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How Do General Election Incentives Affect the Visible and Invisible Primary?

Previous research finds that nominating more centrist candidates increases vote share and win probability in congressional general elections. Yet party primary elections often nominate non-centrist candidates, increasing polarization between the American parties. We develop a model of choice in nomination politics that shows when and how actors respond to incentives of the general election. We then combine 200 million contribution records with data on 22,400 candidates in 7100 House primary elections from 1980 through 2016. We find that potential candidates and primary voters respond to general election incentives but do not find clear evidence for contributors or the winnowing process. Connecting these results back to our model, this implies that actors in the invisible primary either place higher value on in-party candidate ideology or have different beliefs about the general election than do primary voters. Our evidence adds to a body of research that suggests primary voters are a larger moderating force than elites in American party politics.

Conventional wisdom holds that primary elections push the Republican party to the ideological right and the Democratic party to the ideological left. But political science evidence shows that extreme candidates are less successful in general elections (e.g., Ansolabehere, Snyder, and Stewart 2001; Canes-Wrone, Brady, and Cogan 2002; Hall 2015).¹ A belief in returns-to-moderation at the general election means that actors in nomination contests face a tradeoff. They must decide whether to support a less centrist candidate and incur an increased risk that the other party's candidate wins the general election or support a more centrist candidate to increase their chances of winning the general election but at the cost of less preferred policy views (e.g., Aranson and Ordeshook 1972; Coleman 1971, 1972).

Some political elites, however, have expressed skepticism that there are returns-to-moderation at the general election. In the 2020 Democratic presidential primary, candidate Pete Buttigieg said, “It’s true that if we embrace a far left agenda, they’re going to say we’re a bunch of crazy socialists. If we embrace a conservative agenda, you know what they’re going to do? They’re going to say we’re a bunch of crazy socialists. Let’s stand up for the right policy, go up there and defend it.” (Basu 2019). Evidence from Broockman et al. (2021) suggests local party officials agree with Buttigieg. Local political elites they surveyed reported there is no trade-off between ideological purity and chances at the general election.

The choices made by political actors across thousands of primary elections determine the candidates nominated for office and, subsequently, the extent of political polarization between the parties in Congress and state legislatures. How much more these actors value extreme candidates over moderates and what they believe about the relative chances of each at the general election determines which candidate they support. While political scientists have offered evidence that actors in primary elections prefer more extreme candidates (e.g., Brady, Han, and Pope 2007; Hill 2015; Hill and Tausanovitch 2018; Rogowski and Langella, 2015), we have to date much less evidence on the beliefs of primary actors about relative chances at the general election. It is the combination of the two that determines political choices.

In this article we study how beliefs about returns-to-moderation at the general election influence the behavior of political actors in nomination politics. We start with a model of the choice faced by potential candidates, contributors, activists, and primary voters when deciding whom to nominate to face a known opponent of the other party. While most models of nomination politics consider two parties making nomination choices concurrently in anticipation of the general election, we model a setting where one party knows their general election opponent during the nomination contest. In practice, the vast majority of US House districts have one candidate (the incumbent) known with near certainty. In the 2020 House elections, for example, only eight of 399 incumbents who ran for reelection were defeated in primaries, meaning that in 98% of cases with a sitting incumbent, the incumbent made it to the general election ballot.² Therefore actors in non-open-seat out-party primaries know with near certainty who they will face in the general election. Out-party actors must decide

which candidate to support in anticipation of facing that incumbent at the general.

Our model shows that the general election has a moderating effect on primary elections only under certain combinations of beliefs and preferences. A moderate candidate in a primary election gains support only if the primary voter, contributor, or activist believes the return-to-moderation is large, if their preference for an extreme nominee over a moderate nominee is not too great, or some combination of the two.

In other words, the response of actors in primary elections to a more moderate or extreme opponent is ambiguous. While some political actors might always support an extremist or a moderate regardless of the opponent, the support of others might be contingent.

Political actors whose support in the primary is contingent, however, do not all follow the same strategy. Our model shows that while some choose to match the extremity of their opponent—supporting a moderate to face a moderate opponent and an extremist to face an extremist opponent—others choose to zag the extremity of their opponent—supporting an extremist against a moderate and a moderate against an extremist.

Actors who match the extremity of their opponent do so because, even though they would prefer that an extremist of their party represented them, an extremist's lower chances of winning the general election against a moderate opponent lead them to nominate a moderate to improve their chances at the general. When their opponent is an extremist, however, they believe they have a higher chance of winning the general election with their extremist and so are willing to take the gamble of nominating an extremist from their party.

Actors who zag the extremity of their opponent do so because, even though their extreme nominee is less likely to win the general election against a moderate opponent, they are willing to take the gamble on the extremist. If they win the general election, they get their more preferred representative. If they lose the general, the winner is a moderate from the other party. But if the incumbent is an extremist, the disutility of the incumbent winning reelection is large enough to induce actors who zag to support a moderate from their party in the primary.

Thus, our model shows that there can be a paradox of moderation. Even with a general electorate that prefers centrist candidates and actors in primary politics who know the general

electorate prefers centrists, a centrist candidate on one side can cause the other party to nominate an extremist. With model results in hand, we can draw inferences about the effect of the general election using empirical observation of primary actor response to moderate versus extreme incumbents. If we observe matching behavior, we can infer actors believe there are returns-to-moderation and that they do not have much greater disutility for an extreme versus moderate incumbent from the other party. In contrast, if we observe zagging behavior we can infer actors believe there are returns-to-moderation but that they do have much greater disutility to the other party's extremist. If we observe no response, we are less certain of its cause. It could be that the political actors do not believe there are returns-to-moderation. It could, alternatively, be that the actors' valuation of ideology dominates general election returns-to-moderation. Finally, it could be that different actors follow different strategies that, on average, roughly cancel out. But strategies that cancel out, on average, have important implications for aggregate political polarization.

We gather new evidence to estimate how incentives of the general election have influenced the choices of political actors in US House primary elections. We marshal data on candidate entry, campaign finance, and election results for nearly all House primary and general elections from 1980 through 2016. We use 200 million individual contribution records to estimate primary candidate ideology for thousands of House candidates and two-way fixed effect difference-in-differences (DID) research designs to estimate how actors in party nominations respond to the ideology of their general election opponent.

We find that voters in primary elections respond to general election incentives with a matching strategy. Primary voters tend to support a more moderate candidate to face a more moderate opponent and a more extremist candidate to face a more extremist opponent. This suggests that primary voters believe there are returns-to-moderation and that they do not dislike extremist opponents relative to moderate opponents. This implies that general elections do induce a moderating influence on the choices of primary election voters.

In the *invisible primary* prior to primary election day, however, we only find consistent evidence that potential candidates respond to the general election incentive. We estimate that, on average, about one additional out-party congressional candidate enters the primary contest in response to an incumbent two standard

deviations more centrist. Our evidence on the choices of other actors in the invisible primary is imprecisely estimated. Our evidence does not clearly indicate that incumbent ideology influences patterns of primary election campaign finance or the number of candidates receiving votes in the primary election (in contrast to filing paperwork with the FEC as a candidate). This suggests that the dynamics of the invisible primary do not materially change with different incentives implied by the general election opponent.

We also estimate if our results vary by district competitiveness (Hirano and Snyder 2019), party of primary, or nationalized versus pre-nationalized era (Bonica and Cox 2018). We do not find strong evidence of heterogeneity by any of these factors.

Our model and results speak to research on political polarization, campaign finance, nomination politics, candidate ambition, and voting behavior. Combining our evidence with our model indicates that ambitious candidates and voters in primary elections have a greater moderating influence on political polarization than do contributors and other political activists involved in candidate nominations. This result is consistent with the survey evidence of Broockman et al. (2021) that local party elites do not believe the general election opponent should influence their nomination choices. Our result also reinforces other evidence that campaign contributors behave more with expressive than instrumental motivation (e.g., Francia et al. 2003; Hill and Huber 2017; Magleby, Goodliffe, and Olsen 2018).

Second, we show that the general election returns-to-moderation do bind on choices in primary elections but that the effect appears limited to only some actors. Although the general election can induce primary voters to support more centrist candidates and induce potential candidates to throw their hats into the ring, primary voters cannot nominate centrists if the invisible primary forces centrists to drop out of the contest by denying funds, endorsements, or support. This finding suggests need for future research on the dynamics of the invisible primary in congressional elections and on the different beliefs and preferences of primary voters versus political elites.

Strategy in Primary Elections

The political science of elections suggests important differences between voters in primary and general elections. Those who participate in party primary elections have preferences out of the

mainstream, e.g., divergent from the median voter (e.g., Brady, Han, and Pope 2007; Hill 2015; Hill and Tausanovitch 2018; Rogowski and Langella 2015). At the same time, the political science of general elections finds returns-to-moderation. More centrist candidates win more general election votes and are more likely elected than more extreme candidates (e.g., Ansolabehere, Snyder, and Stewart 2001; Canes-Wrone, Brady and Cogan, 2002; Canes-Wrone and Kistner 2022; Hall 2015; Tausanovitch and Warshaw 2018).³ Returns-to-moderation are consistent with estimates of the policy views of the full American population, who appear to tend centrist rather than extreme (Clinton 2006; Hill and Tausanovitch 2015).

For example, Ansolabehere, Snyder, and Stewart (2001) show that the relative centrism of the two major-party candidates predicts election results (their table 3, appendix B). They estimate that typical variation in the midpoint between the Democratic and Republican candidate in House elections is worth up to 3 percentage points in vote share. This shows that actors who want to maximize chances at the general election ought to account for the ideology of both candidates.

To date, political science lacks extensive empirical evidence on how actors in primary elections respond to the policy platform of their opponent. Hall and Thompson (2018) show that *general* electorates respond to nominee policy ideology. They find that a less centrist opponent causes voters who identify with the other party to increase turnout at the general. Hall (2015) shows that the magnitude of this general election response is substantively large. When an extreme candidate narrowly wins a primary nomination, the party's expected vote share in the general election falls by around 10 percentage points compared to if the more centrist candidate had been nominated. This decrease in vote share decreases the chance that party wins the seat by 35 to 54 percentage points.

Evidence also suggests that other features of primary elections can influence the general election outcome. Fourinaies and Hall (2020), using data from runoff elections in the American south, estimate that divisive competition in primary elections leads to worse performance in the general election. Going to a runoff election decreases that party's chance of winning the general by around 21 percentage points.

Scholars have also examined when and why candidates choose to enter a primary contest as a function of local and

national conditions. Powell (1982) argues that candidates tend to enter primaries when their policy views match those of their constituents and Thomsen (2014) suggests that moderate candidates are discouraged from running when they expect to be outside the usual ideological range of a party's candidates.

The existing research shows that the nomination contest has consequences at the general election and that electoral context influences candidate entry. What is less clear is how much, when, and in what direction different general election incentives influence the choices of potential candidates, the choices of campaign contributors to become involved in primary contests, the choices of activists and volunteers to support one candidate or another in primary contests, or the vote choices of those who turn out in primary elections.

A Model of Choice for Actors in Nomination Politics

We develop a model of the choices that face actors in nomination politics to explain how and when the incentives of the general election might influence nomination politics. We model the choice in challenger primaries for the out-party who nominates a candidate to run against a known incumbent in the upcoming election, imagining the setting of most US House contests. The choice facing each actor in primary election politics is: knowing what they know about the incumbent, which candidate from their own party should they support?

The key takeaway from this analysis is that there is no dominant single strategy for actors in primary elections. They do not always nominate centrists in anticipation of the general election, and they do not always nominate extremists because extremists better represent their political views. Rather, their choice depends upon beliefs about the general electorate, their relative preferences for moderates versus extremists of their party, and their relative preference for moderate versus extremists of the other party.

The parameters of the model are:

- X_m, X_e, Y_m, Y_e \equiv profiles of the incumbent (X) and challenger (Y) candidates, moderate (m) or extreme (e).
- p, q \equiv political actor beliefs about the probabilities that the challenger party wins the general election if they nominate an extremist (Y_e) against the general election opponent, p if that opponent is moderate X_m and q if extreme X_e .

- $\delta_p, \delta_q \equiv$ political actor beliefs about additional returns-to-moderation (on a probability scale) when the challenger party nominates a moderate instead of an extremist. The probability of winning the general election is $p + \delta_p$ nominating a moderate against a moderate incumbent and $q + \delta_q$ when nominating a moderate against an extreme incumbent. We sometimes refer to this simply as returns-to-moderation. Note that either δ_p or δ_q could be zero if political actors believe there are no returns-to-moderation (Broockman et al., 2021).
- $x_m, x_e, y_m, y_e \equiv$ the actor's utility for each candidate profile with $x_e < x_m < y_m < y_e$.

Each actor might have different utilities for the candidates and different beliefs about election probabilities and so different actors might support different candidates in the primary. Against a moderate incumbent X_m , an actor's expected utilities for each challenger candidate are

$$\begin{aligned} U(Y_e X_m) &= p y_e + (1-p) x_m, \text{ and} \\ U(Y_m X_m) &= (p + \delta_p) y_m + (1-p - \delta_p) x_m, \end{aligned}$$

and against an extreme incumbent X_e

$$\begin{aligned} U(Y_e X_e) &= q y_e + (1-q) x_e, \text{ and} \\ U(Y_m X_e) &= (q + \delta_q) y_m + (1-q - \delta_q) x_e. \end{aligned}$$

These expected utilities make immediately clear the trade-offs facing out-party political actors. Are the returns-to-moderation δ_p and δ_q large enough to offset the preference for the more extreme candidate of their party Y_e over the more moderate candidate of their party Y_m ? Alternatively stated, do they prefer the lottery in the first line with their extremist or the lottery in the second line with their moderate?⁴

The model allows a formal statement of this trade-off, which we present in Propositions 1 and 2.

Proposition 1 (Nomination strategy against a moderate incumbent). *An actor in primary politics supports the extreme candidate of their party against a moderate incumbent if and only if*

$$\delta_p / p \leq (y_e - y_m) / (y_m - x_m).$$

Proof. See Appendix section A.

The candidate supported depends upon comparison of two quantities. On the left is the proportional increase in general election probability from nominating a moderate over an extremist. For example, if the extremist's probability at the general election is 0.4 and the moderate's 0.6, the proportional increase is $0.2/0.4 = 50\%$. The righthand side is a fraction measuring the actor's relative preference for extremity. The numerator is the difference in utility between the party extremist and the party moderate. The denominator is the difference in utility between the party moderate and the incumbent moderate. For example, if their utility to the party extremist, party moderate, and opposing moderate are 5, 4, and 2, the ratio is $(5-4)/(4-2) = 50\%$.

The actor compares their increased chances at the general election they would gain from nominating the moderate to their relative preference for their party's extreme versus moderate candidate. Naturally, the actor is more likely to support the extremist the more likely the party extremist is to win the general election (increasing the denominator p on the lefthand side of Proposition 1), the less likely the moderate challenger is to win the general election (decreasing the numerator δ_p on the lefthand side), the more the actor values their extremist candidate (increasing the numerator $(y_e - y_m)$ on the righthand side), and the less the actor values the moderate candidate of their own party (decreasing the numerator $(y_e - y_m)$ and increasing the denominator $(y_m - x_m)$ on the righthand side).

Proposition 1 also makes clear that the incumbent is relevant to the primary actor's choice. The greater the utility x_m from the incumbent (decreasing the denominator on the righthand side), the more likely the actor is to support the extremist from their party, all else equal.

This bears repeating. The more that actors in nomination politics appreciate a moderate of the other party, the more likely they are to support an extremist in their primary election. This is a paradox of moderation where a more centrist candidate on one side can cause a more extremist candidate on the other, all else equal.

The strategic considerations facing a primary actor against an extremist incumbent parallel those above with the substitution of the parameters relevant to the extremist incumbent, summarized in Proposition 2.

Proposition 2 (Nomination strategy against a extremist incumbent). *An actor in primary politics supports the extreme candidate of their party against an extremist incumbent if and only if*

$$\delta_q/q \leq (y_e - y_m) / (y_m - x_e).$$

Proof. See Appendix section A.

The actor again compares the increment to election probability they gain from nominating the moderate to their relative preference for extremity, this time against the baseline of preference from the extreme incumbent X_e . When the actor expects a greater return in election probability from nominating the moderate than their relative preference for their party extremist over their party moderate, they support the moderate.

Connecting Model to Empirical Results

The results in Propositions 1 and 2 allow us to draw inferences about the preferences and beliefs of actors in nomination politics from empirical observation of their choices. Actors might follow one of four strategy pairs against incumbents of different ideologies. They might match the ideology of the opponent (support moderate versus moderate and extremist versus extremist), zag the ideology of the opponent (support extremist versus moderate and moderate versus extremist), always support the moderate, or always support the extremist.

Actors in nomination politics match the ideology of the incumbent under the condition stated in Proposition 3:

Proposition 3 (Match ideology of the incumbent). *An actor in primary politics supports a moderate candidate versus a moderate incumbent and extremist candidate versus an extremist incumbent when.*

$$(y_m - x_e)\delta_{q/q} \leq (y_e - y_m) \leq (y_m - x_m)\delta_{p/p}.$$

Proof. See Appendix section A.

The inequality says that the actor's difference in preference for their party moderate over the other party extremist weighted by the returns-to-moderation against the extremist must be less than the actor's difference in preference between their party extremist

and their party moderate. This quantity must also be less than the actor's difference in preference for their party moderate over the other party moderate weighted by the returns-to-moderation against the moderate. This can obtain if the other party's extremist is particularly distasteful relative to the other party's moderate or if the returns-to-moderation against the other party's moderate are greater than the returns-to-moderation against the other party's extremist, or both.

The second strategy, zagging the ideology of the incumbent, has the opposite requirements of the matching strategy (see Proposition A1). To zag, the actor's difference in preference for their party moderate over the other party moderate weighted by the returns-to-moderation against the moderate must be less than the actor's difference in preference for their party moderate over the other party extremist weighted by the returns-to-moderation against the extremist. This can obtain if the other party's extremist is no more distasteful to the actor than the other party's moderate or if the returns-to-moderation against the other party's extremist are greater than the returns-to-moderation against the other party's moderate, or both.

Finally, actors in nomination politics always support extreme candidates for nomination if they believe the returns-to-moderation are at or nearly zero, or if their utility for their party moderate is very small, or if their utility to a moderate or disutility to an extreme incumbent is large (see Proposition A2). Actors always support moderate candidates for nomination if they both value their party moderate sufficiently more than the incumbent moderate, believe returns-to-moderation are sufficiently greater than zero, and do not gain too much utility from a moderate incumbent (Proposition A2).

The model allows us to draw conclusions about primary actor preferences and beliefs from observation of how the choices of each respond to the centrism of the incumbent, which we summarize in [Table 1](#).

Research Design and Data

To inform the model and understand how general elections influence decision making in primary election politics on the ground, we use a difference-in-differences (DID) design. When out-party primary actors face different incumbents in two elections, their strategic considerations diverge to the extent that the

TABLE 1
Summary of Model Connection to Empirical Observations

Actor strategy	Observed choices	Implications for primary actor preferences and beliefs.
Matching	Support a centrist to face a centrist incumbent, and support an extremist to face an extremist incumbent.	Believed electoral benefits to nominating a centrist are not large, and much prefer their own party centrist to the other party incumbent centrist.
Zagging	Support an extremist to face a centrist incumbent, and support a centrist to face an extremist incumbent	Believed electoral benefits to nominating a centrist are large, and do not much prefer their own party centrist to the other party incumbent centrist.
Ignore incumbent centrism	No pattern between primary support and incumbent cent- trism	Either believed electoral benefits to nominating a centrist are not large, or do not much prefer their own party centrist to the other party incumbent centrist, or do not much prefer their own party extremist to their own party centrist, or primary actor beliefs and preferences heterogeneous, leading to a mix of matching and zagging strategies that cancel out.

incumbents differ in characteristics relevant to electoral choice. By holding fixed other elements but allowing incumbent ideology to change, we can examine how actors in nomination politics react to different incentives created by the general election.

Our DID specification is.

$$y_{ijt} = \alpha_{ij} + \delta_{jt} + \beta(\text{Incumbent centrism})_{ijt} + \varepsilon_{ijt}, \quad (1)$$

where y measures a choice made by actors in the primary politics of district i , out-party j , year t , δ_{ij} is a party-district-districting cycle fixed effect, δ_{jt} is a party-year fixed effect, β is our coefficient of interest mapping incumbent centrism into the choices of actors in out-party primary ijt , and ε_{ijt} is a random error. We define districting cycle fixed effects by inter-censal years, e.g., the years 1992–2000 are one districting cycle.

This regression specification allows us to estimate how primary actors react to opponents of different ideology while controlling for potential district-party and party-election confounding variables. For example, do more candidates run in the primary when the incumbent is moderate versus extreme? Are party donors more likely to involve themselves in a primary election when the incumbent is moderate or when the incumbent is extreme? And are primary voters more likely to match or zag the extremity of their general election opponent?

The DID design controls for at least two sources of potential confounding with two-way fixed effects. First, each congressional district has primary actors from each party with likely-correlated ideological proclivities and political behaviors. The party-district-districting cycle fixed effect accounts for these average proclivities as well as any other fixed characteristics of the district in that districting cycle.

Second, the party-year fixed effects account for election-specific factors that might influence incumbent turnover or the behavior of out-party actors. For example, if there are commonly held expectations (Cox 1997) that a year will be “good for Democrats,” we might see more retirements by incumbent Republicans *and* more Democratic contestants in primary elections. The party-year fixed effects account for any party-election average influences including wave elections and differences between presidential and midterm elections.

The party-year fixed effects also control for over time variation in factors that impact all districts such as polarization of parties or the nationalization of elections.

To account for district-specific changes in party support—which might be related to incumbent retirements and replacements—we include as a covariate two-party presidential vote in the congressional district; contemporaneous in presidential years and two-year prior presidential vote for midterm years.

Data and Measurement

To evaluate the responsiveness of actors in nomination contests to the policy ideology of their opponent, we compile data from US House elections. Our analysis considers choices in congressional primaries made by three classes of actors. First, we consider the actions of potential candidates. We use the Bonica (2013, DIME) compilation of Federal Election Commission (FEC) campaign finance records to count the number of candidates who file with the FEC (whether or not they raised money) in each party-district-election. We imagine that this variable measures the result of strategic calculations by ambitious challengers (Jacobson and Kernell 1983).

In addition to considering the number of candidates who file with the FEC, we also look at the type of candidates who choose to enter the race. We consider two types of potential candidates: centrists and extremists. To identify centrist candidates, we identify candidates who are one standard deviation more moderate than the party's mean candidate based on their ideology, as computed below. Extremist candidates are candidates who are one standard deviation more extreme than the mean candidate in the party.

Second, we investigate how the parties themselves behave. For each party and election, we count the number of “party contributors” (Hassell 2015) who gave to any primary candidate in the district prior to the primary election date.⁵ We classify party contributors as those who gave to one or more of the Democratic National Committee, Republican National Committee, or any of the four party campaign committees for the House and Senate in that cycle. These donors are those who are most likely to be involved with the political party at the local level and likely to provide additional support in the form of volunteering or other resources (Hassell 2015). We imagine that this variable approximates the result of strategic calculations by local party elites, similar to those interviewed by Broockman et al. (2021).

Additionally, we investigate whether the behavior of parties changes in direction as well as magnitude. To do this, we consider the centrism of the average candidate that a party contributor

gives to in each district; we tally the average ideology of candidates receiving donations from party contributors, weighted by the number of party donors candidates receive donations from. We code this as centrism; higher values indicate that party contributors are donating to more moderate candidates while lower values indicate donations to more extreme candidates, on average.

We measure the net consequence of the invisible primary with an indicator variable taking the value one if more than one candidate received votes in the primary election (Hirano and Snyder 2019, data extended with Federal Election Commission results) and zero if only one candidate received votes. We imagine that this variable measures the winnowing effect of the invisible primary; if the party is active we should see fewer candidates in the primary receiving votes as candidates drop out and decline to contest on election day. We also look at the number of candidates who are viable, using Thomsen (2022)'s measure of the effective number of candidates in a primary. This measure reflects how competitive a primary is overall, with higher scores indicating less coalescence around a single candidate.

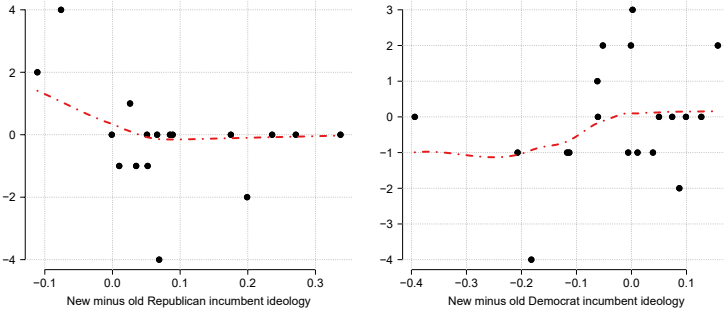
Finally we look at voter choices in primary elections. To do so, we measure the ideological profile of the eventual nominee of the party primary. We construct an estimate of each primary candidate's policy ideology using contributions made in the primary election cycle. Following the procedure of Hall (2015), we first impute to each contributor a pseudo-NOMINATE score as the dollar-weighted average of the NOMINATE scores of congressional candidates to which they contribute in that election cycle. Second, for each primary candidate we compute a pseudo-NOMINATE score as the dollar-weighted average of the pseudo-NOMINATE scores of their pre-primary contributors. Constructing a pseudo-NOMINATE score for each primary candidate allows us to compare ideology to the incumbent on a roughly common scale, where our explanatory variable of congressional incumbent ideology is the DW-NOMINATE first-dimension estimate downloaded from voteview.com (Carroll et al. 2009).

Results

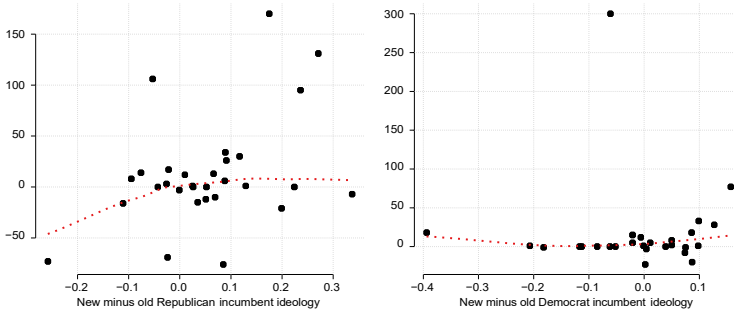
We begin with [Figures 1](#) and [2](#). We plot behaviors of out-party actors in the invisible and visible primary in districts where an incumbent runs for reelection after replacing a same-party incumbent within the same districting cycle. Sometimes the new

FIGURE 1
Invisible Primary Rresponses to Change in Opponent Ideology

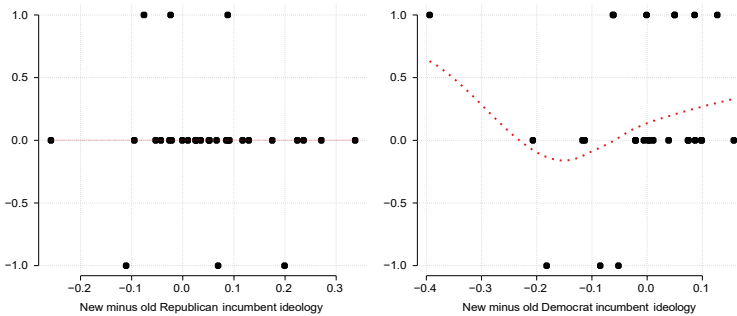
Party candidate response: Candidates filed with FEC



Party-connected contributor response: Number party-connected contributors

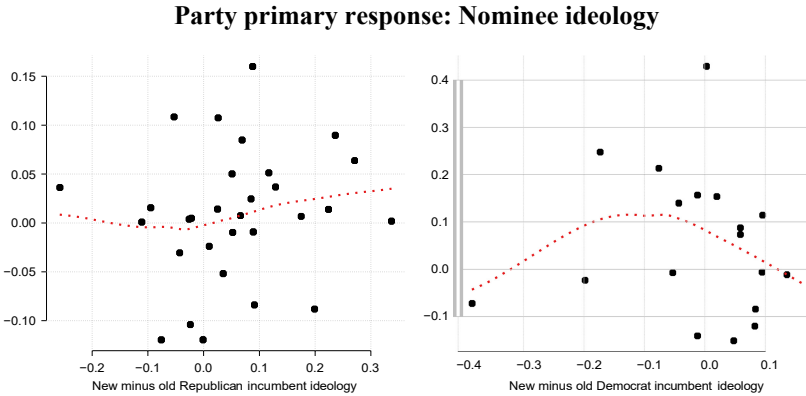


Party invisible primary response: Multiple candidates win votes at primary



incumbent will be more centrist. Other times the new incumbent will be less centrist. By looking at within-district changes in primary actor choices, we hold constant features of the district-districting

FIGURE 2
Net Response to Change in Opponent Ideology



cycle that do not vary over time and aim to isolate the direct effect of change in the incumbent's ideology on choices by actors in primary elections. This is also the identifying variation in our regression models below.

For each of these out-party-district-elections, we plot change in a behavior in the out-party's primary politics (y-axis) against change in the incumbent's NOMINATE score (x-axis). When the value on the x-axis is greater than zero, the new incumbent has a more conservative first-dimension NOMINATE score than the old incumbent. When less than zero, the new incumbent has a more liberal score than the old.

Figure 1 presents results for actors in the invisible primary and Figure 2 for voters in the visible primary. We present Democratic primaries on the left and Republican primaries on the right. The first row of Figure 1 considers the strategic response of potential out-party challengers measured by change in the number of candidates who filed paperwork to run for office with the FEC. The second row considers the response of contributors and third the winnowing effect of the invisible primary with the indicator for more than one candidate receiving votes.

If general election incentives bind on the actions of actors in nomination politics through one of the mechanisms we presented above, we should observe systematic relationships between change in incumbent ideology and political choices of the out-party. The

direction and magnitude of these relationships depend upon the parameters of our model and so, to the extent we observe patterns, we can draw inferences about the preferences or beliefs of the out-party actors involved.

Across the three rows of [Figure 1](#), we do not observe strong systematic relationships. There is some suggestive evidence of more candidates filing with the FEC to run against more centrist incumbents (Republican incumbents with lower NOMINATE scores in the upper left frame and Democratic incumbents with higher NOMINATE scores in the upper right frame). The other four frames do not present any clear patterns.

[Figure 2](#) presents the combined effect of candidate, contributor, and voter behavior with change in the policy ideology score of the candidate eventually nominated by the out-party. Democratic nominees show a very small response to change in Republican incumbent ideology (left frame) while Republican nominees exhibit a variable response to change in Democratic incumbent ideology.

Difference-in-Differences Model Results

[Figures 1](#) and [2](#) do not account for time trends or changes in party support of general electorates. To account for these potentially spurious variables, we apply the DID designs and present results of estimating Equation 1 in [Table 2](#). Each column presents coefficient estimates for the response by different primary actors. We cluster standard errors on the party-districting cycle-district.

To ease comparison, we multiply Republican incumbent scores by negative one to standardize incumbent NOMINATE scores so that increasing values always indicate the incumbent is increasingly centrist. We also divide this centrist score by two standard deviations measured within the sample of that column's specification so that coefficients represent the causal effect of two standard deviations of centrist.

Column one of [Table 2](#) presents the estimated effect of incumbent centrist on the number of candidates who filed to run in the out-party primary in that cycle. We find that an incumbent two standard deviations more centrist induces one additional out-party challenger in about eight out of every ten contests. Ambitious candidates for office are somewhat more likely to run when the incumbent in their district is more centrist. However, when we break this down by ideology we see that these candidates are concentrated around the party's median; incumbent centrist

TABLE 2
Response by Primary Actors to Opponent Centrist

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
No. Candidates in Primary with FEC	No. of Centrist Candidate	No. of Extreme Candidates	Log no. campaign Committee Connected Contributor	Mean Party Support Centrist (standardized)	More than One Primary Receives in	Effective No. of Candidates	Nominee Centrist (standardized)
0.786*	-0.092	-0.078	0.272	-0.006	-0.100	-0.308	0.045**
(0.465)	(0.165)	(0.151)	(0.288)	(0.006)	(0.139)	(0.207)	(0.021)
Out-Party Presidential Vote Share in District	-0.332	0.796	0.916	-0.000	-0.074	0.896	-0.037
(1.469)	(0.661)	(0.830)	(1.174)	(0.034)	(0.519)	(0.658)	(0.082)
Observations	1,470	1,470	2,751	1,081	3,440	3,440	741
R-Squared	0.668	0.737	0.845	0.862	0.572	0.668	0.954
Year-Party FEs	✓	✓	✓	✓	✓	✓	✓
Party-Districting Cycle-District FEs	✓	✓	✓	✓	✓	✓	✓
Response Variable Standard Deviation				.13			.15

**p < 0.05

*p < 0.1

Note: Standardized incumbent centrist scores are NOMINATE score divided by two standard deviations within that estimation sample. All scores recorded so that increasing indicates more centrist.

does not contribute to either more candidates who are extreme or more who are centrists (columns two and three).

Columns four through seven present the effect of incumbent centrism on the (log) number of party-connected contributors, the behavior of contributors, and the winnowing effect of the invisible primary. Although the point estimates are suggestive, none of the three results are statistically significant. Actors in the invisible primary do not respond as consistently to incumbent centrism as do potential candidates and voters (column eight).

Column eight estimates voter response to incumbent ideology. In order to distinguish preferences of primary voters from the effects of the invisible primary, we limit analysis to primary elections where at least two candidates remained on the ballot. That is, we want to observe how voters respond when given choice about whom to nominate.

Voters respond to a more centrist incumbent by nominating a more centrist challenger. The average effect is small: an incumbent two standard deviations more centrist causes a nominee 0.05 standard deviations more centrist, on average. Primary voters appear to follow a matching rather than a zagging strategy, nominating more moderate challengers when the incumbent is more moderate and less moderate challengers when the incumbent is less moderate.

The results of the DID analysis suggest that the general election incentives of incumbent ideology impact the choices of some actors in nomination politics but not others. The pool of potential challengers responds to a more centrist incumbent by being somewhat more likely to enter the primary contest. Voters at the primary election modestly match the ideology of the incumbent. In contrast, we do not find much evidence that either the participation of party-connected contributors or the winnowing process of the invisible primary change in response to incumbents of different ideologies.

Because the data sources for outcome variables differ, the sample size varies across columns. Models 6 and 7 include the full sample of primary results because they do not require FEC data. Models 1 and 4 require only some FEC data in every district and so include most districts. The more restricted models require broader candidate centrism measures and so have smaller sample sizes. The most restricted model (eight) is limited because it requires centrism scores computed for the nominee of the out-party primary, which is often missing either due to incomplete FEC filings or a lack of donors who also gave to incumbent politicians. The different

sample sizes represent an attempt to include as much data as possible to maximize precision and coverage for each model.

Variability in Response to Incumbent Ideology by District Competitiveness

Hirano and Snyder (2019) argue general election competitiveness drives primary behavior. Hassell (2023) also finds competitiveness important; he shows that party elites coordinate less in safe districts. Table 3 estimates variation in responsiveness to incumbent centrism by competitiveness of the general election. We follow Hirano and Snyder (2019, 38) and define a district competitive if the previous election vote margin was less than 15%, which is about 23% of the contests in our sample. We interact incumbent centrism with a competitive indicator.

We find little evidence that general election competitiveness drives results. None of the interaction terms are statistically distinct from zero at standard levels and the point estimates are of small magnitude except for the number of candidates filing with the FEC (column one). There the point estimate suggests competitive districts increase the rate of new entrants by around 50%.

The only exception is the measure of how party contributors behave; we observe a small effect of district competitiveness on which candidates campaign committee-connected contributors donate to. A more centrist incumbent leads to party contributors backing more extreme nominees in competitive districts. This effect is small, similar to the moderating effect of incumbent centrism on nominee centrism but works in the opposite direction. If accurate, it suggests party contributors may follow a zagging strategy.

In Appendix Table A1, we present DID results on nominee centrism and district competitiveness when measuring centrism exclusively with contributions made prior to the primary date. We find a larger effect of incumbent centrism on pre-primary ideology and otherwise-similar interaction effects.

That we do not find general election competitiveness of great influence on the behaviors of primary actors connects to our model results. The model says actors in nomination politics respond to incumbents of different ideologies either because of change in general election probabilities or because of differences in their preference for centrist versus extreme opponents. That we only find minimal variability in behavior by general election

TABLE 3
Response by Primary Actors to Incumbent Centrism, by District Competitiveness

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
No. Candidates in Primary Filed with FEC		No. of Centrist Candidates	No. of Extreme Candidates	Log no. campaign Committee Connected Contributors	Mean Party Support Centrist	More than One Primary Receives in	Effective No. of Candidate	Nominee Centrist (standardized)
Incumbent Centrist (standardized)	0.634 (0.479)	-0.057 (0.180)	-0.169 (0.193)	0.297 (0.306)	-0.002 (0.053)	-0.088 (0.141)	-0.349* (0.211)	0.047** (0.021)
Incumbent Centrist* Competitive	0.349 (0.217)	-0.043 (0.068)	0.276 (0.213)	0.014 (0.144)	-0.072** (0.029)	-0.014 (0.060)	0.079 (0.095)	-0.002 (0.008)
Out-Party Presidential Vote Share in District	0.592	-0.361	0.364	0.740	0.090	-0.085	0.917	-0.067
Out-Party Presidential Share Competitive*	(1.492) 0.873	(0.688) -0.054	(0.874) 0.967	(1.190) 0.169	(0.286) -0.199**	(0.525) -0.008	(0.671) 0.133	(0.087) 0.002
Observations	(0.561) 2,757	(0.187) 1,446	(0.670) 1,446	(0.332) 2,713	(0.070) 1,063	(0.163) 3,400	(0.274) 3,400	(0.017) 727
R-Squared	0.668	0.738	0.788	0.848	0.867	0.571	0.669	0.958
Party-Districting Cycle-District FEs	✓	✓	✓	✓	✓	✓	✓	✓
Year-Party FEs	✓	✓	✓	✓	✓	✓	✓	✓
Response Variable Standard Deviation								.15

**p<0.05
*p<0.1

Note: Standardized incumbent centrist scores are NOMINATE score divided by two standard deviations within that estimation sample. All scores recoded so that increasing indicates more centrist.

competitiveness suggests that the variability we do see—in the centrism of the challenger candidate voters select—is driven by the relative disutility of a centrist versus extremist opponent rather than by differential returns-to-moderation against a centrist versus extremist opponent. The heterogeneity we do observe suggests that party actors might be slightly more attuned to the competitiveness of general elections, although given the small substantive size of the coefficient and the large number of heterogeneous effects examined this result should be interpreted with caution.

Variability in Response to Incumbent Ideology by Party

In [Table 4](#) we estimate how the effects of incumbent centrism vary by political party. We interact centrism with an indicator for the observation being a Democratic primary (and thus a Republican incumbent).

We do not find statistically significant differences by party. The point estimates, however, are of important substantive magnitudes. They suggest that the candidate entry effect is driven more by Republican potential challengers than by Democratic (column one, the negative point estimate on the Democratic interaction) and that, to the extent party-connected contributors respond, Democratic contributors are more responsive than Republican (column four, the point estimate on the interaction is an order of magnitude larger than the direct effect). The winnowing point estimate (column six) suggests slightly larger magnitude effects of Republican incumbent centrism on Democratic invisible primaries. Voter response (column eight) appears to be driven by Republican nomination politics with the interaction point estimate fully cancelling out the positive direct effect. All of these point estimates have large standard errors and so should be interpreted with caution.

Variability in Response to Incumbent Ideology over Time

Bonica and Cox (2018) argue that, beginning in 1994, the political parties “strategically nationalized” congressional elections due to increasing electoral competitiveness (though see Canes-Wrone and Kistner 2022). They argue that strategic nationalization drew voter attention toward the contest between party coalitions and lessened the benefit to individual candidates of tailoring a district-specific ideology. In our model, this would seem

TABLE 4
Response by Primary Actors to Incumbent Centristism, by Party

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Number candidates in primary filed with FEC	Number of centrist candidates	Number of extreme candidates	Log number campaign committee connected contributors	Mean party support centristism (standardized)	More than one candidate receives votes in primary	Effective number of candidates	Nominee centristism (standardized)
Incumbent centristism (standardized)	1.143	-0.739	-0.123	0.052	-0.010	-0.088	-0.147	0.047**
	(0.816)	(0.608)	(0.394)	(0.274)	(0.017)	(0.185)	(0.343)	(0.022)
Incumbent centristism* Democratic primary	-0.617	0.834	0.062	0.468	0.006	-0.023	-0.274	-0.055
	(0.952)	(0.618)	(0.425)	(0.589)	(0.018)	(0.263)	(0.421)	(0.042)
Out-party presidential vote share in district	0.779	-0.312	1.088	1.167	0.015	1.000	1.330	-0.016
	(2.020)	(1.091)	(1.226)	(0.990)	(0.058)	(0.696)	(0.923)	(0.106)
Out-party presidential share* Democratic primary	-0.512	0.013	-0.684	-0.554	-0.030	-2.357**	-0.982	-0.085
	(2.934)	(1.215)	(1.624)	(2.652)	(0.069)	(1.035)	(1.299)	(0.148)
Observations	2,793	1,470	1,470	2,751	1,081	3,440	3,440	741
R-squared	0.668	0.741	0.779	0.845	0.862	0.574	0.669	0.954

TABLE 4 (Continued)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Number candidates in primary filed with FEC	Number of centrist candidates	Log number campaign committee connected contributors	Mean party support centrist (standardized)	More than one candidate receives votes in primary	Effective number of candidates	Nominee centrist (standardized)
Party-districting cycle-district FEs	✓	✓	✓	✓	✓	✓	✓
Year-party FEs	✓	✓	✓	✓	✓	✓	✓
Response variable standard deviation				.13			.15

**p < 0.05

*p < 0.1

Note: Standardized incumbent centrist scores are NOMINATE score divided by two standard deviations within that estimation sample. All scores recoded so that increasing indicates more centrist.

TABLE 5
Response by Primary Actors to Opponent Centristism, by Era

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Number candidates in primary filed with FEC	Number of centrist candidates	Number of extreme candidates	Log number campaign committee connected contributors	Mean party support (stand-ardized)	More than one candidate receives votes in primary	Effective number of candidates	Nominee centristism (stand-ardized)
Incumbent centristism (standardized)	1.037** (0.517)	-0.172 (0.216)	-0.075 (0.179)	0.308 (0.267)	-0.012 (0.011)	-0.196 (0.162)	-0.367 (0.224)	0.046** (0.021)
Incumbent centristism* After 1994	-0.356 (0.289)	0.105 (0.142)	-0.005 (0.126)	-0.048 (0.077)	0.007 (0.009)	0.135 (0.110)	0.084 (0.149)	-0.001 (0.010)
Out-party presidential vote share in district	-0.334 (1.898)	-0.784 (0.916)	0.943 (1.017)	0.434 (1.120)	0.038 (0.071)	1.158* (0.661)	1.559* (0.848)	-0.072 (0.114)
Out-party presidential share After 1994*	1.411 (1.469)	0.381 (0.631)	-0.153 (0.805)	0.567 (0.407)	-0.044 (0.068)	-1.459** (0.490)	-0.797 (0.699)	0.036 (0.087)
Observations	2,793	1,470	1,470	2,751	1,081	3,440	3,440	741
R-squared	0.669	0.739	0.778	0.845	0.863	0.574	0.669	0.954
Party-districting cycle-district FEs	✓	✓	✓	✓	✓	✓	✓	✓
Year-party FEs	✓	✓	✓	✓	✓	✓	✓	✓
Response variable standard deviation					.13			.15

**p < 0.05

*p < 0.1

to decrease the magnitude of the district-specific general election returns-to-moderation δp and δq . This should generically increase the likelihood that political actors support extremists in nomination politics and decrease the responsiveness of primary elections to incumbent ideology.

In [Table 5](#), we estimate variability by time period. We interact centrism with an indicator variable for the election taking place after 1994. We find no statistically significant interaction effects. The point estimates on the interactions are of small magnitude for all but column six. The point estimates suggest that, while incumbent centrism narrowed the field from 1980 to 1994, it did not influence the number of candidates on the primary ballot after 1994. With larger standard errors, however, this conclusion must be tentative.

Conclusion

Previous research documents that (a) voters at general elections vote for more centrist candidates in congressional elections and (b) party activist and voters at primary elections often nominate more extreme candidates. These two empirical results suggest a tension where political actors in nomination politics must evaluate a trade-off between what they want in the ideal and the gamble they must take in practice. The dynamics of these contrasting incentives help determine the representation attained by American voters.

In this essay, we bring more than 35 years of candidate filing, political contribution, and primary election data to bear to understand the response of actors in nomination politics to the ideology of their general election opponent. Our evidence suggests that some actors in nomination politics in the United States from the 1980s through the 2010s responded to general election incentives while the evidence for others is inconclusive. The number of candidates filing to run and the centrism of the eventual nominee increased with a more centrist incumbent. The behavior of party contributors and the winnowing effect of the invisible primary, however, did not respond consistently to the ideology of their opponent, on average, nor do the number of extreme or centrist candidates running. While these average non-responses might mask different patterns of individual-level responses, it is the aggregate response that contributes to any average effect of nomination politics on polarization.

These findings help explain why the American political parties have polarized even though voters in American general

elections seem to prefer more centrist candidates. Our model of choice in nomination politics shows that, even if general electorates prefer centrist candidates, nominating extremist candidates is not necessarily irrational for party actors. Instead, beliefs about the *relative* returns-to-moderation for a moderate as opposed to an extremist nominee might induce political actors in nomination politics to sometimes support an extremist even if they know the general electorate would more likely select a moderate.

Our model and results also help explain why a party might unilaterally polarize despite the electoral incentives to run moderates in the general election. A unilateral polarization might look something like the Republican party when Tea Party activists unseated centrist incumbents in primaries prior to the 2010 midterm elections (Skocpol and Williamson 2012). Change in the relative utility for a party's more extreme versus moderate candidates, or in the relative disutility for the other party's more extreme versus moderate candidates, or in beliefs about the relative returns- to-moderation can lead to change in choice by primary voters even without any change in the preferences of the general electorate.

One mechanism that could temper the incentives of general election returns-to-moderation is the absence of "common beliefs about viability" (Cox 1997). If actors in primary politics have divergent beliefs about which of the candidates offers the best value of viability and representation, primary elections might not converge on relatively centrist nominees. This might very well drive our finding that voters and potential candidates respond to opponent ideology while contributors and the invisible primary do not. Further, Utych (2020b, 2020a) suggests the centrist incentives might be changing, which could produce (potentially accurate) divergent beliefs among primary electorates.

Second, actors in primary elections might anticipate the legislative institutions through which representation is moderated. If general election voters believe that voting for a Democratic or

Republican candidate in their district realistically means voting for the Democratic or Republican party coalition (e.g., Tausanovitch and Warshaw 2018), the policy ideology of *district* candidates might be of less import (Bonica and Cox 2018). If primary actors believe general election voters make choices in this way, they might conclude that returns-to-moderation are muted, tune out general election incentives, and make choices on other factors. Canes-Wrone and Kistner (2022) present evidence that

general election vote share is now less responsive to challenger than to incumbent ideology.

These alternative mechanisms suggest important tasks for future research: evaluating beliefs about returns-to-moderation among primary actors, understanding the relative valuation of party moderate and extreme candidates, and measuring the voting calculus of general election legislative voters with respect to selecting an individual representative against selecting a party coalition. Any of these mechanisms might help explain why only some actors in nomination politics appear to respond to the returns-to-moderation offered by voters at general elections.

ENDNOTES

1. There is some debate as to the size or persistence of returns-to-moderation; Utych (2020b) and Cohen et al. (2016) provide evidence that returns-to-moderation are either disappearing or essentially zero in some contexts. Our model shows that *beliefs* about returns-to-moderation are the relevant input to the choices of political actors in sequential elections, regardless of their actual size.

2. See https://ballotpedia.org/United_States_Congress_elections,_2020 and also Boatright (2013).

3. Tausanovitch and Warshaw also find that voters respond to the perceived ideological extremity of the party coalitions rather than the individual candidates, which would complicate the incentives faced by primary voters.

4. We have chosen a simple model, but one could alternatively model the choice in continuous space such as in a spatial model. For example, with quadratic utility and win probability following a normal distribution, the actor would trade off decreasing quadratic utility moving the challenger away from their ideal point for increasing win probability from a midpoint between a more centrist nominee and the incumbent.

5. Hassell (2023) proposes using coordination to measure party activity, but we believe volume to be more directly related to election outcomes. Total volume of support represents the aggregated beliefs of party actors about the potential to win the district.

6. Due to the smaller sample size, we are unable to estimate the by-party interaction term.

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APPENDIX A

Analysis of the Formal Model

With the parameter and expected utility definitions from the main text, we can characterize the strategies for each political actor in the primary election.

A.1. Proof to Proposition 1

Proof. The political actor supports the extreme candidate against the moderate incumbent when

$$\begin{aligned} U(Y_m | X_m) &\leq U(Y_e | X_m), \\ (p + \delta_p)y_m + (1 - p - \delta_p)x_m &\leq py_e + (1 - p)x_m, \\ \delta_p(y_m - x_m) &\leq p(y_e - y_m), \\ \delta_p/p &\leq (y_e - y_m)/(y_m - x_m). \end{aligned} \tag{A1}$$

A.2. Proof to Proposition 2

Proof. The political actor supports the extreme candidate against the extreme incumbent when

$$\begin{aligned} U(Y_m | X_e) &\leq U(Y_e | X_e), \\ (q + \delta_q)y_m + (1 - q - \delta_q)x_e &\leq qy_e + (1 - q)x_e, \\ qy_m + \delta_q y_m - \delta_q x_e &\leq qy_e, \\ \delta_q/q &\leq (y_e - y_m)/(y_m - x_e). \end{aligned} \tag{A2}$$

A.3. Proof to Proposition 3

Proof. The actor matches the ideology of the opponent when the relevant conditions of Propositions 1 and 2 both hold:

$$\begin{aligned} (y_e - y_m)/(y_m - x_m) &\leq \delta_p/p, \quad \text{and} \\ \delta_q/q &\leq (y_e - y_m)/(y_m - x_e). \end{aligned}$$

Rearranging terms, we require

$$\begin{aligned} (y_e - y_m) &\leq (y_m - x_m)\delta_p/p, \quad \text{and} \\ (y_m - \neg x_e)\delta_q/q &\leq (y_e - \neg y_m), \\ \rightarrow (y_m - x_e)\delta_q/q &\leq (y_m - x_m)\delta_p/p. \end{aligned} \tag{A3}$$

A.4. Proposition A1

Proposition A1 (Zag ideology of the incumbent). *An actor in primary politics supports an extremist candidate versus a moderate incumbent and moderate candidate versus an extremist incumbent when*

$$(y_m - x_m)\delta_p/p \leq (y_e - y_m) \leq (y_m - x_e)\delta_q/q.$$

Proof. The actor matches the ideology of the opponent when the relevant conditions of Propositions 1 and 2 both hold:

$$\delta_p/p \leq (y_e - y_m)/(y_m - x_m), \text{ and} \\ (y_e - y_m)/(y_m - x_e) \leq \delta_q/q.$$

Rearranging terms, we require

$$(y_m - x_m)\delta_p/p \leq y_e - y_m, \text{ and} \\ y_e - y_m \leq (y_m - x_e)\delta_q/q. \\ \rightarrow (y_m - x_m)\delta_p/p \leq (y_m - x_e)\delta_q/q.$$

A.5. Proposition A2

Proposition A2 (Always support challenger of one ideology). *An actor in primary politics always supports an extremist candidate when*

$$\delta_p/p \leq (y_e - y_m)/(y_m - x_m), \text{ and} \\ \delta_q/q \leq (y_e - y_m)/(y_m - x_e), \text{ and} \\ y_m(\delta_p/p + \delta_q/q) \leq 2(y_e - y_m) + x_m\delta_p/p + x_e\delta_q/q.$$

An actor in primary politics always supports a moderate candidate when

$$(y_e - y_m)/(y_m - x_m) \leq \delta_p/p, \text{ and} \\ (y_e - y_m)/(y_m - x_e) \leq \delta_q/q, \text{ and} \\ 2(y_e - y_m) + x_m\delta_p/p + x_e\delta_q/q \leq y_m(\delta_p/p + \delta_q/q).$$

Proof. The actor always supports an extremist candidate when the relevant conditions of Propositions 1 and 2 both hold:

$$\delta_p/p \leq (y_e - y_m)/(y_m - x_m), \text{ and} \\ \delta_q/q \leq (y_e - y_m)/(y_m - x_e).$$

Rearranging terms, we require

$$\begin{aligned} (y_m - x_m)\delta_p/p - y_e + y_m &\leq y_e - y_m - (y_m - x_e)\delta_q/q, \\ y_m(1 + \delta_p/p) - x_m\delta_p/p &\leq 2y_e - (1 + \delta_q/q)y_m + x_e\delta_q/q, \\ y_m(\delta_p/p + \delta_q/q) &\leq 2(y_e - y_m) + x_m\delta_p/p + x_e\delta_q/q. \end{aligned}$$

The actor always supports a moderate candidate when:

$$\begin{aligned} (y_e - y_m)/(y_m - x_m) &\leq \delta_p/p, \text{ and} \\ (y_e - y_m)/(y_m - x_e) &\leq \delta_q/q. \end{aligned}$$

Rearranging terms, we require

$$\begin{aligned} y_e - y_m - (y_m - x_m)\delta_p/p &\leq (y_m - x_e)\delta_q/q - y_e + y_m, \\ x_m\delta_p/p - y_m(1 + \delta_p/p) &\leq (1 + \delta_q/q)y_m - 2y_e - x_e\delta_q/q, \\ 2(y_e - y_m) + x_m\delta_p/p + x_e\delta_q/q &\leq y_m(\delta_p/p + \delta_q/q). \end{aligned}$$

APPENDIX B

Ideology Scores Using Only Pre-primary Contributions

In Table A1 we present the effect of incumbent centrism on nominee ideology where we measure ideology using only contributions made prior to the date of the primary. This cuts our sample size by about 15% but the measure is not influenced by post-nomination contributions. Of course, in many contests where it is clear who the nominee will be, pre-nomination contributions are made without uncertainty in a fashion similar to post-nomination contributions. Our results are similar to those presented in the main text with a larger magnitude effect of centrism on nominee ideology. In each specification, we find that a two standard deviation increase in incumbent centrism causes a one-tenth of a standard deviation increase in nominee centrism. This is about twice the estimated effect of incumbent centrism on nominee centrism measured using pre- and post-primary contributions.

Also similar to results in the main text, we find little evidence of variability in the effect by district competitiveness or pre- versus post-1994.⁶ The point estimate on the interaction between incumbent centrism and the post-1994 indicator suggests a smaller effect of centrism in more recent years.

TABLE A1
 Response by Primary Voters to Opponent Centristism, Nominee Ideology Measured with Pre-Primary Contributions Only

	(1)	(2)	(3)
	Nominee Centristism (Pre-Primary Ideology) (standardized)	Nominee Centristism (Pre-Primary Ideology) (standardized)	Nominee Centristism (Pre-Primary Ideology) (standardized)
Incumbent Centristism (standardized)	0.099** (0.045)	0.101* (0.052)	0.123** (0.057)
Incumbent Centristism*Competitive		0.005 (0.026)	
Out-Party Presidential Vote Share in DISTRICT	-0.458 (0.434)	-0.546 (0.475)	-0.750 (0.499)
Out-Party Presidential Share*Competitive		0.024 (0.065)	
Incumbent Centristism*After 1994			-0.025 (0.054)
Out-Party Presidential Share*After 1994			0.305 (0.382)
Observations	624	611	624
R-Squared	0.949	0.954	0.950
Year-Party FEs	✓	✓	✓
Party-Districting Cycle-District FEs	✓	✓	✓
Response Variable Standard Deviation	.2	.2	.2

**p<0.05

*p<0.1