# Why do parties use primaries?:

# Political selection versus candidate incentives

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**Abstract**

This paper contrasts empirically two possible explanations for the party decision to use primaries: desire to improve political selection (selection effect), or desire to increase political competition —and incentives— among candidates (incentive effect). Using a simple model of endogenous primaries, I show that each explanation implies a different relation between primary adoption and the strength of partisan support. I estimate this relation using the case of Latin American presidential primaries and find robust evidence that the incentive effect dominates the selection effect.

*Keywords*: political parties, primaries, candidate nomination procedures.

*JEL classification*: D72, H39

## 1 Introduction

Political parties play a central role in political selection (Bille 2001; Besley 2005). They nominate candidates who participate in elections and define the set of politicians from which voters can choose. In practice, parties use different procedures to nominate their candidates. These procedures range from less participative methods, such as nomination by the party leader, to more democratic procedures, such as primaries, in which party members or voters choose the party's candidate (Hazan and Rahat 2006).

The voluntary use of primaries provides a micro-level example of endogenous adoption of democratic institutions. Their adoption is, however, quite puzzling because it involves party

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elites giving away their power. This puzzle has spurred a literature that explores the determinants of primary adoption.[1]

This literature highlights three main explanations as to why parties choose to use primaries. First, they may avoid costly internal conflict. Second, they may help the party improve the quality of their candidates (selection effect). Finally, they may increase internal competition and create incentives among candidates to exert more effort during the electoral campaign (incentive effect). Recent empirical evidence finds a positive relation between intra-party divisions and primary adoption in line with the argument that primaries may avoid costly internal conflict (Kemahlioglu et al. 2009). There is, however, no evidence on the relative importance of the selection and incentive effects.

This paper explores empirically the relative importance of these two effects using the case of Latin American presidential primaries. This is an important empirical question to better understand how party institutions work, and how they may affect economic and policy outcomes. I start by developing a model of primary adoption that encompasses the selection and incentive effects, and link them to an observable variable: the relative number of a party's core supporters or partisan support.[2]

The main contribution of the model is to show that the relation between partisan support and primary adoption depends on which effect dominates. In particular, the relationship is negative if the selection effect dominates, but may be positive if the incentive effect is more important. Intuitively, when the number of core supporters is large, the electoral benefit from choosing a better candidate is smaller since there are few undecided voters to attract (smaller selection effect). In contrast, the reduction in inter-party competition associated with stronger partisan support reduces candidates' incentives to exert effort. In turn, this increases the gains from strengthening intra-party competition and makes the use of primaries more attractive (larger incentive effect).

Based on the model's predictions, I evaluate empirically the relation between the relative level of partisan support and primary adoption using a dataset of Latin American presidential candidates. The use of primaries in Latin America is a recent, mostly unregulated, phenomenon. Their use has been partial: only some parties in any country have adopted them, and there are

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[1]See Section 1.1 below for a literature review.

[2]Formally, this variable is defined as the share of the electorate that always votes for the party regardless of the quality of its candidate or policies.

several cases in which parties have changed nomination procedures over their lifetimes. These features make Latin America an ideal case for studying the determinants of the adoption of primary elections. As a measure of relative partisan support, I use the seat share obtained by the party in the previous legislative election.[3] A similar variable has been used extensively, both in political science and economics, as a proxy for partisan support and as an inverse measure of inter-party political competition (King 1989; Besley et al. 2010).

The main empirical challenge relates to omitted variables affecting both the measure of partisan support and the adoption of primaries for selecting political candidates. For example, factors such as strength of democratic values, a party's organizational capacity, or power of party elites may be relevant variables for which we cannot obtain reliable measures. Omitting these variables may lead to inconsistent econometric estimates. I address this concern by including party fixed effects as well as other covariates. The identification strategy reduces the scope of omitted variables by effectively controlling for time-invariant determinants of primary adoption at the country and party level. To the best of my knowledge, this empirical strategy has not been used in the literature studying the determinants of primary elections.

I find robust evidence of a positive and significant relation between the relative levels of partisan support and primary adoption. The most conservative estimate suggests that a one-standard deviation increase in the measure of partisan support raises the probability of using a primary by almost one-third. This finding is consistent with the argument that, at least among Latin American parties, the incentive effect is more important than the selection effect. Political parties seem to adopt primaries mostly to strengthen intra-party competition —and elicit more effort from candidates during the electoral campaign— than to improve political selection.

I also evaluate the electoral gains from using primaries. I find that primaries are associated with better electoral performance: primary-nominated candidates have a vote share four percentage points higher than candidates selected in other ways, and are more likely to win presidential elections. These results are similar to the ones found by Carey and Polga-Hecimovich (2006), albeit using a different empirical strategy. The main difference is that I also document that the electoral gains from using primaries *increase* with partisan support: the larger the party, the more it gains from using primaries. These apparently puzzling results are, however,

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[3]The results are similar using the vote share obtained by the party's candidate in the previous presidential election.

consistent with the model's predictions when the incentive effect plays an important role in primary adoption.

The findings in this paper should not be interpreted as evidence that parties use primaries solely to regulate political competition and maximize candidates incentives. The results shed light only on the relative importance of two important mechanisms, namely the incentive and selection effect, in the Latin American case. They do not rule out, however, other possible motives for adopting primaries, such as reducing internal conflict or information asymmetries between parties and voters.

## 1.1 Related Literature

This paper relates to a growing literature exploring the determinants of primary adoption and, more broadly, to a literature studying endogenous political institutions and their effects on economic and policy outcomes.[4] Earlier explanations of primary adoption focus on structural factors, such as the sizes of electoral districts (Matthews 1985) or the degree of federalism (Epstein 1980). Lundell (2004) evaluates these hypotheses using a cross-section of 70 countries. He finds that countries with smaller parties tend to adopt more decentralized selection methods. Nonetheless, he finds no significant correlation with district magnitude or territorial organization.

Recent work explores, more explicitly, the benefits and costs of primaries. For example, Kemahlioglu et al. (2009) argue that primaries allow parties to solve internal conflicts. Using the case of Latin American presidential primaries, they find that coalitions —explicitly formed to support a candidate— as well as large, centrist parties are more likely to use primaries. They interpret their findings as evidence that intra-party divisions make primaries more likely. In related work, Hortala-Vallve and Mueller (2010) develop a model wherein parties adopt primaries to avoid costly party splits.

Adams and Merrill (2008) and Serra (2011) develop models that highlight the selection effect. In their models, primaries provide an informational advantage to the party by allowing it to

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[4]For some examples of work on endogenous political institutions, see Alesina and Trebbi (2004), Ticchi and Vindigni (2010) and Acemoglu et al. (2012). The literature studying the economic effects of political institutions is quite large. For example, Barro (1996), Rodrik and Wacziarg (2005), Papaioannou and Siourounis (2008) and Kudamatsu (2012) study the effect of democracy on growth and well-being, while Persson and Tabellini (2003) and Persson et al. (2003) thoroughly study the effect of electoral rules and form of government on policy choices. In one of the few studies using long-term historical data, Kurrild-Klitgaard (2000) examines the effect of constitutional rules on the incidence of coups in Denmark.

identify candidates with better quality or valence. In this view, parties may adopt primaries to improve candidate selection and enhance a party's electoral performance.

In a seminal paper, Caillaud and Tirole (2002) develop a complementary view stressing the incentive effect. Their model depicts the relation between parties and their candidates as a principal-agent problem. Candidates can exert effort during the campaign to improve policy design and thus to increase the party's electoral success. This effort, however, is not contractable. In this model, primaries allow parties to regulate intra-party political competition and elicit more effort from candidates. Castanheira et al. (2010) extend this argument and present a two-party model of primary adoption that includes the selection and incentive effects. In their model, parties use primaries to regulate political competition and to create incentives among candidates.

Both the selection and incentive effects highlight a (potential) electoral benefit from using primaries. Using data from Latin American parties, Carey and Polga-Hecimovich (2006) find evidence of better electoral performance associated with primaries, and interpret their result as evidence that primaries increase the parties' appeal to voters, a sort of "democratic seal of approval".[5]

The contribution of this paper to this literature is twofold. First, it contrasts empirically two effects associated with the benefits from using primaries: the selection and incentive effects. These two effects have been discussed before theoretically; however, to the best of my knowledge, there is no empirical evidence addressing their relative importance. Second, it confirms and expands previous findings about the determinants of primary adoption, and their effect on electoral performance. These issues have been explored before using a similar dataset (Carey and Polga-Hecimovich 2006; Kemahlioglu et al. 2009). This paper, however, uses a new identification strategy exploiting within-party variation. This identification strategy addresses concerns about omitted variables at the party and country levels that may have affected previous results.

The rest of the paper proceeds as follows. Section 2 develops a simple analytical framework. Section 3 presents some background on Latin American presidential primaries, and discusses

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[5]Other possible electoral benefits from primaries may come from its role as informational or commitment devices. For example, Castanheira et al. (2010) discuss a trust effect: parties can use costly primaries to signal the quality of their candidates. Meirowitz (2005) presents a model wherein primaries allow voters an early chance to reveal their preferences. Jackson et al. (2007) argue that primaries allow a party to credibly commit to more centrist policies. In this line, Gerber and Morton (1998) find evidence that U.S. representatives from states with less open primaries take policy positions further from the median voter's ideal position.

the data and empirical strategy. Section 4 presents the empirical evidence. Section 5 concludes. All proofs are in the Appendix.[6]

# 2    A model of endogenous primaries

The aim of this section is to develop a simple model of primary adoption to guide the empirical analysis. The model stresses two possible reasons for adopting primaries: gains from creating incentives among candidates (incentive effect) and gains from improving candidate selection (selection effect).

These two mechanisms have received special attention in the literature on the determinants of primary election adoption. Caillaud and Tirole (2002) model primaries as tools to regulate political competition and maximize the effort politicians put into the design of electoral platforms. In a complementary view, Adams and Merrill (2008) and Serra (2011) develop models of primary adoption wherein primaries improve selection of the candidate with better campaigning skills. Castanheira et al. (2010) develop a model of primary adoption that includes the incentive and selection effects. Their model is richer since it includes the strategic interactions between two parties and voters. This allows parties to compete by choosing a nomination procedure, and use it as a signal of a politician's quality.

The contribution of the model in this section is to make explicit the link between observables (such as strength of partisan support) and the incentive and selection effects. As I show below, both effects react differently to partisan support. While the selection effect declines with partisan support, the incentive effect increases with it. In turn, this affects the likelihood of adopting primaries in different ways. Later, I exploit the model's predictions to evaluate empirically which of the two effects is more important for adopting primaries in the context of Latin American presidential candidates.

## 2.1    The basic setup

Consider an office-seeking party that nominates a candidate to run in presidential elections. The vote share obtained by the party's candidate depends on the relative number of the party's core supporters, $\lambda$, the quality of the candidate, $q_c$ and the effort exerted by the party's candidate

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[6]Additional results are presented in an online Appendix available at `http://www.sfu.ca/~faragons/files/appendix_online.pdf`.

during the general electoral campaign, $e$. In particular, the party's vote share is

$$\lambda + (1 - \lambda)(\phi_s q_c + \phi_i e),$$

where $\lambda$ is the relative number of partisan supporters, i.e., citizens who will vote for the party regardless of the candidate's type or effort. Alternatively, we can interpret $\lambda$ as an inverse measure of inter-party political competition as in Besley et al. (2010). In the empirical section, I use the proportion of seats obtained by a party in the previous legislative elections as a measure of $\lambda$.

The parameters $\phi_s$ and $\phi_i$ capture the relative importance of candidate selection and candidate's incentives to attract non-partisan voters. The element $(1 - \lambda)(\phi_s q_c + \phi_i e)$ can be interpreted as the proportion of non-partisan voters attracted to the party's candidate owing to her quality, $q_c$, or effort, $e$.

I define $e$ as the pre-electoral effort exerted by the politician.[7] In Caillaud and Tirole (2002), this effort corresponds to investments in improving the quality of her policy manifesto. More broadly, however, it can represent other costly actions that (1) affect the party's candidate performance in the general election and (2) are committed before the nomination process.[8] These may include, for example, initial fund raising, development of electoral logistical support, participation in debates, town hall meetings, recruitment of policy advisors, and so on.

In contrast, quality represents any invariant characteristic of the politician that improves her electoral performance. It could correspond to the campaigning skills, as in Adams and Merrill (2008), or to the politician's charisma, honesty or valence.

Before nominating its candidate, the party chooses a nomination procedure. There are two nomination procedures $\mathcal{N} = (P, NP)$, where $P$ stands for primary and $NP$ for non-primary. If the party uses $NP$, a politician is selected randomly and automatically becomes the party's candidate. In contrast, under $P$, two randomly drawn politicians compete in internal elections and the party picks its preferred candidate. The party perfectly observes the quality and effort

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[7]Note that the model does not require this effort to generate positive spillovers for the party. The argument could work even if the benefit from this effort could be captured only by the politician. The party will, in any case, naturally prefer a higher level of effort than the politician's optimal because it does not bear the cost of effort.

[8]This excludes actions that affect internal election performance, but are not relevant for the general election, as well as actions taken after the candidate secures the party nomination.

of politicians.[9] The level of effort, however, is not contractable and it is chosen by the politician before the nomination process unfolds.

Let us denote the expected vote share under the nomination procedure $\mathcal{N}$ as $V_{\mathcal{N}}$, and the electoral benefit from using primaries as $V \equiv V_P - V_{NP}$. I assume that the party takes the nomination procedures of other parties as given. There is, however, a cost to adopting primaries. This cost may be party specific but it is independent of $\phi_s$ and $\phi_i$, the relative importance of the selection and incentive effects. Parties consider both the benefit and cost of using a particular nomination procedure. This implies that, ceteris paribus, the probability of using a primary is increasing in $V$.

The timing of events is as follows:

1. Party chooses a nomination procedure.

2. Politicians are chosen randomly to be considered for nomination by the party.

3. Politicians decide level of effort.

4. Party nominates a candidate.

5. Candidate runs in the general election.

## 2.2 Selection effect

Let us start with a case in which only selection matters. In this case, $\phi_s = 1$ and $\phi_i = 0$, and the expected party's vote share is $V_{\mathcal{N}} = \lambda + (1 - \lambda)E(q_c|\mathcal{N})$. Note that the party is a vote maximizer and hence strictly prefers a higher $q$.

Politicians' quality is distributed uniformly, $q \sim U[0, 1]$. With a non-primary selection process, a random politician becomes the party's candidate; thus $E(q_c|NP) = \frac{1}{2}$. In contrast, with a primary selection process, the party is able to select the best candidate among the two randomly selected politicians. Let $q_1$ and $q_2$ be the quality of the two randomly drawn politicians, then $E(q_c|P) = E(\max\{q_1, q_2\}) = \frac{2}{3}$.[10]

Note that primaries improve political selection by giving parties the opportunity to observe the qualities of potential candidates.[11] The improvement in candidate selection translates into

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[9]The results are similar if we allow for some degree of imperfect observability of types or effort. An extension of the model with imperfect information is available in the online Appendix.

[10]To see this, define $G(x) = \Pr(\max\{q_1, q_2\} < x)$. Note that $G(x) = \Pr(q_1 < x)\Pr(q_2 < x) = x^2$. Hence, $E(\max\{q_1, q_2\}) = \int_0^1 x \, dG = \frac{2}{3}$.

[11]This result is similar to Adams and Merrill (2008) and Serra (2011).

better electoral performance. In particular, the expected electoral gain from using primaries (the selection effect) is $V = (1 - \lambda)(E(q_c|P) - E(q_c|NP)) > 0$.

The electoral gain from primaries is decreasing in $\lambda$. Intuitively, a party with a strong partisan support benefits less from improving candidate quality, since there are fewer swing voters to attract. In that case, the selection effect from primaries is smaller. This result implies that the probability of using a primary, which is positively related to $V$, would also be decreasing in $\lambda$.

## 2.3 Incentive effect

Let us consider now an alternative scenario in which incentives are all that matter. In that case, $\phi_s = 0$ and $\phi_i = 1$, and thus the party's vote share is $\lambda + (1 - \lambda)e_{\mathcal{N}}$, where $e_{\mathcal{N}}$ is the candidate's effort under nomination procedure $\mathcal{N}$.

A politician's utility depends on some ego rents from office, normalized to one, minus the cost of effort. Note that a politician wins office only when the party wins the general election *and* the politician wins the party's nomination. For simplicity, I assume that the probability the party wins the election is equal to the party's vote share, and that the cost of effort is quadratic. This implies that the expected utility of a politician under nomination procedure $\mathcal{N}$ is

$$U_{\mathcal{N}} = [\lambda + (1 - \lambda)e]\Pr(\text{win party nomination}|\mathcal{N}) - \frac{ce^2}{2},$$

where $c$ is a cost shifter large enough to guarantee $e_P, e_{NP} < 1$. A politician's outside option gives her a utility of zero.

**Optimal effort**   In a non-primary, the randomly selected politician is also the party's candidate. Hence, the candidate's optimal effort is simply

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\begin{aligned}
e_{NP} &= \arg\max_e \lambda + (1 - \lambda)e - \frac{ce^2}{2} \\
&= \frac{1 - \lambda}{c}.
\end{aligned}
$$

Under a primary, however, the optimal effort can be thought of as the outcome of a sequential game between politicians and the party. In the first stage, both politicians simultaneously decide

their level of effort. In the second stage, the party picks the best available candidate. Recall that the effort level, similar to the politician's quality in the previous case, is perfectly observable by the party.

Since the party maximizes vote share, it strictly prefers candidates with higher $e$. By symmetry, both politicians exert the same level of effort and thus have the same probability of nomination. This setup resembles a second-price auction in which two identical politicians compete for the party nomination by promising to exert some effort.

In the unique sub-game perfect Nash equilibrium (SPNE), both politicians exert the maximum possible level of effort such that their expected utility is zero. Hence, $e_P$ solves:[12]

$$U_P(e_P) \equiv [\lambda + (1-\lambda)e_P]\frac{1}{2} - \frac{ce_P^2}{2} = 0$$

**Lemma 1** *In a primary, the effort level exerted by the party's candidate is greater than in a non-primary: $e_P > e_{NP}$. The difference $e_P - e_{NP}$ is increasing in $\lambda$.*

Similar to the models of Caillaud and Tirole (2002) and Castanheira et al. (2010), primaries increase internal competition and a candidate's effort. A less obvious result is that the difference increases with partisan support. Intuitively, the increase in $\lambda$ reduces the marginal benefit of effort, and hence $e_{NP}$. In contrast, a higher $\lambda$ increases the expected benefit from securing the party's nomination and hence increases the maximum effort that politicians are willing to exert in a competitive primary. Together these two effects increase the gains, in terms of candidates' additional effort, that the party can obtain from primaries.

The increase in a candidate's effort translates into better electoral performance. In particular, the party's expected gain from using primaries (the incentive effect) is $V \equiv (1-\lambda)(e_P - e_{NP})$. Note that, in general, the sign of $\frac{dV}{d\lambda} = (1-\lambda)\frac{d(e_P - e_{NP})}{d\lambda} - (e_P - e_{NP})$ is ambiguous. On the one hand, there is a first-order effect of increasing the difference $(e_P - e_{NP})$, as shown in Lemma 1. On the other hand, there is a second-order effect of reducing the marginal benefit of improving effort. We can show, however, that:

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[12]To see this, consider a possible strategy wherein both politicians offer the same level of effort $e_a < e_P$ and have a probability of nomination equal to $\frac{1}{2}$. Since the probability of nomination increases to one by a small increase in effort $e_a + \epsilon$, a politician will find unilateral deviation to be profitable, and the strategy profile will not be an equilibrium. A similar argument applies for strategies with different effort levels.

**Lemma 2** *If partisan support is not too large ($\lambda < \bar{\lambda}$), the incentive gain from using primaries increases with $\lambda$, $\frac{dV}{d\lambda} > 0$.*

## 2.4 Summary

The model highlights two electoral benefits from primaries: selection and incentive effects. More importantly, it predicts a differential effect of partisan support ($\lambda$) on the electoral benefits, $V$, and through this channel, on the probability of adopting a primary. We can summarize the previous results as follows:

**Proposition 3** *Under the assumption that the likelihood of using a primary is positively correlated to their net benefit, $V$, then:*

1. *When the selection effect dominates, the probability of using primaries is decreasing in $\lambda$.*

2. *When the incentive effect dominates, and $\lambda$ is not too large ($\lambda < \bar{\lambda}$), the probability of using primaries is increasing in $\lambda$.*

Intuitively, the increase in $\lambda$ reduces the gains from selecting a better candidate since the party has strong partisan support. This reduces the magnitude of the selection effect. In contrast, the reduction in inter-party competition associated with a larger $\lambda$ reduces candidates' incentives to exert effort. In turn, this raises the gains from increasing intra-party competition and makes the use of primaries more attractive.

Proposition 3 provides the basis for the empirical analysis. It suggests including a measure of $\lambda$ as a determinant of primary adoption, and using the sign of this relation to learn about the relative importance of the selection and incentive effects.

There are, of course, other possible determinants of primary adoption, such as party ideology, internal polarization, preference for democratic institutions, party history, national electoral rules, and the cost of running internal elections. I remain agnostic about the effect of these other variables. In the empirical analysis, however, I need to consider these other determinants when estimating the relation between $\lambda$ and primary adoption.

# 3  Background

## 3.1  Presidential primaries in Latin America[13]

Latin American democracies share many institutional and historical features. They all have civil law systems, proportional electoral systems,[14] and strong presidential governments in which the executive plays a central role in national politics. Since the 1970s, the region has experienced a new wave of democratization with the collapse of old military regimes and changes in partisan structures. The most radical feature has been the surge of new parties, decline in incumbents, and fragmentation of partisan support (Alcántara Sáez 2002).[15]

In recent democratic elections, Latin American political parties have used different methods to nominate presidential candidates. The nomination procedures range from nomination by the party leader to more democratic procedures, such as primaries (Alcántara Sáez 2002). This institutional heterogeneity makes Latin America an interesting testing ground for studying the determinants of primary election adoption.

Primaries in Latin America are not as widespread as in U.S. politics. From 1980 to 2004, around 7% of presidential candidates were nominated in a primary (open or closed). This figure increases to 15% if we consider only parties included in the panel sample. For both groups, however, primary elections have risen in importance over time, specially during the second half of the 1990s (see Figure 1).

Latin American primaries have three important features. First, primaries are mostly a party-specific phenomenon. In a given election, the use of primaries is partial, with only some parties using them (see Table 1). This suggests that party characteristics, together with environmental conditions, may play a relevant role in primary adoption.

Second, the adoption of primaries is a party decision more than a national policy. Few countries have compulsory primaries. Moreover, even when required, their implementation has not

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[13]For additional information on Latin American primaries, I refer the reader to Alcántara Sáez (2002), Carey and Polga-Hecimovich (2006: 532-533) and Freidenberg (2003). Martz (1999) and González (1999) provide country analysis for Colombia, Venezuela and Uruguay. For a thorough analysis of the history and organization of the main political parties in some Latin American countries, see Alcántara Sáez and Freidenberg (2002).

[14]The exception is Chile.

[15]One example of this phenomenon has been the decline of the Mexican PRI, after ruling the country for almost 40 years, and the surge of the party PAN. In Venezuela, Peru, Ecuador and Colombia, new parties have displaced old ones and won presidential office, such as Movimiento V República (Hugo Chávez), Cambio 90 (Alberto Fujimori), PSP (Lucio Gutiérrez), Partido Social de Unidad Nacional (Juan Manuel Santos). Similar phenomena can be documented in the rest of the region.

been fully enforced (see Table 1). In some cases, the adoption of primaries followed an electoral reform (such as in Honduras, Paraguay, Uruguay, and Panama). In others, however, primaries have been used even when the electoral rules did not require them for specific cases (Alcántara Sáez 2002; Freidenberg 2003). For example, the FMLN in El Salvador changed its statute in 2000 to start using primaries, while the Partido Justicialista in Argentina used primaries in the contested election between Antonio Cafiero and Carlos Menem in 1989. Similarly, in early 2000, after decades of nominations controlled by the incumbent president, the party leaders of the Mexican PRI changed the party statutes and implemented primary elections (Freidenberg and Sánchez López 2002). This creates within-party variation in the use of primaries.[16] In the empirical strategy, I exploit this feature of the data to control for time-invariant party characteristics.

Finally, primaries in Latin America can be open or closed.[17] In the first case, the whole electorate can participate in candidate selection, though few parties have implemented this procedure.[18] Closed primaries, in which only party members participate, are more common. In both cases, the specific procedures —such as criteria for choosing a candidate, requirements to be eligible to vote, and ratification requirements— are mostly unregulated by electoral legislation, and vary between countries and parties.[19]

## 3.2 Data

I use a dataset of Latin American presidential candidates obtained from Carey and Polga-Hecimovich (2007). The dataset covers the candidates running in presidential elections of 17 countries from 1978 to 2004. For each candidate, the dataset contains information about her nomination procedure, electoral performance, party affiliation, and vote share. It also contains indicators about whether the candidate was endorsed jointly by several parties (pre-electoral coalition) or endorsed by the party of the incumbent president (incumbent party). The most important variable is *PRIMARY*, an indicator equal to one if the candidate was nominated in

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[16]As a rough measure of this heterogeneity, I calculate the standard deviation of the use of primaries between and within parties. The values are 0.268 and 0.277, respectively.

[17]Note that due to data availability, I am unable to distinguish between open and closed primaries in the empirical analysis.

[18]The most important cases are: FREPASO and UCR in Argentina, FSLN in Nicaragua, the Liberal Party in Colombia and, more recently, Concertación in Chile, PRI in Mexico and parties in Uruguay (Freidenberg and Sánchez López 2002).

[19]See Freidenberg and Sánchez López (2002) for additional details on rules and practices to nominate presidential candidates in Latin America.

a primary (open or closed) and zero otherwise. The latter category includes less democratic methods such as party conventions and nominations by party leaders. These two categories correspond to the primary and non-primary procedures described in the model.

I complement this dataset with information on party age, existence of legal mandate to use primaries, and seat share obtained by the candidate's party in legislative elections.[20] I define seat share as the proportion of seats obtained by the party in the legislature. In case of bicameral parliaments, I consider the lowest chamber or *Cámara de Diputados*. These data come from reports available at the websites of the Center on Democratic Performance and the Political Database of the Americas.[21]

**Measure of $\lambda$, relative partisan support.** As empirical counterparts of $\lambda$, I use past electoral results. In particular, the preferred measure of $\lambda$ is the party's seat share in the previous election (*SEATSHARE1*).[22] As a robustness check, I also use alternative measures of $\lambda$, such as the vote share obtained by the party in the previous two presidential elections (*VOTESHARE1* and *VOTESHARE2*), the seat share obtained in the election before the previous presidential election (*SEATSHARE2*), and the average of the vote share and seat share in the last two previous elections (*AVERAGE12*).

The use of past electoral results as measures of relative party strength follows standard practice in political science. For example, in the context of U.S. politics, a widely used measure of dominance of the Democratic Party in a given state is the Ranney index. This index is an average of the Democratic Party's seat share in the state legislature, its vote share in gubernatorial elections, and the proportion of terms during which the Democrats controlled the governor's office and state legislature (King 1989).

Using past electoral outcomes as measures for $\lambda$ would be valid to the extent they are good predictors of the vote share a candidate would have expected to obtain from her party's members, regardless of her type or effort. This would happen, for example, if there is persistence

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[20]The online Appendix provides a description of all variables and data sources.

[21]The website addresses are `http://cdp.binghamton.edu/era/index.html` and `http://pdba.georgetown.edu/Elecdata/elecdata.html`, respectively.

[22]Note that Latin American countries have a presidential form of government with separate presidential and legislative elections. Both elections, however, may be held at the same time. I prefer to use the seat share in the previous election, instead of the contemporaneous seat share, to reduce concerns of reverse causality between the use of primaries and party electoral performance.

in partisanship over time.[23] There are, however, some important limitations.[24] In particular, the proxies for $\lambda$ could also reflect differences in party size, party discipline, or organizational capacity, among others. To the extent that these other factors are not controlled for, they can confound the results and lead to inconsistent estimates of the relation between $\lambda$ and primary adoption. I discuss these concerns in more detail in Section 3.3.

The empirical strategy exploits within-party variation. To implement it, I construct an identifier of parties based on their names. Then, I use this identifier to include party fixed effects in the baseline regression. If a party changes name, it is treated as a new party. Similarly, pre-electoral coalitions formed specifically to support a specific candidate are considered to be new parties.[25] Table 2 provides summary statistics for the main variables.

The final sample includes 194 candidates from 58 political parties. The number of observations is smaller than in the original Carey and Polga-Hecimovich (2007) dataset for two reasons. First, it excludes candidates from parties observed only once, and hence eliminated from the estimation when using party fixed effects. Second, it does not include candidates for which data on their parties' seat share in the previous election were unavailable. This happens when the party is new, just after democratic transitions (hence without recent previous elections), or when the party is very small.

The panel sample, though smaller, captures a large part of electoral activity: more than 70% of the total vote share and seat share in the period of analysis. Nonetheless, the dataset should not be considered a representative sample of political parties. In particular, the parties in the sample tend to be larger, perform better, and be more likely to use primaries.[26] We need to have this caveat in mind when interpreting and generalizing the results.

## 3.3 Empirical Strategy

The aim of the empirical analysis is to estimate the relation between primary adoption and *SEATSHARE1*, the empirical counterpart of $\lambda$. Recall from Proposition 3 that this relation may be positive or negative depending on which effect (incentive or selection) is more important.

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[23]A better empirical counterpart of $\lambda$ would be the share of voters willing to support a party before the candidate is selected. Constructing this measure would require data on opinion polls taken during the electoral campaign. I am, however, unable to construct this proxy due to data limitations.

[24]I thank an anonymous referee for pointing out these limitations.

[25]This definition of coalition corresponds to the ''narrow'' definition used by Kemahlioglu et al. (2009).

[26]See the online Appendix for a group comparison.

The main empirical challenge is dealing with omitted variables affecting both the measure of $\lambda$ and primary adoption. This could happen, for instance, if I do not include other possible primary determinants potentially correlated with $\lambda$, such as a party's commitment to democratic values, size, organizational capacity, discipline, or degree of internal conflict. Similar problems would arise if the proxy for $\lambda$ reflects other party characteristics, besides the strength of partisan support, that are not controlled for. In both cases, the unobserved heterogeneity may lead to inconsistent estimates.

To address this concern, I exploit within-party variation. This allows me to include party fixed effects and effectively control for time-invariant party characteristics. I also include a rich set of covariates at the party and election levels to further reduce the scope of omitted variables.

I estimate the following model:

$$primary_{ij} = \alpha_j + \eta_t + \beta SEATSHARE1_{ij} + \gamma \mathbf{X}_{ij} + \epsilon_{ij}, \tag{1}$$

where $primary$ is an indicator of whether candidate $i$ from party $j$ was nominated in a primary. The variable $SEATSHARE1$ is the seat share obtained by the party in the previous legislative elections. I use this variable as the preferred measure of $\lambda$, the relative strength of partisan supporters.

The preferred specification includes party fixed effects, $\alpha_j$, and dummies for each election year, $\eta_t$.[27] It also includes several covariates, $\mathbf{X}_{ij}$, such as indicators of other parties using primaries, legal mandate to use primaries, status as incumbent party or pre-electoral coalition, and party age.

As a robustness check, I also estimate the model with fewer control variables and alternative measures of $\lambda$. I estimate regression (1) using a linear probability model and clustering the errors at the party level. The reason for clustering the errors is to address possible serial correlation in the use of primaries.[28]

Figure 2 depicts the basic correlation between the use of primaries and previous seat share

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[27]The year dummies are included to correct for changes in trends of primary use. The results, however, are robust to the exclusion of these year fixed effects.

[28]The results are robust to using a simpler White correction of the standard errors. I also estimate the relation using discrete dependent variable models. In particular, I use a logit model and conditional logit models with country and party fixed effects. In all cases, the relation remains positive, though it becomes insignificant when using party fixed effects. In this last case, this result may be driven by the drastic reduction of sample size when using the conditional logit model. All these results are available in the online Appendix.

($SEATSHARE1$). Each bubble in the graph represents the proportion of primary-nominated candidates in different bins of previous seat share. The size of the bubble is proportional to the number of observations in each bin. Note that the correlation is positive, which is consistent with primary adoption being driven mostly by the incentive effect. In the next section, I explore this relation more formally.

## 4 Empirical evidence

Table 3 presents the main results. Column 1 estimates the baseline regression (1) with the full set of control variables as described in the previous section. Columns 2 and 3 estimate more parsimonious models by eliminating fixed effects and control variables. In all cases, the estimate of $\beta$, the relation between the measure of $\lambda$ ($SEATSHARE1$) and the likelihood of primary adoption is positive and statistically significant. The magnitude of the coefficient is also relevant. The most conservative estimate suggests that a one standard deviation increase in $SEATSHARE1$ is associated with almost 50% increase in the probability of using a primary.

Columns 4 to 6 check the robustness of the results by using alternative measures of $\lambda$. Column 4 uses the seat share obtained by the party in the past two elections ($SEATSHARE1$ and $SEATSHARE2$), while column 5 uses the vote share obtained in the previous presidential election ($VOTESHARE1$). Finally, column 6 uses the average of vote share and seat share in the last two elections ($AVERAGE12$). This last variable is the one that more closely resembles the Ranney index. In all cases, the results are qualitatively similar to the ones obtained using $SEATSHARE1$.[29]

The regression in column 1 includes other determinants of primary adoption already studied in the literature, such as indicators of being a pre-electoral coalition or an incumbent party (Kemahlioglu et al. 2009) (henceforth KWH). These variables are used by KWH as measures of internal division. The results, however, are not similar. While KWH document a positive and significant correlation between these two variables and primary adoption, I find a negative (though not always significant) correlation. These differences are neither driven by the choice of control variables nor by party fixed effects. Instead, they seem to be driven by differences in the sample of parties. As mentioned in Section 3.2, I use a sample of parties observed for at

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[29]Note, however, that the sample size reduces significantly due to loss of observations when using $SEAT-SHARE2$.

least two electoral periods. These parties tend to be larger and more successful than short-lived parties. In contrast, the sample used by KWH includes these short-lived parties, and hence our results may not be comparable.[30]

## 4.1 Ancillary predictions

The model provides ancillary predictions that may shed some additional light on the relative importance of the selection and incentive effects (see Proposition 3). In particular, it suggests that if parties use primaries because of the incentive effect, we should observe that (i) primaries improve electoral performance, and (ii) the electoral benefits should increase with partisan support $\lambda$.[31] Intuitively, parties with strong partisan support face less inter-party political competition. In turn, this reduces the incentives for candidates to exert costly effort. In that case, the party has more to gain, in terms of the candidate's extra effort and electoral benefits, from adopting competitive primaries.

To explore these ancillary predictions, I estimate the following model:

$$
\begin{aligned}
y_{ij} = \alpha_j + \eta_t + \phi_0 primary_{ij} + \phi_1 (primary_{ij} \times SEATSHARE1_{ij}) + \\
\phi_2 SEATSHARE1_{ij} + \delta \mathbf{W}_{ij} + \mu_{ij},
\end{aligned}
\tag{2}
$$

where $y_{ij}$ is a measure of the electoral performance of candidate $i$ from party $j$, such as a candidate's vote share or an indicator equal to one if the candidate won the presidential election. Similar to the baseline regression, this specification includes party fixed effects, $\alpha_j$, and exploits within-party variation. As additional controls, it includes year fixed effects, $\eta_t$, and a set of covariates, $\mathbf{W}_{ij}$, such as number of candidates, an indicator of other parties using primaries, and whether the candidate belongs to the same party as the incumbent president.

The most important variable in this specification is the interaction between the use of primaries and *SEATSHARE1*, the empirical counterpart of $\lambda$. This interaction term allows us to estimate the electoral gains from primaries and how they change with partisan support. The parameters of interest are $\phi_0$ and $\phi_1$. They capture the differences in electoral performance between primary and non-primary nominated candidates and can be used to estimate $V$, the

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[30]A possible hypothesis motivated by these results is that larger parties may be able to utilize other means of solving internal conflict. In that case, measures of internal division may be less important in determining primary adoption.

[31]In terms of the model, these predictions imply $V > 0$ and $\frac{dV}{d\lambda} > 0$.

electoral gains from using primaries.[32] In particular, note that $\phi_1$ represents $\frac{dV}{d\lambda}$. Thus, if the incentive effect is more important than the selection effect, we should expect $\phi_1 > 0$.

Table 4 presents the estimates of equation (2). Columns 1 and 4 exclude *SEATSHARE1* and thus provide estimates of the average electoral gains from using primaries. In both cases, the results suggest that primaries indeed bring electoral benefits. Primary nominated candidates obtain a vote share around 4.3 percentage points higher, and are more likely to win presidential elections.[33]

The rest of the columns estimate equation (2) including the interaction term, with and without party fixed effects. Note that we cannot reject the hypothesis that $\phi_1 \geq 0$. This implies that the electoral gains from using primaries, either in terms of vote share or probability of winning, *increase* with $\lambda$. I interpret these findings as evidence that the primary bonus increases with partisan support. This is consistent with the model's predictions in the case when the incentive effect is relatively more important.[34]

Figure 3 uses estimates from column 3 to display this relation graphically. In particular, it plots the predicted increase in vote share of primary-nominated presidents for different values of *SEATSHARE1*. The figure also displays the 90% confidence interval.[35] Formally, I estimate $\hat{V} = \hat{\phi}_0 + \hat{\phi}_1 SEATSHARE1$, where $\hat{V}$ is the expected primary bonus, and $\hat{\phi}_0$, $\hat{\phi}_1$ are regression estimates.[36] Figure 3 shows the positive relation between primary bonus and the measure of $\lambda$, *SEATSHARE1*. Note that the point estimate of the primary bonus becomes positive for values of *SEATSHARE1* above 0.30.[37] The confidence intervals, however, include zero in almost all of the range of $\lambda$. This is driven by the loss of precision when estimating the primary bonus, $V$,

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[32]Recall that $V = V_P - V_{NP}$ where $V_P$ and $V_{NP}$ are the candidate's vote share when using primary and non-primary, respectively. Formally, the estimate of $V$ is $\phi_0 + \phi_1 SEATSHARE1$.

[33]These results echo the findings of Carey and Polga-Hecimovich (2006). Using a similar dataset but a different identification strategy, they find that primary-nominated candidates obtain a vote share between four and six percentage points higher than candidates selected in other ways.

[34]There are, however, other possible reasons why the primary bonus may increase with partisan support. For example, the gains from a primary may be a relative increase in partisan support instead of an absolute gain in vote share. More broadly, the results would be similar if the marginal benefit from using primaries increases with partisan support. While I cannot rule out this possibility, I explore the robustness of the results to the inclusion of the interaction of primary with a proxy for party size at the moment of the election, i.e., after the nominating decision was announced. As such a proxy, I use the party's seat share obtained in the legislative elections *contemporaneous* with the presidential election (*SEATSHARE*). The results, available in the online Appendix, are similar.

[35]A similar graph for the increase in the probability of winning the presidential election is available in the online Appendix.

[36]To construct the confidence interval, I first calculate the standard errors of each point estimate using the estimated covariance matrix. Then, I add and subtract 1.64 S.E. to the point estimates.

[37]In the sample, *SEATSHARE1* ranges from zero to 0.94, with a median value of 0.25.

and cannot be used to test whether that bonus increases with $\lambda$. This test is formally done in the regression framework by introducing the interaction term ($primary \times SEATSHARE1$).

## 4.2 Discussion

The previous empirical results point to a robust positive relation between measures of $\lambda$ and primary adoption. They also suggest that the holding of primaries brings electoral benefits to parties, and that these electoral benefits are increasing in the relative strength of partisan support ($\lambda$).

In the context of the model discussed in Section 2, I interpret these findings as evidence that, in the Latin American case, the incentive effect is more important for primary adoption than the selection effect (see proposition 3). Intuitively, parties with stronger partisan support face less inter-party competition. This may reduce incentives for candidates to invest in pre-electoral efforts that may improve the party's electoral performance, such as policy design, fund raising, or recruitment of cabinet members. In this context, parties may strengthen candidates incentives by fostering more intra-party competition by, for example, adopting primaries.

There are, however, at least three relevant limitations that we need to take into account when interpreting the results. First, the results could be driven by other, unobserved, party characteristics, such as size or organizational capacity. For example, larger, better organized parties may face lower costs of implementing primary elections and thus be more likely to adopt, and benefit from them.[38] To the extent that these unobserved party characteristics are time-invariant, they are controlled for by the party fixed effects. In that case, we can be confident of the interpretation of the results. There is, however, always the possibility that the included controls may fail to capture other relevant time-variant unobserved characteristics.

Second, the empirical strategy is not well suited for studying the relative importance of other determinants of primary adoption that are relatively fixed over time, such as party ideology or degree of internal divisions.[39] Because they are time-invariant, the effect of these factors cannot be identified reliably when party fixed effects are entered. The results are, therefore, not very informative regarding the viability of these other factors. For that reason, they should not be interpreted as evidence that the incentive effect is the most important determinant of the

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[38]See Section 3.3 for a more detailed discussion.
[39]I refer the reader to Kemahlioglu et al. (2009) for a discussion of these primary determinants.

adoption of party primaries. Instead, they suggest only that the incentive effect seems to be relatively more important than the selection effect.

Finally, the empirical evidence uses a panel dataset of parties. By construction, the parties in the sample exist for more than one electoral period and the sample is not representative of all Latin American parties. As I mention in Section 3.2, the parties in the sample are larger and have better electoral performances than parties observed for one period only. For that reason, while informative about the determinants of candidate selection in primary elections rather than selection by party elites for large, long-lived parties, the results tell us little about the determinants of primary adoption among short-lived, smaller parties.

# 5  Final remarks

This paper contrasts empirically two possible explanations for the party decision to adopt primary elections: desire to improve political selection (selection effect), or a desire to increase political competition, and pre-electoral incentives among candidates (incentive effect). These explanations have already been proposed theoretically, but their relative importance has not been evaluated empirically. This is an important issue if we wish to better understand determinants of primary adoption, and the economic effects of party nomination procedures.

I develop a simple model of endogenous primaries that encompasses both effects and link them to an observable variable: the strength of partisan support. The model predicts a different relation between this variable and primary adoption depending on which effect dominates.

Using the case of Latin American presidential primaries, I find robust evidence of a positive relation between the relative strengths of parties' partisan support and primary adoption. This result is consistent with the incentive effect being more important than the selection effect.

These findings suggest that office-motivated parties may adopt primaries to foster more intra-party competition and elicit more effort from candidates during the general electoral campaign. The increase in effort can be interpreted as more investment in policy design, but it could also refer to any activity that (i) is committed before the nomination process and (ii) improves a candidate's electoral performance, such as fund raising, campaign spending, or recruitment of political advisors. A remaining question is whether the greater effort associated with primaries translates into better policies and economic outcomes for voters. This question, though beyond

the scope of this paper, warrants further research.

# A   Proofs

## A.1   Proof of Lemma 1

Note that $U_P(e_{NP}) = \frac{\lambda}{2} > 0$ and that $U_P'(e_{NP}) = -\frac{1-\lambda}{2} < 0$. Together these results imply that $e_P > e_{NP}$. For the second part of the proposition, recall that $e_{NP} = \frac{1-\lambda}{c}$, thus $\frac{de_{NP}}{d\lambda} = -\frac{1}{c}$. Taking total derivatives to $U_P(e_P)$ we obtain $\frac{de_P}{d\lambda} = \frac{(1-e_P)/2}{c(e_P - e_{NP}/2)}$ which is positive since $e_P < 1$, by construction, and $e_P > e_{NP}$.

## A.2   Proof of Lemma 2

Using the proof of Lemma 1 and definition of $e_{NP}$, we can write $\frac{\partial V}{\partial \lambda} = 2e_{NP} - e_P + \frac{e_{NP}(1-e_P)}{2e_P - e_{NP}}$.

Note that if $e_P < 2e_{NP}$ then $\frac{dV}{d\lambda} \lesseqgtr 0$, but if $e_P < 2e_{NP}$, then $\frac{dV}{d\lambda} > 0$, but if $e_P < 2e_{NP}$ we can unambiguously state that $\frac{dV}{d\lambda} \lesseqgtr 0$. The condition $e_P < 2e_{NP}$ is satisfied if $U_P'(2e_{NP}) < 0$ and $U_P(2e_{NP}) < 0$. $U_P'(2e_{NP}) < 0$ since $U_P' < 0$ for any $e > \frac{e_{NP}}{2}$.

To evaluate the second condition, note that $U_P'(2e_{NP}) = -\frac{1}{c}[\lambda^2 - \lambda(\frac{c}{2} + 2) + 1]$. This expression is negative if $\lambda \in (0, \bar{\lambda})$, where $\bar{\lambda} = 1 + \frac{c}{4} - \frac{\sqrt{(c/2+2)^2 - 4}}{2}$.

This condition is not unreasonable. The average of a party's seat share in the data, the empirical counterpart of $\lambda$, is 0.26. This implies that $\lambda < \bar{\lambda}$ is satisfied for $c \in (0, 3)$.

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Table 1: Use of presidential primaries in Latin America 1978-2004

| Country | Legal mandate to use primaries | Use of primaries in practice |
|---|---|---|
| Argentina | No | Partial (1989, 1995, 1999, 2003) |
| Bolivia | Yes, since 1999 | No |
| Brazil | No | Partial (2002) |
| Chile | No | Partial (1993, 1999) |
| Colombia | No | Partial (1978, 1986, 1990, 1994) |
| Costa Rica | Yes | Partial (1978, 1982, 1986, 1998, 2002) |
| Dominican Rep. | No | Partial (1982, 1986) |
| Ecuador | No | No |
| El Salvador | No | Partial (2004) |
| Guatemala | No | Partial (2003) |
| Honduras | Yes | Partial (2001) |
| Mexico | No | Partial (2000) |
| Nicaragua | No | Partial (1996, 2001) |
| Panama | Yes, since 1997 | Partial (1999) |
| Paraguay | Yes, since 1996 | Partial (1993, 1998, 2003) |
| Peru | No | No |
| Uruguay | Yes, since 1996 | All parties (1999, 2004), partial (1989) |
| Venezuela | No | Partial (1978, 1993) |

Notes: 'Partial' means that only some parties used primaries. The year of the presidential election in which primaries were used appears in parentheses.

Sources: Alcántara Sáez (2002), Freidenberg (2003) and Carey and Polga-Hecimovich (2007).

Table 2: Summary statistics

| Variables | Nr. obs. | Mean | Standard deviation |
|---|---|---|---|
| Primary | 194 | 0.155 | 0.362 |
| Other party uses primary | 194 | 0.216 | 0.413 |
| Legal mandate to use primaries | 194 | 0.144 | 0.352 |
| | | | |
| Previous seat share | 194 | 0.269 | 0.207 |
| Presidential vote share | 194 | 0.271 | 0.180 |
| Previous presidential vote share | 194 | 0.263 | 0.195 |
| Win presidential election | 194 | 0.294 | 0.457 |
| | | | |
| Party age | 157 | 48.1 | 45.8 |
| Incumbent party | 194 | 0.294 | 0.457 |
| Pre-electoral coalition | 186 | 0.280 | 0.450 |
| Number of candidates | 194 | 8.763 | 4.186 |

Table 3: Determinants of primary adoption

| | Dependent variable = Primary | | | | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | A. Main results | | | B. Alternative measures of $\lambda$ | | |
| SEATSHARE1 | 0.371*** | 0.398*** | 0.514*** | 0.513*** | | |
| | (0.117) | (0.104) | (0.120) | (0.172) | | |
| SEATSHARE2 | | | | 0.153* | | |
| | | | | (0.087) | | |
| VOTESHARE1 | | | | | 0.303** | |
| | | | | | (0.147) | |
| AVERAGE12 | | | | | | 0.478*** |
| | | | | | | (0.183) |
| Other party uses primary | 0.068 | 0.100 | | 0.081 | 0.055 | 0.062 |
| | (0.121) | (0.109) | | (0.120) | (0.097) | (0.127) |
| Legal mandate to use primaries | 0.511*** | 0.423*** | | 0.394* | 0.432*** | 0.403* |
| | (0.138) | (0.115) | | (0.223) | (0.140) | (0.227) |
| Pre-electoral coalition | -0.266** | | | | | |
| | (0.109) | | | | | |
| Party age | 0.006 | | | | | |
| | (0.008) | | | | | |
| Incumbent party | -0.010 | | | | | |
| | (0.059) | | | | | |
| Party fixed effects | Yes | No | No | Yes | Yes | Yes |
| Year fixed effects | Yes | Yes | No | Yes | Yes | Yes |
| Observations | 144 | 194 | 194 | 119 | 194 | 119 |
| Number of parties | 41 | 58 | 58 | 38 | 58 | 38 |
| R-squared | 0.482 | 0.394 | 0.086 | 0.317 | 0.377 | 0.294 |

Notes: Robust standard errors in parentheses. Standard errors are adjusted for clustering at party level. * denotes significant at 10%, ** significant at 5% and *** significant at 1%. All regressions are estimated using a linear probability model. All regressions, except column 3, include election year fixed effects. Columns 1, 4, 5 and 6 include party fixed effects.

Table 4: Primaries and electoral performance

| | Presidential vote share | | | Win presidential election | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Primary | 0.043* | -0.043 | -0.100 | 0.317** | -0.242 | -0.578** |
| | (0.025) | (0.073) | (0.077) | (0.138) | (0.282) | (0.286) |
| Primary × SEATSHARE1 | | 0.180 | 0.337** | | 1.226* | 1.711** |
| | | (0.151) | (0.150) | | (0.662) | (0.697) |
| SEATSHARE1 | | 0.166** | 0.448*** | | 0.417 | 0.474* |
| | | (0.069) | (0.100) | | (0.321) | (0.248) |
| Incumbent party | -0.005 | -0.032 | 0.004 | -0.143* | -0.223** | -0.010 |
| | (0.018) | (0.021) | (0.037) | (0.075) | (0.091) | (0.100) |
| Ln(number of candidates) | -0.024 | -0.029 | -0.026 | -0.023 | -0.052 | -0.072 |
| | (0.023) | (0.023) | (0.029) | (0.092) | (0.090) | (0.087) |
| Other party uses primary | -0.049* | -0.033 | 0.010 | -0.194* | -0.124 | -0.064 |
| | (0.027) | (0.026) | (0.032) | (0.107) | (0.117) | (0.102) |
| p-value of test $H_0 : \phi_1 \geq 0$ | | 0.883 | 0.986 | | 0.968 | 0.991 |
| Party fixed effects | Yes | Yes | No | Yes | Yes | No |
| Observations | 194 | 194 | 194 | 194 | 194 | 194 |
| Number of parties | 58 | 58 | 58 | 58 | 58 | 58 |
| R-squared | 0.267 | 0.303 | 0.430 | 0.143 | 0.167 | 0.170 |

Notes: Standard errors are adjusted for clustering at party level. * denotes significant at 10%, ** significant at 5% and *** significant at 1%. All regressions include election year fixed effects. Regressions in columns 4, 5 and 6 are estimated using a linear probability model.

Figure 1: Proportion of primary-nominated candidates
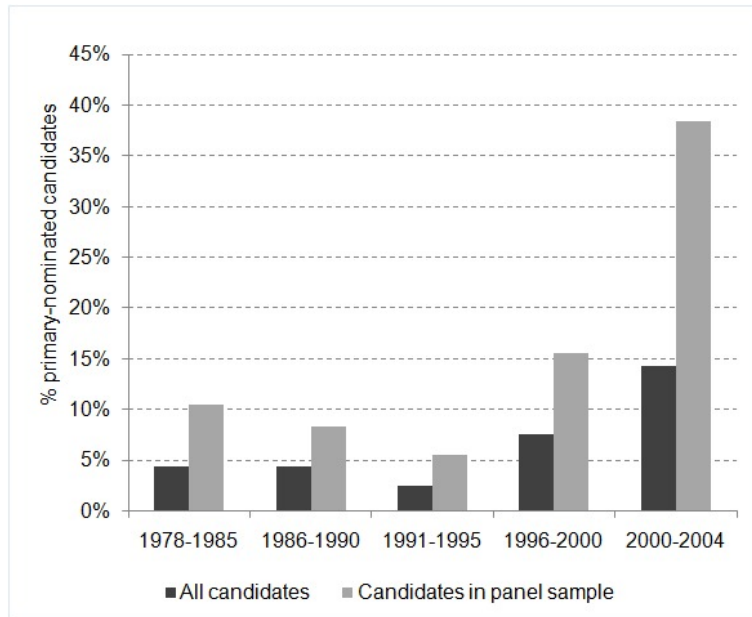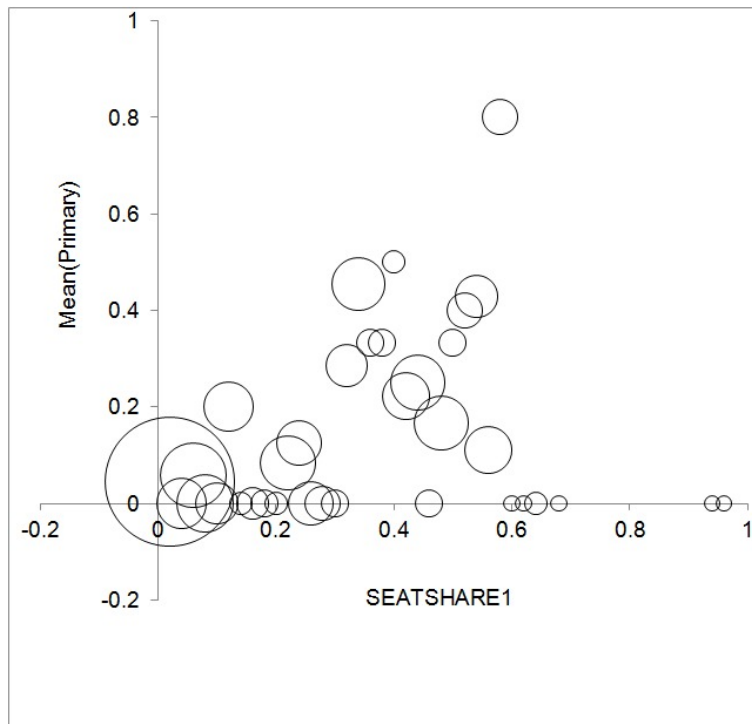


Figure 2: Primaries and previous seat share



Note: Every bubble represents the average of the variable *primary* in a bin of *SEATSHARE1*. The size of each bin is 0.02. The size of a bubble is proportional to the number of observations in each bin.

Figure 3: Predicted increase in vote share of primary-nominated presidents