Electoral Selection with Parties and Primaries

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We develop a model of intraparty candidate selection under partisan electoral competition and voter uncertainty. Candidates for office belong to parties, which are factions of ideologically similar candidates. Each party's candidate for a general election can be selected either by a "centralized" mechanism that effectively randomizes over possible candidates or by voters in a primary election. The electorate cares about ideology and valence, and both primary and general elections may reveal candidate valences. Our main theoretical result is that while primaries raise the expected quality of a party's candidates, they may hurt the ex ante preferred party in a competitive electorate by increasing the chances of revealing the opposing party's candidates as superior. Thus, primaries are adopted in relatively extreme districts where a clear favorite party exists. An empirical analysis of the adoption of direct primaries and the competitiveness of primary elections across U.S. states supports these predictions.

Scholars have long argued that meaningful political parties are necessary for a successful democracy. As Fiorina states, "The only way collective responsibility has ever existed, and can exist given our institutions, is through the agency of the political party; in American politics, responsibility requires cohesive parties" (1980, 1).[1] Parties serve a variety of purposes in different systems. The list includes providing long-lived organizations through which relatively short-lived politicians can formulate policies, make credible promises to voters, solve collective action problems, and pursue politics as a career; providing low-cost information to voters about the likely policy goals or ideologies of politicians; providing low-cost information about which politicians are responsible for current policy outcomes; providing voters with distinct policy choices; and organizing legislative activity to solve collective choice problems.[2]

While the benefits of party-based competition seem clear, researchers have paid less attention to one significant drawback. When imperfectly informed voters care about candidate characteristics other than ideology, they may not be able to select optimal candidates from ideologically cohesive parties, especially in ideologically extreme constituencies. The basic idea is simple: if it is costly for voters to replace an incumbent politician—because the alternative is a politician from the opposing political party—then voters may find themselves "stuck" with low-quality politicians even when they know the politicians are of low quality.[3]

[1] A World Bank report on political accountability echoes this, with an even broader, worldwide recommendation (see http://www.ifes .org/Content/Publications/Articles/2001/Anti-Corruption-Political-Accountability.aspx):

   Effective sanctions on politicians can be enhanced most effectively through a meaningful degree of political competition in the electoral process. . . . Political competition is most effective in promoting accountability when it is channeled through organizations that provide broad constituencies with vehicles—such as mass-based political parties and interest groups—to express their collective demands to political leaders.

[2] See, for example, Wilson (1885), Schattschneider (1942), Ranney (1951, 1962), Fiorina (1980), Alesina and Spear (1988), Harrington (1992), Cox and McCubbins (1993), and Aldrich (1995).

[3] While the literature on principal-agent-type models of politics is large and ever-expanding, virtually all of this work studies *nonpartisan* settings. A sampling includes Barro (1973), Ferejohn (1986), Rogoff and Sibert (1988), Austen-Smith and Banks (1989), Rogoff (1990), Banks and Sundaram (1993, 1998), Harrington (1993), Persson, Roland, and Tabellini (1997), Fearon (1999), Berganza (2000), Le Borgne and Lockwood (2001, 2006), Smart and Sturm (2003, 2007), Hindriks and Belleflamme (2005), Hatfield and Padró i Miquel (2006), Besley (2006), and Besley and Smart (2007). Exceptions are Bernhardt et al. (2009), Campuzano (2005), and Meirowitz (2007).

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This article studies one way for parties to remedy this problem, namely primary elections. Our theoretical approach is to consider how voters would act when confronted by candidates of known ideology but of initially unknown quality or valence. Thus, each candidate's party label gives her ideological position, but provides no information about quality. As in many models of electoral competition, the valence dimension could represent a characteristic such as skill, charisma, or personal background that a voter considers valuable in an elected official (e.g., Ashworth and Bueno de Mesquita 2008). It might also serve as a reduced form for shirking in office. Valence is therefore similar in spirit to the costs of ethnic divisions studied by Acemoglu, Robinson, and Verdier (2004) and Padró i Miquel (2007), although we emphasize type selection rather than moral hazard problems, and partisan rather than ethnic divisions. The uncertainty over valence might correspond to uncertainty over which of a set of possible valence characteristics will become salient during the course of a campaign. If candidate valences were revealed, a moderate voter may vote against her *ex ante* preferred party, while an extreme voter would have no alternative but to elect the candidate of the preferred party.

In our model, the electorate's dominant party chooses whether parties must select their candidates by primary. This assumption reflects the fact that politicians from the *ex ante* favored party are more likely to be in a position to write or implement election laws. It also reflects the way in which primaries were adopted across the United States. Outside the South, no parties adopted statewide primaries until state laws mandated them, and these laws always applied to both major parties.[4] Without primaries, the valences of the parties' candidates may only be revealed in the general election. With primaries, the valences of all of both parties' candidates for the general election may be revealed at an earlier stage.

Primary elections help to improve voter choices by adding another opportunity for valences to be revealed. In a primary election, a voter can reject low-valence candidates from each party. Parties therefore benefit through the selection of higher-valence candidates. But the gains are potentially limited by two factors. Since campaigning in primaries is costly and candidate entry is endogenous, a party may not attract enough candidates to benefit from the increased information under a primary system. Additionally, the increased likelihood of valence revelation reduces the voter's need to rely solely on ideology

in choosing a politician. This will tend to hurt a voter's *ex ante* preferred party.

In the third section, we derive the main result of the model, which follows directly from the preceding logic. If the voter (or equivalently, the electoral district) is relatively extreme in the sense of having an unambiguous favorite party, then primaries do not threaten that party's electoral prospects. Primaries typically will not disproportionately reduce the favored party's number of candidates and will therefore give the voter a chance to choose its stronger candidate. These constituencies can restrict attention to one party and use the primary election rather than the general election to select politicians. By contrast, when the voter is moderate, primaries are more likely to reveal information that causes her to vote against the favored party's candidate. From the perspective of the favored party, primaries therefore help in safe districts and hurt (probabilistically) in contested districts. Since the favored party chooses whether to hold primaries, the model predicts that primaries are more likely to be introduced where interparty competition is weaker.

The model has two additional implications. First, in the world with primaries, all but the most moderate constituencies are dominated by one party. Without primaries, somewhat left-leaning constituencies sometimes elect politicians from the rightist party, and vice versa. Thus, primaries may lead to the appearance of a more polarized electorate. Second, by improving the ability to select politicians, all constituencies would be strictly better off with primaries than without them. However, extreme constituencies—i.e., those with a clear favorite party—do not always benefit more than moderate constituencies. Thus, if voters could choose whether to hold primaries directly and primaries were expensive, more moderate constituencies might actually prefer to adopt them.

We then present empirical results from elections in the United States that are broadly consistent with comparative statics predictions of the model. The dataset includes primary and general elections for almost all states over the period 1888–2008. We examine three hypotheses: (1) "extremist" states—i.e., those with a dominant party— are more likely to adopt primaries, (2) primaries tend to help initially favored parties, and (3) the primaries of advantaged parties are more likely to attract two "serious" candidates than those of nonadvantaged parties. We find evidence supporting all three hypotheses. The first and third should probably not be viewed as strong "tests" of the model, since other models make similar predictions and previous empirical work has found evidence consistent with them.[5] The second hypothesis is somewhat more

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[4] In many southern states, the Democratic party used primaries on a voluntary basis; however, most scholars argue that a main rationale was to cement the disenfranchisement of African Americans (see, e.g., Key 1949 and Johnson 2010). In Latin America, primary adoption was in some cases voluntary and in other cases mandated.

[5] For example, Ansolabehere et al. (2006) find evidence consistent with the third hypothesis above.

interesting, however. Ware (2002) discusses cases where an initially favored party hoped to profit from primaries (e.g., Pennsylvania), but we are unaware of any comprehensive statistical evidence in support of this idea.

We note also that some previous work on Latin America finds evidence supporting one of the key assumptions of our model—that primaries reveal information and allow primary voters to choose higher-quality candidates. Specifically, Carey and Polga-Hecimovich (2006) and Aragon (2010) find that presidential candidates nominated by primaries receive higher vote shares in the general election.[6]

Our work diverges from previous models of primaries which have focused on extensions of the Downsian framework (e.g., Aranson and Ordeshook 1972; Coleman 1971, 1972; Owen and Grofman 2006). Closer to our work are Caillaud and Tirole (1999), Jackson, Mathevet, and Mattes (2007), Adams and Merrill (2008), Castanheira, Crutzen, and Sahuguet (2010), and Serra (2011), who study the incentives of parties to introduce democratic governance. While none of these articles arrive at the same predictions as those here, Serra's work perhaps most closely complements ours. In his model, a party may similarly introduce primaries in order to maximize valence, but at the cost of losing ideological control to the party's rank and file.[7] His model differs from ours in that only one party can have primaries, and parties and candidates are policy motivated. Thus, the cost of primaries comes from ideological drift, rather than risk induced by revealing the opposition's valence. This causes an ideologically extreme party to introduce primaries in his model, while the party that is heavily ideologically favored by the voter does so in ours.

Of course, there are other rationales for the existence of primaries. For example, primaries may be a useful way for the party's rank and file to monitor leaders, they may help voters signal their preferences to candidates (Meirowitz 2005), or they may mediate competition between organized factions (Hortala-Vallve and Mueller 2011).

The Model

We develop a simple model of political competition in a single constituency or district. The election is an open-

seat race between two political parties, labeled *L* and *R*. Each party *i* has two potential candidates, labeled C^{i1} and C^{i2}, whose partisan affiliations are public information. Each potential candidate may choose whether to declare entry into the election. Before the general election, each party *i* with at least one declared candidate generates a single candidate C^i. In a world without primaries, this selection process is random. If there are primaries, then a voter (M) who represents the district's median voter chooses which candidate will represent the party in the general election. This distinction captures the idea that without primaries, the selected candidate will be more likely to reflect objectives other than the voter's wishes.[8] M also chooses the winner of the general election. The winner of the general election implements a policy *x* from the convex, compact set $X \subseteq \Re$.

Parties play two roles in the model. First, the favored party in the district (i.e., the party most likely to hold office *ex ante*) chooses whether primaries will precede the general election. Second, they ensure that their candidates are ideologically homogeneous, either by screening the ideological preferences of their members or enforcing party discipline once their candidates are elected. The party *i* ideal policy is $\mu^i \in X$ ($\mu^L < \mu^R$), which is implemented automatically after the general election.[9]

In addition to her party identification, each candidate has a valence parameter v_c drawn independently according to the uniform distribution on $[-1/2, 1/2]$.[10] Each player is uninformed about all valence parameters unless they are revealed during an election, at which point these parameters become public. The revelation may occur in the course of either a primary or general election campaign. There are two interpretations for this type of uncertainty. It may reflect actual uncertainty about characteristics such as rhetorical skills that are revealed during the course of a campaign. Alternatively, it may correspond to a shock in the voter's preferences over heterogeneous but known candidate characteristics. Thus, in some elections previous experience in government might be a positive distinguishing feature of a candidate, but in others private sector experience might be perceived as having greater value.

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[6] Kemahlioglu, Weitz-Shapiro, and Hirano (2009) critique the data and some of the analyses in Carey and Polga-Hecimovich (2006).

[7] In Jackson, Mathevet, and Mattes (2007) candidates are distinguished only by ideology, while in Castanheira et al. (2010) they are distinguished only by valence.

[8] Naturally, introducing primaries would benefit a party less electorally if it had an alternative selection mechanism that more frequently generated the voter's preferred candidate.

[9] The equilibrium of the game is essentially unchanged if we assume instead that parties represent collections of ideologically heterogeneous candidates, as long as candidates are sufficiently office motivated and could not credibly communicate their preferences beyond their party label.

[10] Our results follow with minor modifications for discrete distributions.

Parties have lexicographic preferences, maximizing first the probability of winning the election in the district and second the expected valence of its elected candidates.[11] Each potential candidate C^{ij} has an additive utility function $u_{C^{ij}}(\cdot)$, consisting of two components. First, candidates care about holding office and receive one unit of utility for winning the general election, and zero otherwise. Second, declaring entry in the election imposes a cost $k \in [0, 1]$. The voter cares about policy and valence. Her utility is:

$$u_M(x, w; y_M) = u(|y_M - x|) + v_w,$$

where $u: \Re_+ \to \Re_-$ is continuous, concave, and strictly decreasing with $u(0) = 0$; y_M is her ideal point; x is the policy implemented by the winning party; and v_w the valence of the election winner w.

The sequence of moves is as follows. All actions are observable unless otherwise noted.

1. *Election Rules.* The party with the ideal point preferred *ex ante* by M chooses whether there will be primary elections ($e = 1$) or not ($e = 0$).
2. *Candidate Draws.* Nature selects $v_{C^{L1}}$, $v_{C^{L2}}$, $v_{C^{R1}}$, and $v_{C^{R2}}$, unobserved by M.
3. *Declarations.* Each potential candidate C^{ij} simultaneously chooses whether to enter the election ($d_{C^{ij}} = 1$) or not run ($d_{C^{ij}} = 0$).
4. *Valence Revelation (Primaries).* If $e = 1$, Nature reveals all $v_{C^{ij}}$ with probability $\pi_p \in (0, 1)$.
5. *Primary Elections or Candidate Selection.* If $e = 1$, then for each party i, M casts a vote r_p^i choosing C^i from the set of party i's declared candidates. If $e = 0$, then for each party i, C^i is chosen with equal probability from the set of party i's declared candidates. If a party i has no declared candidates, then $C^i = \emptyset$.
6. *Valence Revelation (Generals).* If $e = 0$, or $e = 1$ and v_{C^L} and v_{C^R} are unknown to M, then Nature reveals v_{C^L} and v_{C^R} with probability $\pi_g \in (0, 1)$.
7. *General Election.* M casts a vote $r_g \in \{C^L, C^R\}$ for one of the party candidates.

Since the voter can choose any candidate from either party in a primary election, the model corresponds most closely to an "open" primary. However, given the assumption that there is no intraparty ideological competition, voters in a "closed" primary would act just as M

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does in this model, since all voters would wish to maximize candidate valence. Note also that voters cannot distinguish between primary candidates if Nature does not reveal their valences at that stage. In this environment, candidate selection is effectively random and the voter's problem becomes essentially identical to that in a world without primaries.

We derive subgame perfect equilibria in pure strategies. This consists of the favored party's optimal choice of election rule e^* and each potential candidate's declaration d_c^*. Additionally, M must cast optimal votes r_p^{L*}, r_p^{R*}, and r_g^*. These votes depend on M's information about each candidate's valence. Since there can be no signaling of valence, her beliefs about valence are trivial when valence is revealed by Nature, and are equivalent to her prior beliefs otherwise.

To rule out a number of uninteresting cases, we assume that potential candidates break ties in favor of not declaring. We also require that M choose at every primary election the candidate who would yield the highest expected payoff if she were to achieve office. This refinement simply rules out nonintuitive equilibria where M chooses inferior candidates from the party that is expected to lose the general election and does not affect the winner of the general election. It is also consistent with an environment in which nonmedian primary voters vote for candidates with the outcome of the general election in mind.

Main Results

Since many of our results will focus on M's preferences, it will be convenient to classify the voter (or, equivalently, the district type) according to her *ex ante* preferences over the parties. M's assessment of a candidate in any election depends in part on her policy utility from each party's candidates. For each party i, this is:

$$\overline{u}^i = u(|y_M - \mu^i|). \tag{1}$$

Note that our assumptions on $u(\cdot)$ ensure that $\overline{u}^i$ is decreasing in $|y_M - \mu^i|$.

Denote by $\hat{u} = \overline{u}^R - \overline{u}^L$ M's relative expected preference for party R's candidates, and let m be the ideal point at which $\hat{u} = 0$. In the absence of knowledge about valence, a voter for which $y_M = m$ will be indifferent between the two parties, with the tie broken in favor of party R. We call a party *favored* if M prefers the expected policy ideal point of its candidates. (Recall that the favored party chooses whether to hold primary elections.) To

denote extreme voters, let $\overline{m}$ and $\underline{m}$ be the voter ideal points at which $\hat{u} = 1$ and $\hat{u} = -1$, respectively. The concavity and symmetry of the voter's utility function implies that $\overline{m}$ and $\underline{m}$ are unique and satisfy $\overline{m} - m = m - \underline{m}$. Then for any $y_M \geq \overline{m}$ (respectively, $y_M \leq \underline{m}$), M will prefer party R (respectively, L) regardless of valence. Much of the subsequent discussion therefore focuses on moderate districts, where $y_M \in (\underline{m}, \overline{m})$.

No Primaries

Consider first the nonprimaries world. Since each party's candidate is chosen randomly from among the set of declared candidates, the parameters of each party's general election candidate are effectively random draws from the party's respective distributions if at least one of its candidates enters. A second declared election candidate cannot affect a party's chances of victory. If no candidate enters the election for a party, then the party loses the election with certainty.

Suppose initially that each party generates at least one candidate. If valence is not revealed in the general election, then M simply chooses the candidate whose party's ideal point is closest; thus, $r_g^* = R$ if and only if $\overline{u}^R \geq \overline{u}^L$.

If Nature reveals the candidates' valence parameters, then the condition for voting for C^R becomes $\overline{u}^R + v_{C^R} \geq \overline{u}^L + v_{C^L}$. It is therefore possible in a moderate district where $|\hat{u}| < 1$ that a high valence differential would cause M to vote for the ideologically more distant party. For any moderate-right voter with $y_M \in [m, \overline{m})$ (equivalently, $\hat{u} \in [0, 1)$), C^R's probability of victory conditional upon having valence v_{C^R} is the probability that C^L's valence v_{C^L} falls below $v_{C^R} + \hat{u}$. This probability is 1 if C^R's valence and ideological advantages are too large, i.e., if $v_{C^R} + \hat{u} > 1/2$. The unconditional probability of a party R victory in a general election when valences are revealed can then be calculated by integrating over realizations of v_{C^R}:

$$\int_{-1/2}^{1/2} \min\{1, v + \hat{u} + 1/2\}dv$$
$$= \int_{-1/2}^{1/2-\hat{u}} v + \hat{u} + 1/2\, dv + \int_{1/2-\hat{u}}^{1/2} dv \qquad (2)$$
$$= \frac{1 + 2\hat{u} - \hat{u}^2}{2}.$$

Likewise, for $y_M \in (\underline{m}, m)$, party R's probability of victory is $(1 + \hat{u})^2/2$. Summarizing across all cases, the *ex ante* probability of a party R victory is:

$$\rho_g^R = \begin{cases} 0 & \text{if } \hat{u} < -1 \ (y_M \leq \underline{m}) \\[2mm] \pi_g \dfrac{1 + 2\hat{u} + \hat{u}^2}{2} & \text{if } \hat{u} \in [-1, 0) \ (y_M \in (\underline{m}, m)) \\[2mm] 1 - \pi_g \left(1 - \dfrac{1 + 2\hat{u} - \hat{u}^2}{2}\right) & \text{if } \hat{u} \in [0, 1] \ (y_M \in [m, \overline{m})) \\[2mm] 1 & \text{if } \hat{u} > 1 \ (y_M \geq \overline{m}), \end{cases}$$
$$(3)$$

Given (3), the number of party R candidates willing to enter is then:

$$n^R = \begin{cases} 0 & \text{if } k \geq \rho_g^R \\ 1 & \text{if } k \in [\rho_g^R/2, \rho_g^R) \\ 2 & \text{if } k < \rho_g^R/2. \end{cases} \qquad (4)$$

The expressions for ρ_g^L and n^L are symmetric. They imply an intuitive comparative static: within each party, more candidates will enter as the electoral environment becomes more favorable. At the extremes, where $|\hat{u}| \geq 1$, the favored party will have one candidate if $1 > k \geq 1/2$ and two if $k < 1/2$, while the other will have none. They also imply that a party's election prospects are decreasing in the revelation probability π_g if it is favored, but increasing if it is unfavored.

Primaries

With primaries, the voter has an additional chance to receive information about candidate valence. If Nature does not reveal the valence of primary candidates, then under any voting strategy the valences of the general election candidates C^L and C^R are random draws from the valence distribution. The game then reduces to the game without primaries. By contrast, the revelation of the primary candidates' valence parameters may change each party's election prospects. When valences are revealed, M chooses the candidate with the higher valence in each party; thus, $r_p^{i*} = C^{i1}$ if and only if $v_{C^{i1}} \geq v_{C^{i2}}$.

The revelation of information in primaries has two direct effects. First, it increases the expected valence of each party's candidate. The n-th order statistic of a sample of n independent draws from $U[0, 1]$ is distributed according to $\beta(n, 1)$, which has mean $n/(n + 1)$. Since valence is distributed according to $U[-1/2, 1/2]$, this implies that the expected valence of each party's better candidate is $1/6$. With two entrants, primaries then raise the expected valence of each party's chosen candidate from zero to $\pi_p/6$. (Increasing the number of primary candidates beyond two would increase the expected valence further.)

Second, the revelation of valence gives each party an additional opportunity to lose the election in an

ideologically favorable district. The clearest example of this takes place when M barely favors party R. Suppose that an equal number of candidates from both parties enter the election. In this environment, M essentially chooses the candidate with the highest expected valence in each election. With probability π_p, the valence of both parties' candidates are revealed and both party R candidates will lose with a probability of about $1/2$. This is strictly higher than party R's probability of losing when valences are not revealed during the primaries, which by (3) is approximately $\pi_g/2$. Consequently, party R may not benefit from primaries.

The first result characterizes the entry strategies in all pure strategy equilibria. To simplify the presentation, we focus on right-leaning districts ($\hat{u} \geq 0$), as the results for left-leaning districts are symmetric. Since all candidates within a party are *ex ante* identical, we state the result in terms of the equilibrium number of candidates from each party, denoted by the pair (n_R, n_L). Thus, $n_R = 1$ implies that either C^{R1} or C^{R2} enters the election. The proof may be found in the journal's online Supporting Information.

Proposition 1. Number of candidates. *In districts where $\hat{u} \geq 0$, the set of possible entrants in pure strategy equilibria is:*

(n_R^*, n_L^*)

$$
= \begin{cases}
(0, 1) & \text{if } k \geq \pi_p \left(\dfrac{1 + 2\hat{u} - \hat{u}^2}{2} \right) + (1 - \pi_p)\rho_g^R \\[2mm]
(0, 2) & \text{if } k \in \left[\pi_p \left(\dfrac{1 + 3\hat{u} - \hat{u}^3}{3} \right) + (1 - \pi_p)\rho_g^R, \dfrac{1}{2} \right) \\[2mm]
(1, 0) & \text{if } k \geq \dfrac{1}{2} \\[2mm]
(1, 1) & \text{if } k \in \left[\pi_p \left(\dfrac{2 + 3\hat{u} - 3\hat{u}^2 + \hat{u}^3}{6} \right) + (1 - \pi_p)\dfrac{\rho_g^R}{2}, \right. \\[2mm]
& \left. \quad 1 - \pi_p \left(\dfrac{1 + 2\hat{u} - \hat{u}^2}{2} \right) - (1 - \pi_p)\rho_g^R \right) \\[2mm]
(1, 2) & \text{if } k \in \left[\pi_p \left(\dfrac{3 + 8\hat{u} - 6\hat{u}^2 + \hat{u}^4}{12} \right) + (1 - \pi_p)\dfrac{\rho_g^R}{2}, \right. \\[2mm]
& \left. \quad \dfrac{1}{2} - \pi_p \left(\dfrac{1 + 3\hat{u} - \hat{u}^3}{6} \right) - (1 - \pi_p)\dfrac{\rho_g^R}{2} \right) \\[2mm]
(2, 0) & \text{if } k \in \left[1 - \pi_p \left(\dfrac{2 + 3\hat{u} - 3\hat{u}^2 + \hat{u}^3}{3} \right) - (1 - \pi_p)\rho_g^R, \dfrac{1}{2} \right) \\[2mm]
(2, 1) & \text{if } k \in \left[\dfrac{1}{2} - \pi_p \left(\dfrac{3 + 8\hat{u} - 6\hat{u}^2 + \hat{u}^4}{12} \right) - (1 - \pi_p)\dfrac{\rho_g^R}{2}, \right. \\[2mm]
& \left. \quad 1 - \pi_p \left(\dfrac{2 + 3\hat{u} - 3\hat{u}^2 + \hat{u}^3}{3} \right) - (1 - \pi_p)\rho_g^R \right) \text{ and} \\[2mm]
& \quad k < \pi_p \left(\dfrac{2 + 3\hat{u} - 3\hat{u}^2 + \hat{u}^3}{6} \right) + (1 - \pi_p)\dfrac{\rho_g^R}{2} \\[2mm]
(2, 2) & \text{if } k < \dfrac{1}{2} - \pi_p \left(\dfrac{3 + 8\hat{u} - 6\hat{u}^2 + \hat{u}^4}{12} \right) - (1 - \pi_p)\dfrac{\rho_g^R}{2}.
\end{cases}
$$

$$(5)$$

While the conditions supporting each pair are occasionally cumbersome, the intuition of the equilibrium strategies is straightforward. Each potential candidate must weigh the probability of victory against cost of entry. When k is sufficiently low, all potential candidates enter. When k is sufficiently high, only one potential candidate across both parties will enter. For intermediate costs, every other configuration of entering candidates is possible. For example, $(n_R^*, n_L^*) = (2, 0)$ requires that $k < 1/2$, so that each party R entrant can receive expected utility $1/2 - k > 0$. Likewise, the lower bound on k is the probability that the party L candidate wins when $(n_R, n_L) = (2, 1)$. At that probability of victory, each party L potential candidate expects zero utility from both entering and staying home and is thus deterred from entering.

In equilibrium, the effects of voter ideology, or $\hat{u}$, on candidate welfare are ambiguous. Because entry is endogenous, a given candidate's probability of victory may not improve as voter ideology becomes more favorable to her. An increase in $\hat{u}$ (i.e., a more conservative voter) will tend to deter potential candidates from party L, but will also encourage potential candidates from party R.

Proposition 1 also implies that the equilibrium number of entrants may be both nonunique and nonmonotonic in k and $\hat{u}$. To derive stronger predictions about party primary strategies, we examine a simple equilibrium selection rule. For any k, we select the equilibrium with the maximum number of entrants from the favored party. This refinement might reflect the fact that favored parties will tend to have the larger pool of qualified and well-funded candidates. It is also consistent with an environment in which party R's potential candidates were allowed to declare interest first, and party L's potential candidates reacted to these announcements.

Using the derivations from the proof of Proposition 1, it is easily shown that this refinement eliminates the possibility that the number of favored party entrants is fewer than the number of unfavored party entrants, thus ruling out $(n_R^*, n_L^*) = (1, 2)$, $(0, 2)$ or $(0, 1)$. It also allows $(n_R^*, n_L^*) = (1, 1)$ only when $\hat{u}$ or π_p is sufficiently low.[12] All of the other expressions in Proposition 1 remain unchanged. Additionally, the number of party L entrants is now weakly decreasing in $\hat{u}$, while the number of party R candidates is weakly increasing or constant. Figure 1 illustrates two examples of the predicted number of candidates under this refinement.[13]

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[12] These entry strategies are derived in the proof of Proposition 2.

[13] It is worth noting that this refinement makes it possible to form a conjecture about the effect of voter uncertainty over candidate ideological positions. Suppose that the voter was uncertain over both parties' ideal points and that all party members were equally

FIGURE 1 Number of Entering Candidates (n_R^*, n_L^*) as a Function of $\hat{u}$, k
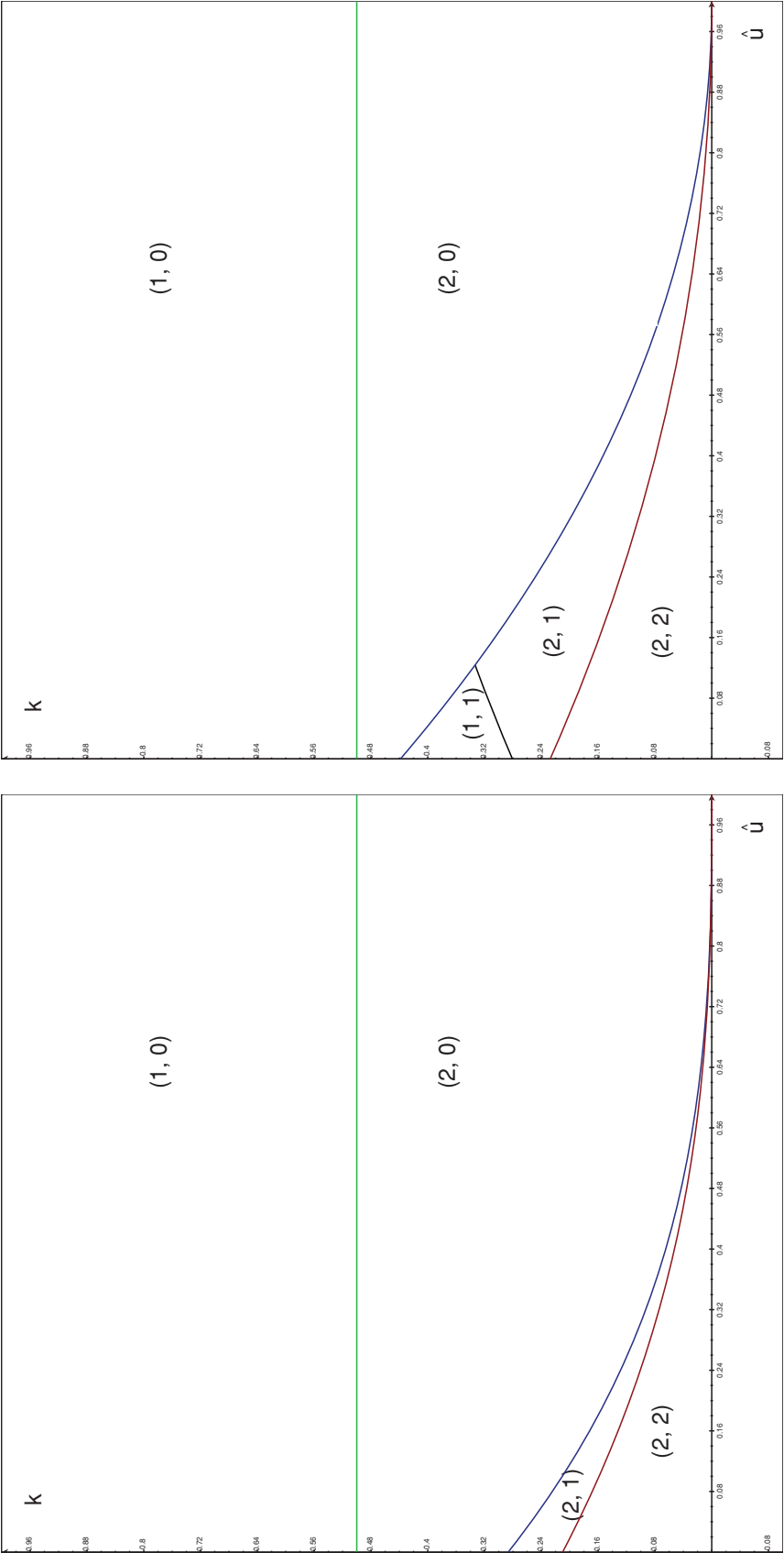
On the left, $\pi_p = 0.8$ and $\pi_g = 0.2$. On the right, $\pi_p = 0.1$ and $\pi_g = 0.9$; note that one entrant from each party is now possible. In both cases, the total number of entrants is decreasing in k. Reducing the relative value of π_p increases entry by party L (the unfavored party) because it reduces party R's chances of choosing its higher-valence candidate. In a moderate (low $\hat{u}$) district, this gives a potential party L candidate a better chance of overcoming its ideological disadvantage.

Our main result, stated in Proposition 2, establishes the favored party's choice of election rules. The result is again restricted to electorates where $\hat{u} \geq 0$, although identical results for left-leaning districts obviously hold by symmetry. Part (i) uses the above refinement to establish a threshold m^R for the voter's preference for party R. The dominant party will simply introduce primaries when M is more extreme than m^R and decline to use them otherwise.[14] Parts (ii)-(iii) arrive at simple sufficient conditions for adopting and declining to adopt primaries that hold even in the absence of the refinement. Thus, regardless of whether the refinement is used, primaries will be introduced in some districts where party R is significantly advantaged but not a certain victor, and for a nontrivial range of parameter values, primaries will not be introduced in the most moderate districts. The proof may be found in the journal's online Supporting Information.

Proposition 2. Primaries in extreme districts. *In districts where $\hat{u} \geq 0$:*

(i) *In an equilibrium where the maximum number of favored party (R) candidates enter, there exists $m^R \in [m, \overline{m})$ such that $e^* = 1$ if and only if $y_M \geq m^R$.*

(ii) *In all equilibria, there exists $m^{R'} \in [m, \overline{m})$ such that $e^* = 1$ if $y_M \geq m^{R'}$.*

(iii) *In all equilibria where n_R^*, $n_L^* > 0$ in some neighborhood of $\hat{u} = 0$, if $\pi_g < 2/3$, then there exists $m^{R''} \in (m, \overline{m})$ such that $e^* = 0$ if $y_M \leq m^{R''}$.*

In general, the favored party will implement primaries in electorates that are sufficiently ideologically friendly, even if it may lose the election with positive probability. Primary elections disproportionately benefit a heavily favored party because the voter is unlikely *ex ante* to elect even a high-valence candidate from the unfavored party. In such an environment, the better of two draws from the favored party's valence distribution may easily create a hurdle too high for any of the unfavored party's candidates to overcome. (In the most extreme districts, where $\hat{u} > 1$, the favored party always wins and therefore benefits only from the higher expected valence of its nominee.) By contrast, the favored party does not

adopt primaries in moderate districts. Here, the voter can take greater advantage of revealed valence information to choose the unfavored party's candidate. This not only raises the win probability of a given unfavored party candidate, but also induces a larger number of unfavored party entrants. The favored party therefore does better by letting the voter decide solely on the basis of partisanship.

A simple corollary of this result is that in the most centrist districts, an unfavored party would stand to gain from introducing primaries. This may occur in an environment where primary elections are imposed by an outside institutional player, such as a court. But since politicians from unfavored parties would be *ex ante* less likely to be elected into positions that would allow them to introduce primaries, it follows that primaries are most likely to be introduced first in relatively extreme constituencies.

Pushing this logic further, Proposition 2 predicts that the effects of primaries on party representation across multiple districts will depend on whether primaries are implemented in a decentralized or centralized way. Suppose that there are many ideologically diverse districts, and that each could choose independently whether to introduce primaries. In this environment, the ability to introduce primaries would strictly reduce the unfavored party's prospects in districts that are somewhat more moderate than $\overline{m}$ and $\underline{m}$. Both parties' fortunes in other districts would remain the same, either because moderate districts will not adopt primaries or because extreme districts would never vote for the unfavored party. The overall reduction in the number of competitive districts would increase the perceived polarization of the electorate. If, however, primaries were imposed "nationally," then the results would be more ambiguous as the unfavored party would benefit in the most moderate districts.

The following example illustrates the equilibrium.

Example. Let M have quadratic utility, with $u(x) = -x^2$. Party L candidates have ideal points at $\mu^L = -3/2$ and party R candidates have ideal points at $\mu^R = 3/2$. Thus, M's expected utility from a zero-valence candidate from party L is $-(y_M + 3/2)^2$ and her expected utility from a party R candidate is $-(y_M - 3/2)^2$. The expected difference in ideological utility between the parties is then $\hat{u} = 6y_M$.

Suppose that $k = 0$, so that two candidates from each party enter in equilibrium, and consider a district where $y_M \geq 0$, so that R is the favored party. Without primaries, C^R wins if valences are unrevealed. But if valences are revealed, C^L can win if $v_{C^L} - v_{C^R} > 6y_M$. This cannot occur if $y_M > 1/6$, as any such voter automatically elects C^R. Otherwise, C^L wins with probability $(1 - 6y_M)^2/2$.

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willing to declare candidacy. Suppose further that due to incumbency or extensive media coverage, the party R candidate's ideal point became known. The effect of this knowledge would be identical to that of shifting $\overline{u}^R$. If the revealed candidate was relatively moderate, the voter would become more favorably inclined toward party R (i.e., effectively increasing $\hat{u}$). This would additionally decrease the number of party L entrants.

[14] The result can also be shown to hold for values of $\hat{u}$ supporting any *given* combination of entrants.

Party R's *ex ante* probability of winning is therefore $\rho_g^R = 1 - \pi_g(1 - 6y_M)^2/2$.

With primaries, each party's chances of winning remain the same if valences are not revealed at the primary stage. But if valences are revealed, party R wins if the valence of its best candidate exceeds that of party L's by at least $\hat{u}$. The density of the second-order statistic of party L's valences is $2v + 1$ ($v \in [-1/2, 1/2]$), and so integrating over v, the probability of party R winning is:

$$\int_{-1/2}^{1/2} [1 - (\max\{0, v - \hat{u} + 1/2\})^2](2v + 1)\, dv$$

$$= \int_{-1/2}^{-1/2+\hat{u}} 2v + 1\, dv$$

$$+ \int_{-1/2+\hat{u}}^{1/2} [1 - (v - \hat{u} + 1/2)^2](2v + 1)\, dv$$

$$= \frac{1}{2} + 8y_M - 36y_M^2 + 216y_M^4. \tag{6}$$

Note that since party R's total probability of victory is simply a linear combination of the preceding expression and ρ_g^R, the probability of valence revelation in the primaries π_p does not affect its induced preferences over primaries. To check when party R would prefer primaries, it is sufficient to compare (6) against ρ_g^R. It is then easily verified that party R prefers primaries if and only if y_M is greater than some threshold m^R. This threshold depends on π_g, with primaries becoming better as π_g increases. At $\pi_g = 1$, $m^R = 0$, while at $\pi_g = 0.5$, $m^R = 0.097$.

The example illustrates that the probability of valence revelation in the general election affects m^R, and hence the types of districts that would adopt primaries. The intuition for this is that a favored party is at risk in a "moderate" district when π_g is high. This creates an incentive to increase the number of draws through primaries. By contrast, when π_g is low, the favored party is more inclined to let voters act on the basis of ideology alone.

We observe finally that from the perspective of voter welfare, it can be shown that all voters benefit from primaries. Primary elections strictly increase the probability of valence revelation, and this can never hurt the voter. However, whether partisan or moderate voters benefit more depends on π_g, which determines the added value of revealing more information in the primaries. To see this, consider two districts with voter preferences at $\hat{u} = 0$ and $\hat{u} = 1$. The second-order statistic from two draws from the valence distribution (i.e., $U[-1/2, 1/2]$) has expected value $1/6$, while the fourth-order statistic from four draws from the valence distribution has expected value $3/10$. In the former district, the voter is indifferent between par-

ties and receives expected valence $(1 - \pi_g)(0) + \pi_g(1/6)$ without primaries. With primaries, she receives $\pi_p(3/10) + (1 - \pi_p)[(1 - \pi_g)(0) + \pi_g(1/6)]$, for an expected gain of $\pi_p(3/10 - \pi_g/6)$. In the latter district, the voter always chooses the party R candidate and receives expected valence 0 without primaries. With primaries, the expected valence is $\pi_p/6$, which exceeds the expected gain enjoyed by the moderate district if $\pi_g > 0.8$. In this case, if voters could choose whether to hold primaries and primaries were costly to implement, then "partisan" districts might be more likely to hold them.[15] By contrast, the moderate district will benefit more from primaries when π_g is low, which increases the expected marginal informational contribution of the primary election.

Evidence from U.S. Primaries

In this section, we use data from the U.S. states to examine three of the hypotheses generated by the model above. The three main hypotheses are (1) "extremist" states—i.e., those with a dominant party—are more likely to adopt primaries, (2) primaries tend to help initially favored parties, and (3) the primaries of advantaged parties are more likely to attract two "serious" candidates than those of disadvantaged parties. As noted in the introduction, Hypothesis (1) is consistent with some existing models. Also, previous empirical work has found evidence for Hypothesis (3).[16] Hypothesis (2) is perhaps the most interesting, because it distinguishes our model from existing theories, and we are unaware of previous statistical studies about it.

The data used cover primary and general elections for almost all states over the period 1888–2008.[17] Details about the data, including sources, can be found in Ansolabehere and Snyder (2002) and Ansolabehere et al. (2006).

Proposition 2 shows that extremist constituencies should be more likely to implement primaries than moderate constituencies, and there should be more competition in their primaries. The U.S. states provide a useful

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[15] It is not clear why primary elections should be any more expensive than general elections. One possibility is that the low-information environment leads to an especially large amount of (mainly wasteful) political campaigning.

[16] For example, Key (1949) discusses (1) with respect to southern states, and the model in Serra (2011) makes a similar prediction. Ansolabehere et al. (2006) explore Hypothesis (3) empirically. On the other hand, Ware (2002) argues that (1) does not really hold outside the South.

[17] We drop Louisiana after 1974 since it uses a unique, nonpartisan, run-off system in place of a partisan general election.

laboratory for testing this hypothesis. Most states passed some kind of primary law during the period 1898–1915. Some of these laws made primaries mandatory and some did not; some covered all statewide elected offices and some were more limited; and some provided for closed primaries and some were more open. We ask the question: what is the correlation between one-party domination and primary activity? More specifically, were states that passed strong, competition-enhancing primary laws during this period likely to be dominated by one party (a sign of "extremism"), and were the states that passed "weak" laws, or no primary laws, states where the two major parties were more evenly matched (a sign of "moderation")?

We divide states into two classes, *Primary States* and *Other States*. Most states passed comprehensive primary election laws during the period 1903–1915. However, Connecticut, Delaware, New Mexico, Rhode Island, and Utah did not. Also, two states—Indiana and New York—gutted their laws after only about a decade of use, eliminating primaries for governor, U.S. senator, and all other statewide offices for over 45 years. Thus, we classify these seven states as the *Other States*. All other states are *Primary States*.[18]

To measure the degree of interparty competition, we use the variable *Vote Margin*, defined as follows. Let V_{ij} be the Democratic share of the two-party vote in race j in state i. Let $\mathcal{J}_i$ be the set of all races for partisan elected statewide executive offices and U.S. Senate seats held in state i during the period 1890–1916 and prior to the regular use of direct primaries.[19] Let J_i be the number of races in $\mathcal{J}_i$, and let $\overline{V}_i = (1/J_i) \sum_{j \in \mathcal{J}_i} V_{ij}$ be the average Democratic vote share over the races in $\mathcal{J}_i$. Then *Vote Margin*$_i = |\overline{V}_i - .5|$. High values of *Vote Margin* mean that one party is heavily favored in the state, while low values indicate a competitive situation.

Table 1 presents the results of a simple analysis correlating *Primary State* and *Vote Margin*. The table is divided into two panels. Both panels show clearly that the states that did not pass strong primary laws during the Progressive era tended to be those in which voters were relatively evenly divided among the two major parties—i.e., states

TABLE 1 Primaries and the Degree of Interparty Competition

	# States	Vote Margin
Primary States	41	.110
Other States	7	.027
t-stat. for difference in means: 2.117(p < .020)		

	One-Party States	Two-Party States
Primary States	.958 (23)	.750 (18)
Other States	.042 (1)	.250 (6)
chi-square test of independence: 4.181(p < .041)		

that were "moderate" from a partisan point of view. The first panel shows a simple difference in means.

The second panel shows another cut of the data. The median value of *Vote Margin* is .068. Call the 24 states with *Vote Margin* below the median *Two-Party States*, and call the 24 states with *Vote Margin* above the median *One-Party States*. The second panel shows the two-by-two contingency table and corresponding chi-square test. All but one of the *One-Party States* passed a strong primary law during the Progressive era. A majority of the *Two-Party States* did as well, but a much larger percentage—almost 30%—did not.[20]

The model also predicts that the introduction of direct primaries benefits the favored party in a state, causing it to win even more elections than before. (In fact, taken literally, Proposition 2 implies that the introduction of the direct primary essentially wipes out the minority party.) Again, the U.S. states provide a crude laboratory for testing this hypothesis. The idea is to look just before and just after the introduction of direct primaries in a state, and see what happens to the average vote share of the party that was advantaged at the time the primary was adopted.

As above, let V_{ij} be the Democratic share of the two-party vote in race j in state i. Let $\mathcal{J}_i^0$ be the set of all races for partisan elected statewide executive offices and U.S. Senate seats held in state i during the 10 years just prior to the regular use of direct primaries. And, let $\mathcal{J}_i^1$ be the set of all races for partisan elected statewide executive offices and U.S. Senate seats held in state i during the 10 years just after the regular use of direct primaries.[21] Let J_i^0 be the

[18] Idaho repealed its primary law in 1919 but enacted a new comprehensive law just one decade later, in 1930, so we classify it as a *Primary State*. Dropping Idaho from the analysis, or reclassifying it as an *Other State*, does not substantially change the results—if anything, they become slightly stronger.

[19] We drop races where a minor-party candidate or independent candidate received more than 15% of the vote. Two states—Arizona and Oklahoma—introduced the direct primary at statehood. For these states, we use the elections between statehood and 1916. The results are similar if we drop them from the analysis.

[20] We also performed this analysis using probit, logit, and ordinary least squares (with and without robust standard errors). All give the same qualitative results as Table 1 for the relationship between *Vote Margin* and *Primary States*.

[21] Again, we drop races where a minor-party candidate or independent candidate received more than 15% of the vote.

TABLE 2 Primaries and Changes in the Degree of Interparty Competition

Dep. Var. = Change in Rel Dem Vote	
Rel Dem Vote Before Primaries	.197*
	(.047)
Constant	−.011
	(.007)
# Observations	39
R-Square	.320

Standard errors in parentheses.
* = significant at the .01 level.
Only *Primary States* included. Also, Arizona and Oklahoma are excluded because they have held primaries since statehood.

number of races in $\mathcal{J}_i^0$, and let $\overline{V}_i^0 = (1/J_i^0) \sum_{j \in \mathcal{J}_i^0} V_{ij}$ be the average Democratic vote share over the races in $\mathcal{J}_i^0$. Similarly, let J_i^1 be the number of races in $\mathcal{J}_i^1$, and let $\overline{V}_i^1 = (1/J_i^1) \sum_{j \in \mathcal{J}_i^1} V_{ij}$ be the average Democratic vote share over the races in $\mathcal{J}_i^1$.

Since we are studying changes in the vote, we must control for the effects of party tides. To do this, let $\overline{V}_{Ni}^0$ be the average Democratic vote share nationwide across all races during the 12 years just before the regular use of direct primaries in state i, and let $\overline{V}_{Ni}^1$ be the average Democratic vote share nationwide across all races during the 12 years just after the regular use of direct primaries in state i. The variables we analyze are *Rel Dem Vote Before Primaries*$_i = \overline{V}_i^0 - \overline{V}_{Ni}^0$ and *Change in Rel Dem Vote*$_i = (\overline{V}_i^1 - \overline{V}_{Ni}^1) - (\overline{V}_i^0 - \overline{V}_{Ni}^0)$.

Table 2 presents the results. The coefficient on *Rel Dem Vote Before Primaries* shows clearly that the party that was favored by voters prior to the use of primaries tended to do even better after primaries were introduced. On average, the Democratic vote share increased in states that were already leaning Democratic, and the Republican vote share increased in states that were already leaning Republican.[22] A simple counting exercise shows the same pattern: the Democratic vote share increased in 8 of the 10 most Democratic states, and the Republican vote share increased in 8 of the 10 most Republican states.

Finally, the model predicts that primary elections in extremist constituencies will tend to have two (or more)

"serious" candidates more often than those in moderate constituencies. This relationship is illustrated in Figure 1. We can test this hypothesis by studying the patterns of primary competition over the entire period primaries have been used in the United States. We can exploit the panel nature of the data to study within-state variation over time, as well as variation across states.

We consider the period 1926–2008, after primaries had been established for a decade in all of the states that passed laws during the main stage of activity, 1898–1915.[23] We consider races for U.S. senator and the following statewide executives: governor, lieutenant governor, attorney general, secretary of state, treasurer, and auditor/controller/comptroller. We restrict attention to these because they are the most common elective statewide offices.[24]

The dependent variable is *Competitive Primary*, which we define as a primary in which the vote margin between the winner and the runner-up was no more than 20% of the total votes cast. In these cases, the winner faced at least one serious opponent.[25]

The main independent variables are three dummy variables, *Democrats Favored*, *Republicans Favored*, and *Competitive State*, defined as follows. Let $\mathcal{J}_{it}$ be the set of all of the races listed above held in state i during the 10-year period $t - 10$ to $t - 1$.[26] Let J_{it} be the number of races in $\mathcal{J}_{it}$, and let $\overline{V}_{it} = (1/J_{it}) \sum_{j \in \mathcal{J}_{it}} V_{ij}$ be the average Democratic vote share over the races in $\mathcal{J}_{it}$. Then *Democrats Favored*$_{it} = 1$ if and only if $\overline{V}_{it} > .58$, *Republicans Favored*$_{it} = 1$ if and only if $\overline{V}_{it} < .42$, and *Competitive State*$_{it} = 1$ if and only if $.42 \leq V_{it} \leq .58$.[27]

Finally, we also include a control variable to distinguish between races where incumbents are running and races where they are not. While our model does not account for this, previous empirical work finds that

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[22] Since the number of observations is small, we investigated whether this conclusion is strongly influenced by a few outliers. It is not. Only three observations have a Cook's D value greater than the standard cutoff value (4/36 = .111 in our case); if we drop these observations, the coefficient on *Rel Dem Vote Before Primaries* is .153 with a standard error of .037. A median regression on the full sample produces a similar estimate: the coefficient on *Rel Dem Vote Before Primaries* is .144 with a standard error of .026.

[23] The exact period chosen does not substantially affect the estimated coefficients. We also considered, for example, the periods 1915–2008, 1940–2008 (New Mexico and Utah had primaries by then), and 1946–2008.

[24] All but seven states have had an elected attorney general at some point during the period studied; all but 10 states have had an elected secretary of state; all but nine have had an elected treasurer; and all but 10 have had an elected auditor/controller/comptroller. Also, all but 11 states have had an elected lieutenant governor who was elected separately from the governor.

[25] If a primary is uncontested, then the winner's vote percentage is 100%, so the primary is not competitive. We drop all cases where a convention was held rather than a primary.

[26] Again, we drop races where a minor-party or independent candidate received more than 15% of the vote.

[27] The exact cutoff vote shares used to define the categories does not matter.

TABLE 3 Primary and Interparty Competition, 1926–2008

Dep. Var. = Competitive Primary				
	Democratic Primaries		Republican Primaries	
Democrats Favored	.304**	.180**		
	(.036)	(.036)		
Republicans Favored			.237**	.130**
			(.037)	(.035)
Competitive State	.119**	.080**	.105**	.056*
	(.034)	(.026)	(.030)	(.023)
Incumbent Running	−.266**	−.269**	−.193**	−.208**
	(.023)	(.022)	(.024)	(.025)
# Observations	7,511	7,511	7,530	7,530
R-Square	.114	.180	.071	.142
State Fixed Effects?	No	Yes	No	Yes

Robust standard errors in parentheses, clustered by state.
** = significant at the .01 level.
* = significant at the .05 level.
Year fixed effects included in all specifications.

incumbents often get a "free ride" in the primaries when seeking renomination. We therefore include the variable *Incumbent Running*, which is 1 if an incumbent is running for reelection in the primary and 0 otherwise.

Table 3 presents the results. The table shows four specifications, two for Democrats (columns 1 and 2) and two for Republicans (columns 3 and 4). For each party, one specification is a pooled cross-section/time-series regression with the main variables of interest plus year fixed effects (columns 1 and 3). The other is a panel regression that includes state fixed effects in addition to the year fixed effects (columns 2 and 4). In all specifications, the standard errors are clustered by state to correct for heteroskedasticity and general within-state autocorrelation. Note that in each specification, we include only two of the three variables *Democrats Favored*, *Republicans Favored*, and *Competitive State*, since collectively they are perfectly multicollinear.

The main hypothesis is that competition should be highest in the primaries of the favored party, in states that have a favored party. The estimates in Table 3 imply that this is the case. For Democrats, the coefficients on *Democrats Favored* are positive and statistically significant, and also larger than the coefficients on *Competitive State*. For the specification in column 1, a test of the hypothesis that the coefficient on *Democrats Favored* is equal to the coefficient on *Competitive State* yields an F-statistic of 44.2, which is significant at the .001 level. For the specification in column 2, this test yields an F-statistic

of 12.0, which is significant at the .002 level. Thus, if the partisan balance in a state increases over time, say from a *Democrats Favored* to *Competitive State*, then competition in the Democratic primary falls.

Columns 3 and 4 show qualitatively similar results for Republicans. The coefficients on *Republicans Favored* are positive and statistically significant and also larger than the coefficients on *Competitive State*. The F-tests comparing the coefficients on *Republicans Favored* and *Competitive State* reject the null hypothesis of equality at the .01 level or better. For the specification in column 3, the F-statistic is 21.8, which is significant at the .001 level; and for column 4, the F-statistic is 7.7, which is significanting at the .008 level. Note, though, that the estimated effects are uniformly smaller for Republicans than for Democrats.

There are two features of primary and general election competition that our model does not predict. First, the overall *level* of primary competition is low, at least compared to the level of general election competition. Our model predicts that primary elections should be quite competitive.

Second, the level of primary competition has fallen steadily over the past 100 years in races involving an incumbent, but it has remained roughly constant in open-seat races (e.g., Ansolabehere et al. 2006). Our model does predict an overall drop in primary competition, since the number of one-party states has also fallen. For example, for the period 1926–60, only 33% of the state-year observations fall into the *Competitive State* category, but for the period 1961–2008, almost 55% do. However, a large part of the decline is unexplained. And, since our model does not directly consider races with incumbents, it cannot address the difference between incumbent-contested and open-seat races.

The data suggest that primaries entail substantial costs and that the costs might have grown over time. What are these costs? First, there are the costs of voting, and of expensive and possibly wasteful campaigning. These are nontrivial—for example, citing costs, several states do not bother to hold primaries for unopposed candidates—but they do not seem huge. Another cost, at least to one party and its supporters, is the possibility that "divisive" primaries can hurt the party's nominees in the general election. A number of empirical studies suggest that closely contested primaries damage nominees.[28] Mudslinging campaigns may leave the nominee with a

[28] The existing empirical research is mixed, however. Johnson and Gibson (1974), Bernstein (1977), and Kenney and Rice (1987) find that close primaries hurt candidates, but Hacker (1965), Piereson and Smith (1975), Miller, Jewell, and Sigelman (1988), and Atkeson (1998) find they do not. Born (1981) finds that close primaries hurt

negative image even among many voters normally loyal to the party, may anger party activists who supported the losing candidate so they refuse to work for the nominee, and may drain the nominee's funds.

Discussion

The model developed here combines a voter with partisan candidates in a simple framework to study the impact of an open-party nomination procedure. The voter chooses between candidates whose ideological preferences are identified by parties but whose valences are unknown. Both general and primary elections may reveal their valence parameters. In this environment, primaries can help the voter to select better politician types, but parties may not benefit from allowing voters to do so. If the voter is certain to vote for a favored party, then that party benefits because primaries allow her to select the better of its candidates. But in an environment where a voter might vote for either party, the information revealed through primaries might hurt the favored party's candidates. As a result, a party will implement primaries wherever voters share their policy preferences. This pattern is broadly supported by data from U.S. primaries.

Several natural extensions remain for future work. The first is to add *ex post* incentives to discipline incumbents for their performance in office to the *ex ante* incentives to select good politician types examined here. It is likely that in this setting, the introduction of primaries would strengthen the voter's incentive to select good types, because a voter no longer needs to discipline a "bad" incumbent from a favored party by electing a candidate from an unfavored party. We therefore expect that primaries would continue to allow the voter to be more selective, especially when a voter matches the ideology of one of the parties closely. But additionally, it would reduce the ability of incumbent officeholders to shirk.

Another extension concerns the existence of parties. Parties are exogenous in our model, but they clearly help the electoral prospects of certain types of candidates. A more satisfying treatment of parties would consider the affiliation incentives of their membership (i.e., the set of potential candidates). Such a model would provide a more complete understanding of the role that parties play in generating election candidates.

incumbents but not challengers. Also, none of these studies fully corrects for the endogeneity of divisive primaries.

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