance from each party. As the presidential vote-share of the incumbent's party in the most recent presidential election has been frequently used as a reasonable measure of a district's affinity for the national party brand (e.g., Canes-Wrone et al. 2002), we use this variable to capture *District Partisanship* for the incumbent's party in a given district.

The larger the presidential vote share, the closer the district median is to the incumbent's party. In our formal model, a district's marginality decreases monotonically as the district median, V, moves closer to the incumbent's party. Therefore, District Partisanship serves as a measure of a district's marginality. As District Partisanship increases, a district becomes less marginal.

Proposition 1 shows that the effect of District Partisanship on incumbent spending depends on the variance of his party's reputation. To measure this, we use the standard deviation of a party's DW-Nominate scores, which we label *Uncertainty in Party Reputation*. This measure captures the amount of dispersion, or "spread," among party members' collective voting records, and is directly related to how predictable a legislator's behavior will be given his party label. It therefore fits our concept of reputational uncertainty. A larger standard deviation in the party's DW-Nominate scores indicates that the party reputation is more variable and less clear.

Corollary 1 to Proposition 1 shows that the effect of variance in a party's reputation varies continuously with a district's marginality. Variance in a party's reputation should cause spending to decrease the most in the most marginal districts. This effect should attenuate as districts become less marginal, and, in the least marginal districts, uncertainty in the incumbent's party reputation should increase spending. We capture this effect with a continuous interaction between Uncertainty in Party Reputation and District Partisanship.

Individual Reputation

Proposition 2 shows that an incumbent's campaign expenditures depend on their distance from the party. We capture this through distance between an incumbent's first dimensional DW-Nominate score and their party's mean DW-Nominate scores in each Congress prior to the election, which we label *Incumbent-Party Distance*.

The effect-size of an incumbent's distance from his party depends on both the district's marginality, as noted in Proposition 2, and on the uncertainty in his party's reputation. We capture these through two interactions. We interact Incumbent-Party Distance with District Partisanship to capture the dependence of Incumbent-Party Distance on the district's marginality. To account for the dependence of Incumbent-Party Distance on Uncertainty in Party Reputation, we interact these variables.

Empirical Model

The baseline statistical model we use to evaluate our hypotheses is an ordinary least squares regression of the following form (with variables listed in the same order as the hypotheses they test):

$$\text{Incumbent's Campaign Expenditures}$$
$$= b_0 + b_1 \text{ (Uncertainty in Party Reputation)}$$
$$+ b_2 \text{ (District Partisanship)}$$
$$+ b_3 \text{ (District Partisanship}$$
$$\times \text{ Uncertainty in Party Reputation)}$$
$$+ b_4 \text{ (Incumbent-Party Distance)}$$
$$+ b_5 \text{ (Incumbent-Party Distance}$$
$$\times \text{ Uncertainty in Party Reputation)}$$
$$+ b_6 \text{ (Incumbent-Party Distance}$$
$$\times \text{ District Partisanship)}$$

We also include the following control variables to capture factors that are known to shape Congressional elections and campaign expenditure strategies:

1) *Challenger's Campaign Expenditure*. Existing research (e.g., Erikson and Palfrey 2000; Erikson and Wright 1993; Jacobson 2009) indicates that the more challenger spends, the better he does. An incumbent facing a lavishly spending challenger thus needs to spend more himself to thwart electoral danger. To account for this, we include the expenditure incurred by the challenger in the fully specified statistical model.
2) *Challenger Quality*. An incumbent's electoral prospects are known to become more difficult when facing a challenger who has previously won an elected position (Jacobson and Kernell 1983). To account for this, we include a dummy variable taking the value of 1 when the challenger has held an elected office previously and 0 otherwise.[14]
3) *Freshman*. First-time incumbents often enjoy comparatively less political influence than the more established ones. This is due to, among other reasons, the fact that a new incumbent has fewer opportunities to perform electorally useful activities (Mayhew 1974b) or less access to influential committee assignments (Munger 1988). To account for this, we include a dummy variable that takes the value of 1 if it is the first time that the incumbent faces a reelection and 0 otherwise.

All the electoral and campaign finance data that we use have been collected and generously provided

by Gary Jacobson. DW-Nominate and associated data have been obtained from Keith Poole and Howard Rosenthal's website (http://www.voteview.com). All our measures of incumbent and challenger spending have been appropriately adjusted for inflation, using 1983 as the baseline year.

Campaign expenditures are, as we noted earlier, potentially affected by numerous factors particular to the district or year. To help account for these unmeasured differences, we employ a two-way fixed effects model with district and year fixed effects.[15] In order to address the changes in district lines due to redistricting, we code postredistricting districts as separate from the old districts with the same number. By including district fixed effects, we account for any mean variation in a district that accounts for incumbent's mean level of spending. Year fixed effects allow us to control for mean levels of spending in any given year, which may be the product of various political events, such as presidential popularity and economic performance. Year fixed effects also control for any systematic time trends that may drive mean campaign expenditures.

RESULTS

Estimating the full model raises concerns about multicollinearity, as it includes three interactions of continuous variables. To allay such concerns, we run three separate models that include only one interaction each. We then fit the full model including all three interaction terms, noting that compared to our estimates of the same interaction terms in the first three models, this has almost no impact on coefficients' sign, size, or significance.

Table 1 below shows the results of our statistical analysis using Liang and Zeger (1986) standard errors clustered by district.[16] The first three columns show the results of the regressions using a single interaction term each. The first column shows the interaction between the uncertainty in the incumbent's party's reputation and district partisanship. The second shows the interaction between an individual candidate's distance from his party and uncertainty in the incumbent's party's reputation. The third column shows the interaction between an individual candidate's distance from his party and district partisanship.

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[14] In effect, we assume an arbitrary "valence" by a quality challenger, which makes him more favorable/closer to median voter in a district. We investigate the challenger's problem in greater detail in another article.

[15] For speed and convenience our replication file fits this model using an algorithm developed by Cornelissen (2008) for estimating models with high dimensional fixed effects. However, we have also fit our model using the slower method of including dummies for each variable. There is no difference between these estimates.

[16] Clustering the standard errors by district helps account for any residual autocorrelation that may still exist between district years after controlling for the mean level of spending in a district, which is a commonly overlooked but real problem in two-way fixed-effects models (Angrist and Pischke 2009, 315–9; Bertrand et al. 2004). We cluster the standard errors at the district level and not the candidate level because it is more conservative to assume that errors are correlated within districts, and, controlling for other variables, are independent between districts. However, we have also estimated our model with the errors clustered by candidate. Doing so does not change any of our results.

TABLE 1.   Effect of Party and Individual Reputations on Incumbent Campaign Expenditures: Two-Way Fixed Effects Regression, House Elections: 1972–2008[18]

	1	2	3	4
Uncertainty in Party Reputation	−2985.59*	−147.87	−641.30	−3882.84**
	(1291.12)	(590.18)	(643.06)	(1252.88)
District Partisanship	−11.05**	−1.71*	−0.55	−11.78**
	(3.85)	(0.86)	(0.546)	(3.86)
District Partisanship × Uncertainty in Party Reputation	62.11**			57.67**
	(20.77)			(20.13)
Incumbent-Party Distance	−99.44	−518.94*	−1303.59**	−1893.60***
	(51.65)	(203.48)	(406.81)	(447.37)
Incumbent-Party Distance × Uncertainty in Party Reputation			7232.64**	7612.99**
			(2316.57)	(2329.90)
Incumbent-Party Distance × District Partisanship		7.82*		8.93**
		(3.45)		(3.36)
Challenger's Spending (in thousands of 1983 dollars)	0.61***	0.62***	0.62***	0.62***
	(0.054)	(0.054)	(0.054)	(0.054)
Challenger Quality	56.18***	56.10***	57.33***	57.67***
	(10.33)	(10.33)	(10.30)	(10.34)
Freshman	13.30	12.82	13.22	13.13
	(9.93)	(9.92)	(9.91)	(9.91)
N	5411	5411	5411	5411
Multiple R^2	0.68	0.68	0.68	0.68
Adj. R^2	0.61	0.61	0.61	0.61

Notes: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. Liang-Zeger (1986) standard errors, clustered on districts, are reported below each coefficient.

We evaluate the implication of the Proposition 1 via the first three variables in our model (Uncertainty in the Party Reputation, District Partisanship, and the interaction between these variables). The estimated coefficients for these variables are shown in the first three rows of columns 1 and 4 of Table 1.

We have argued that greater uncertainty in party reputation decreases spending the most in the most marginal districts. In column 1 (and 4) the coefficient on Uncertainty in Party Reputation represents the effect of uncertainty in a party's reputation when the district is the most marginal (that is, when District Partisanship is 0). This is because these terms are also interacted (Braumoeller 2004). We therefore expect the coefficient of Uncertainty in Party Reputation to be very negative and statistically significant, which it is.

We have argued, via Corollary 1, that uncertainty in the incumbent's party reputation should reduce spending less in less marginal districts. If voters are risk averse, an uncertain party reputation can even increase spending in the least marginal districts. This is shown through the positive coefficient on District Partisanship × Uncertainty in Party Reputation. To make the interaction more interpretable, we plot the estimated marginal effect of Uncertainty in Party Reputation on incumbent spending as a function of District Partisanship in Figure 2 below. Dashed lines represent 95% confidence intervals of the estimated effect.

Figure 2 shows that the effect of the greater uncertainty in the incumbent party's reputation on campaign spending attenuates as districts become less marginal. Indeed, greater uncertainty in the incumbent's party

reputation seems to actually increase spending in the least marginal districts. Given the uncertainty in our estimation, we cannot say precisely where the sign of the effect changes. However, our best estimate is that the transition from a negative to positive effect occurs when the presidential vote share of an incumbent's party is around 55%. Interestingly, 55% is almost exactly the median value in district partisanship among the incumbents in our sample. We therefore speculate that a greater uncertainty in party reputation is potentially harmful to roughly half of a party's incumbents, forcing them to spend more on their campaigns, but helpful to the other half, reducing their need to incur campaign expenditures.

We have argued, in Proposition 2, that an incumbent's campaign spending depends on the incumbent's distance from his party. In marginal districts, a greater distance from the party reduces incumbent spending.[17] Furthermore, distance from the party should reduce spending the most in the most marginal districts. This is demonstrated in columns 2 and 4 of Table 1. Here,

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[17] A potential alternative explanation for the rising cost of campaigns in marginal districts might be that parties pour more money into the shrinking number of competitive districts. This possibility can be empirically evaluated by adding the interaction term between the number of competitive districts in an election and the measure of district partisanship. We have investigated this possibility and have confirmed that this has no effect on the main findings we present in this article. We thank one of the reviewers for pointing out this possibility.

[18] Dependent variable = Incumbent's campaign expenditures in thousands of 1983 dollars.

FIGURE 2. Marginal Effects of Uncertainty in Incumbent's Party Reputation on Incumbent Campaign Spending as a Function of District Partisanship
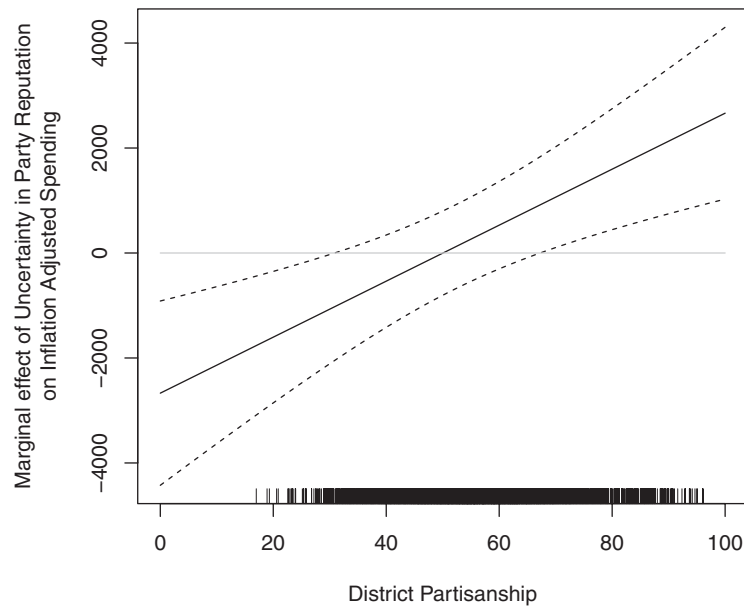
the variable Incumbent-Party Distance is interacted with District Partisanship. Therefore, the coefficient on Incumbent-Party Distance itself represents the effect of distance from the party when a district is the most marginal (i.e., District Partisanship is 0). As expected, this coefficient is negative and significant.

On the other hand, it is less helpful for the incumbent to be far from his party in less marginal districts. Accordingly, the positive coefficient on Incumbent-Party Distance × District Partisanship shows that distance from the party decreases incumbent spending less as a district becomes less marginal.

We also illustrate this interaction by plotting the marginal effect of Incumbent-Party Distance on campaign spending as a function of District Partisanship in Figure 3 below.

Again, this figure shows that the benefits of disassociating from the party decrease as District Partisanship increases.

Proposition 2 further implies, as we have noted via Corollary 2, that the effect of the Incumbent-Party Distance is magnified by a smaller uncertainty in his party's reputation: In marginal districts, the cost of being close to one's party is greater when the party reputation is less uncertain. In incumbent-party friendly districts, the cost of being further from one's party is greater when the party reputation is less uncertain. We test this by interacting Incumbent-Party Distance and Uncertainty in Party Reputation, as shown in columns 3 and 4 of Table 1. We further illustrate this via Figure 4, showing the marginal effect of Incumbent-Party Distance on campaign spending as a function of Uncertainty in Party Reputation.

Figure 4 shows an interesting trend in incumbents' incentive to disassociate from their party. Over the past four decades, the uncertainty in both parties' reputa-

tions has decreased substantially. During the period of our study, the standard deviation of the DW-Nominate scores for the House Democrats fell from 0.21 to 0.15. During the same time, the standard deviation of the DW-Nominate scores House Republicans fell from 0.19 to 0.15. Figure 4 indicates that in 1972, deviating from the party did not decrease an incumbent's spending. Distancing oneself from the party only reduced incumbents' spending once the parties become sufficiently unified in their voting behavior.

DISCUSSION

Numerous scholars have argued that Congressional elections take place in the shadow of the parties' collective reputations (Campbell et al. 1960; Cox and McCubbins 1993; Popkin 1995; Snyder and Ting 2002). This is because the party reputation can substantially affect how voters view individual candidates, and can even take precedence over an incumbent's own reputation if the party brand is informative enough. A strong and informative party label means that candidates increasingly face voters who view them as a typical partisan, and whose minds are harder to change on this front. Facing such voters, candidates are left with two possible choices: they may redouble their own personal effort to disseminate information about themselves, or resign themselves to the relative anonymity of being seen as a mere partisan.

Running as a typical partisan in an incumbent-party friendly district does not represent a special hardship. However, such a strategy is unlikely to yield success in marginal districts. If the party label alone does not suffice to ensure electoral success, the candidate is forced to campaign as an individual, predominantly focusing

FIGURE 3. Marginal Effects of Distance from the Party on Incumbent Campaign Spending as a Function of District Partisanship
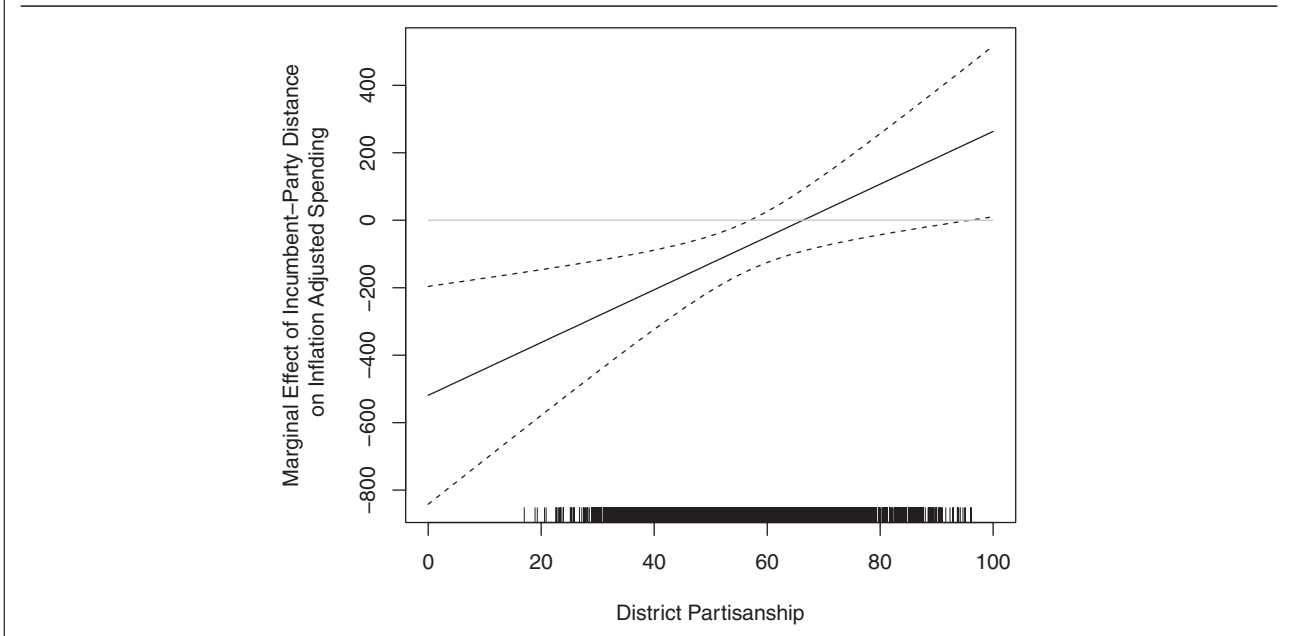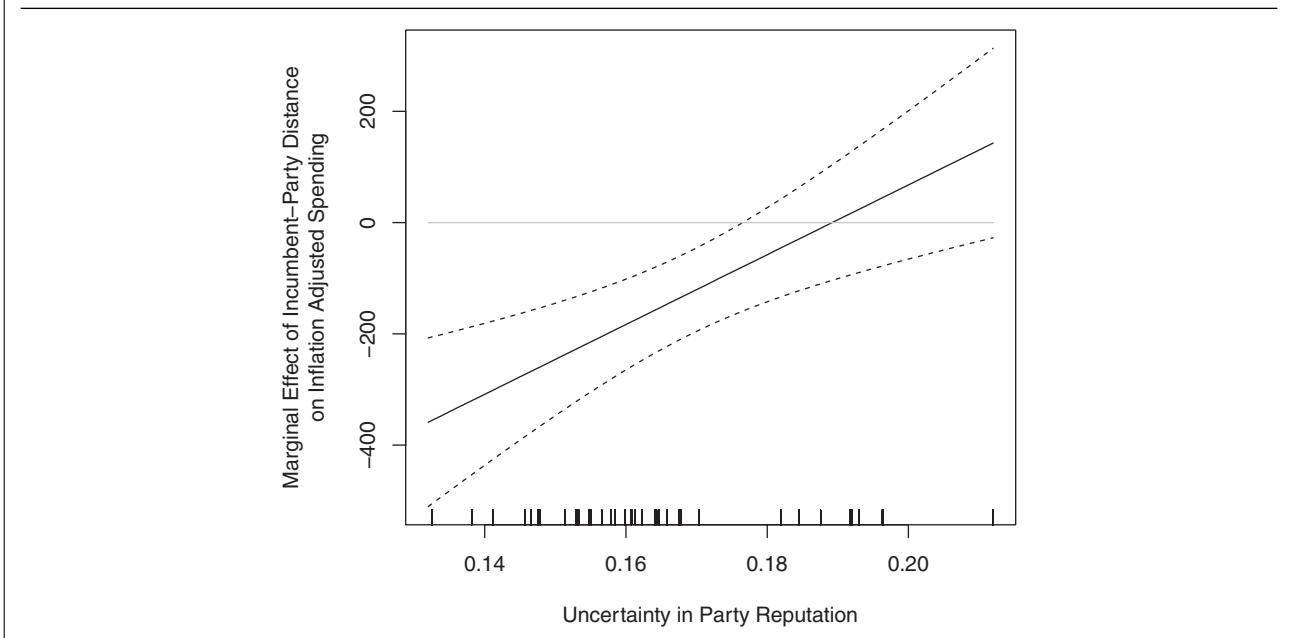

FIGURE 4. Marginal Effects of Distance from the Party on Incumbent Campaign Spending as a Function of Uncertainty in the Incumbent's Party Reputation

on his own individual merits and relying on his own resources. As Jacobson (1978, 485) observed: "campaign spending is important to candidates who need to makes *themselves* known to voters." (emphasis added). As our results indicate, directing voters' attention to the person of the candidate and away from the party is complicated by a stronger party reputation.

Our findings are consistent with previous arguments that both the reputations of the party and its individual members are strongly shaped by their legislative activ-

ities, and that these reputations have significant electoral consequences (Cox and McCubbins 1993; 2007; Woon and Pope 2008). Intraparty homogeneity in the legislative process shapes elections by shaping the information available to the voters (Aldrich 1995). By providing reliable information about most incumbents, stronger party reputations de-personalize elections, encouraging voters to ignore individual candidates and their reputations. Candidates with distinct and consistent legislative reputations of their own would be

affected less by the weight of stronger party reputations, but as parties have grown more homogeneous, such candidates have grown fewer in numbers.

While we do not dispute the argument that collective party reputations play an important role in shaping the outcome of Congressional elections, we are more skeptical of the claim that strengthening the party's reputation constitutes a public good that confers a net electoral benefit on all members, and that parties exist principally for the purpose of proactively building and maintaining a precise reputation (Aldrich 1995; Cox and McCubbins 1993). Our findings show that a clearer, stronger party reputation does not uniformly benefit all party members. While a clearer party reputation may prove an electoral boon to the incumbents in incumbent-party friendly districts, it turns the electoral environment in marginal districts toxic.

In terms of its aggregate electoral impact, a stronger party reputation may not even serve the interests of the party as a whole. By assisting in the electoral defeats of incumbents in marginal districts, or, at least making their reelection bids more difficult, a stronger party reputation might actually weaken a majority party's hold on its status in the chamber. In this vein, our findings place into context Mayhew's famous suggestion that the best service a Congressional party can provide for its incumbents is to leave them alone, so that they may carve out their own unique reputation to fit their districts (1974a, 100). In districts where the party is not especially well liked, the personal reputation of the incumbent, not the party, offers the best path to electoral success. However, a stronger party reputation gets in the way by crowding out the role of individuals and driving up the cost of campaigning.

From the perspective of the party on the whole, this can be particularly dangerous because a clearer party reputation is divisive in a way that a weak party reputation is not. A strong party reputation accentuates internal divisions within the party, as it confers both greater rewards and stiffer penalties for different subsets of party members, giving each side even more of an incentive to fight. While the incumbents in incumbent-party friendly districts may have gained, they did so by alienating their colleagues in marginal districts, possibly poisoning prospects for cooperation within the party framework in Congress. In this vein, our argument may provide some explanation for the "ends against the middle" voting that has been seen more in recent congresses.

Why, then, did the Congressional politics of 1970s and 1980s begin the trend towards stronger party reputations that we see today, as observed by Rohde (1991)? We suggest that the contrast between the patterns of campaign expenditures in 1972 and 2008 provides at least a partial answer. Even a moderate and weak party reputation is still a reputation: it still provides the backdrop that helps and hinders the electoral efforts by party candidates of different stripes. The weak reputations of the parties in the early 1970s offered no significant electoral benefit to the candidates running in highly partisan districts. The later development of stronger party reputations did, but only by shifting the burden to their intraparty rivals representing marginal districts. Thus, the changing nature of party politics in Congress in the past several decades may have been, to some degree, the product of an intraparty struggle over the party's brand that ended up conferring costs and benefits upon different subsets of partisans.

Ultimately, however, the ability of Congressional parties to unify their membership behind a clear, homogeneous label may be limited by the electoral advantage offered by individual maverickness. We have shown that establishing a distinct personal record provides an individual legislator with an alternative to a difficult and costly campaign. Consistently bucking the party on record provides an incumbent with a fairly inexpensive method of drawing attention to himself in lieu of spending campaign money (and having to raise it in the first place). Furthermore, the electoral payoff of a distinctive individual record increases as the party reputation becomes stronger.

Perhaps the party in power can forestall defections from the party brand by paying incumbents off with electorally useful resources that make up for the burden created by its collective reputation. For example, an incumbent's district may receive targeted government expenditures that benefit the incumbent electorally (Carroll and Kim 2010). Party leaders heavily involved in fundraising and the disbursement of campaign funds might target their money specifically at these marginal incumbents precisely because they need it most, and because these incumbents are particularly tempted to defect. However, because the electoral advantage of being a maverick rises as the party reputation becomes more informative, such side payments must rise as well. If so, too much cohesion—and too informative a party label—might simply become something that a party cannot afford.

APPENDIX

In this Appendix, we address how the uncertainty in personal reputations of the incumbents themselves shape their campaign spending, in addition to party reputation and the district characteristics, as noted in footnote 13.

The Effect of Variance in Personal Reputation

Greater uncertainty in an incumbent's reputation has two consequences. First, it makes it more difficult to show that the incumbent is in fact distinct from his party. Second, it inflates the perceived uncertainty of his position, in conjunction with that of the party.[19] Both these effects lower the utility the voter obtains from choosing the incumbent. Specifically,

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[19] The second effect simply echoes the argument by Shepsle (1972) that a candidate whose position is highly uncertain suffers a disadvantage when facing a risk averse electorate, and candidates may only choose ambiguous records because voters like it for some other reason. However, the first effect, which is central to our argument, is completely different from existing arguments about why voters might like or dislike candidates with ambiguous records. In our argument, a marginal incumbent faces an electorate that is hostile towards his party, and seeks to demonstrate that his own reputation has a mean different from that of his party. The difficulty posed by a high degree

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TABLE 2. The Effects of an Incumbent's Personal Reputation on Campaign Expenditures

	1	2	3
Uncertainty in Party Reputation	−3533.92**	−4072.15***	−3719.67***
	(1052.54)	(1039.27)	(1026.31)
District Partisanship	−10.63***	−12.01***	−10.85***
	(2.93)	(3.02)	(2.92)
District Partisanship × Uncertainty in Party Reputation	50.21*	58.26***	50.71**
	(15.56)	(16.09)	(15.58)
Bootstrapped SE of Incumbent DW Nominate Score	395.06*		399.74*
	(181.42)		(178.31)
Number of Roll Call Votes		−0.22	−0.22
		(0.15)	(0.15)
Incumbent-Party Distance	−1798.56***	−1961.20***	−1865.24***
	(433.86)	(437.56)	(441.13)
Incumbent-Party Distance × Uncertainty in Party Reputation	6976.35**	7974.72**	7331.64**
	(2238.52)	(2227.89)	(2281.81)
Incumbent-Party Distance × District Partisanship	8.74**	8.86***	8.66**
	(3.00)	(2.99)	(2.99)
Challenger's Spending (in thousands of 1983 dollars)	0.61***	0.61***	0.61***
	(0.04)	(0.04)	(0.04)
Challenger Quality	57.60***	59.43***	59.37***
	(9.37)	(9.04)	(9.02)
Freshman	12.41	6.92	6.17
	(8.85)	(10.33)	(10.30)
N	5411	5411	5411
Multiple R^2	0.68	0.68	0.68
Adj. R^2	0.61	0.61	0.62

Notes: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. Liang-Zeger (1986) standard errors, clustered on MC, are reported below each coefficient.

Equation (7) implies a straightforward relationship between an incumbent's campaign spending and the clarity of his personal reputation, σ^2. This implies the following proposition:

Proposition A1. *An incumbent's campaign expenditures increases as his personal reputation becomes less clear.*

Proof. In all districts where the incumbent's campaign spending is positive, i.e., $\bar{n} \geq 0$, the following must be true:

$$\frac{2\sigma^2}{s_i^2}(V - K) + \frac{\lambda \sigma^2}{2} > 0 \qquad (10)$$

This can be rewritten as:

$$\frac{2}{s_i^2}(V - K) + \frac{\lambda}{2} > 0 \qquad (11)$$

of uncertainty in personal reputation is that it makes this demonstration and the consequent diversion of attention, away from party to the person, difficult. This argument is simultaneously analogous and different from the argument by Harden and Carsey (2010) and Jones (2003). In their argument, incumbents in heterogeneous districts might seek to avoid taking up clear positions because they fear offending a significant subset of voters. In our argument, incumbents in marginal districts would prefer to be disassociated with a party because they fear offending those who are not favorably disposed to their party. In our argument, however, not taking up clear positions makes it more, not less, likely that the incumbent would be associated with his party.

Differentiating Equation (5) with respect to σ^2 yields the following:

$$\frac{\partial \bar{n}}{\partial \sigma^2} = \frac{\frac{2}{s_i^2}(V - K) + \frac{\lambda}{2}}{[x + 2(K - V)]} \qquad (12)$$

The left-hand side of the inequality (2) appears in the numerator, while the denominator is positive for all cases that we consider, as per footnote 11 above. Thus, the derivative $\frac{\partial \bar{n}}{\partial \sigma^2}$ must always be greater than 0 given inequality (2), in all districts with nonzero incumbent campaign spending, regardless of district characteristics.

What are the potential measures that capture the uncertainty in an incumbent's individual reputation? We have consistently used measures derived from the legislative records of both the party and the incumbents as stand-ins for their relative locations and uncertainties, specifically DW-Nominate Scores. DW-Nominate outputs provide a measure of uncertainty in the form of bootstrapped standard errors of the legislators' first dimensional scores (Carroll et al. 2009). However, alternate measures may be applicable, such as the number of roll call votes that a legislator participates in. The larger the value of an incumbent's the bootstrapped standard errors are, the larger the uncertainty in his personal reputation is. The more votes that a legislator participates in, on the other hand, the smaller the uncertainty in his personal reputation is likely to be.

Table 2 above provides the output of the full empirical model that includes each of these variables. Column 1 shows the results using bootstrapped standard errors of first dimensional DW-Nominate Scores, column 2 shows the results using

the number of roll call votes, and column 3 shows the results using both.

As expected, larger bootstrapped errors (which indicate greater uncertainty in an incumbent's record) correspond to a modest increase in campaign spending. The number of votes cast in a congress also has the expected sign, but at a lower level of statistical significance. This provides some evidence that incumbents with a less ideologically consistent record find it more difficult to convey information about where they stand relative to the party and the voters in a district. However, these findings also suggest that these effects are comparatively insignificant relative to the party reputation and district characteristics, which we have described as more important.

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