SIMON FRASER UNIVERSITY

Department of Economics

Working Papers

12-10

**"Party Nomination
Procedures and
Quality of Government"**

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November, 2011

SFU Economics

Party Nomination Procedures and

Quality of Government[*]

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Abstract

This paper explores empirically the relation between party's procedures to nominate candidates, such as primaries, and quality of government. Using a panel data of Latin American countries, I find robust evidence that the quality of government is higher during the mandate of primary-nominated presidents. The empirical strategy exploits within country variation and controls for relevant covariates at country and party level. Using an instrumental variable approach with determinants of primary adoption produces similar results. The findings are consistent with primaries increasing incentives among candidates to improve policy design, and suggest that party institutions matter for governance.

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

JEL classification: H11, H80.

1 Introduction

There is a widespread belief that political parties are important for governance. After all, they are key political actors. They connect politicians to voters, select candidates to run in elections, and provide the organizational support needed to participate in political life (Duverger, 1965; White, 2006). Despite their perceived importance, however, there is little empirical evidence about the role of party institutions on governance and economic policy.

This paper contributes to this debate by exploring the role of a specific party institution -namely the procedures to nominate candidates- on quality of government. In practice, parties use nomination procedures with different degrees of internal democracy (Bille, 2001; Hazan and Rahat, 2006). The procedures range from nomination by party leaders to more democratic procedures such as primaries. As I discuss below, theory suggests that these institutional differences may shape candidates' incentives and political selection, and through those channels affect economic policies and governance.

I explore the relation between nomination procedures and quality of government using the case of Latin American presidents. For each president, I obtain information of the nomination procedure used by her party. The available data distinguish two broad nomination procedures: primaries (open and close) and non-primaries. As a measure of quality of government, I use an index of government anti-diversion policies, similar to the one used by Hall and Jones (1999). I complement this index with a measure of popular trust in the president. The resulting panel dataset covers 18 Latin American countries from early 1980s to 2008.

The main empirical challenge is the presence of omitted variables that may affect both quality of government and use of primaries. In that case, differences in quality of government between primary and non-primary nominated presidents may just reflect unobserved heterogeneity, not the effect of the nomination procedure.

To address this concern, I exploit within-country variation in the use of primaries. This allows me to control for time-invariant country characteristics and reduces the scope for bias due to omitted variables. I complement this strategy with an instrumental variable approach. As instrument, I use a measure of partisan support of the president's party *before* the presidential election. As I discuss below, the size of partisan support may change the party benefits of using primaries and hence affect its probability of adoption. Moreover, the first stage is also

informative of the mechanism linking primaries to quality of government.

I find robust evidence of a positive relation between primaries and quality of government. The most conservative estimate suggests that the quality of government is 0.16 standard deviations higher during the mandate of primary-nominated presidents. For the average country, this represents an increase of 10 percent in the measure of quality of government. This result is explain mainly by increases in quality of bureaucracy and reduction of corruption in government. I also find that primary-nominated presidents enjoy higher rates of popular trust, a variable highly correlated to popular approval.

The relation between primaries and quality of government is driven by the nomination procedure of the president, not by the nomination procedure used by other politicians. There is, for example, no significant difference in quality of government associated to the use of primaries by the main opposition party. This reduces concerns that the results are just picking up the effect of election-specific shocks (such as increase in democratic values or popular demand for using primaries).

A relevant question is why primaries would affect quality of government. To shed light on this question, I explore the benefits that parties may obtain when using primaries. The literature on primary determinants suggests at least two main benefits of primaries that may also affect quality of government. First, primaries may allow parties to select a better candidate (Adams and Merrill, 2008; Serra, 2011) Second, primaries may allow parties to regulate internal competition and increase candidates' incentives, for example to invest in policy design (Caillaud and Tirole, 2002; Castanheira et al., 2010).[1]

In a companion paper (Aragón, 2011), I show that the relative size of partisan support (i.e. proportion of voters who vote for the party regardless of its candidate's type) is a determinant of primary adoption. Moreover, under reasonable assumptions, the relation between primary adoption and partisan support can be informative of which of these two benefits is more important: negative if selection is the main benefit of primaries, or positive if parties use primaries to increase candidates' incentives.[2]

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[1]I discuss these arguments in more detail in Section 5.

[2]Intuitively, parties with large partisan support have little to win from improving the quality of their candidates. Thus, they would be less likely to use primaries if the main reason is to improve selection. In contrast, large partisan support decreases competition faced by party candidates, and hence their incentives to invest in the electoral campaign. In that case the party may improve its electoral performance by increasing intra-party competition e.g. adopting primaries.

Based on this insight, I explore the determinants of primary adoption in the sample of president's parties. I find a positive and significant relation between likelihood of primary adoption and partisan support -measured as the party's seat share in previous legislative elections. Using this variable as an instrument confirms the previous result of a positive relation between primaries and quality of government. I interpret these findings as evidence that primaries may improve quality of government by increasing incentives among presidential candidates.

This paper relates to a political economics literature studying the effect of nomination procedures on economic policy.[3] Theoretical work suggests that nomination procedures may matter by changing political representation (Jackson et al., 2007), candidate's incentives (Caillaud and Tirole, 2002; Castanheira et al., 2010) or political selection (Adams and Merrill, 2008; Serra, 2011). Consistent with these arguments, Gerber and Morton (1998) find that open primaries in U.S. are associated to policies closer to citizen's ideology. In the same context, Besley and Case (2003) also document differences in size and composition of state government spending associated to open primaries. To the best of my knowledge, however, there is no evidence of the effect of nomination procedures on quality of government.

I also view this work as a contribution to the literature on political institutions and economic performance. Most of this literature focuses on the effects of macro level institutions such as democracy, electoral rules or form of government.[4] This paper complements this literature by studying the contribution of party institutions to good governance.[5]

The plan of the paper is as follows. Section 2 provides some background of the Latin American case and discusses some arguments why nomination procedures may affect governance. Section 3 explain the data and empirical strategy. Section 4 presents the main results while section 5 explores possible mechanisms linking primaries to quality of government. Section 6 concludes.

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[3]There is, of course, a large literature examining the effect of nomination procedures on other outcomes such as information dispersion and acquisition (Meirowitz, 2005), legislators' ability to compromise (Alvarez and Sinclair, 2011), or party polarization and loyalty (Ansolabehere et al., 2006; Ansolabehere et al., 2010). Other papers focus on the sequentiality associated to the use of primaries, specially in the U.S. case. For example, Knight and Schiff (2010) explore the effect of sequential voting on social learning, while Klumpp and Polborn (2006) develop a model to examine the effect of primaries on the effectiveness of campaign spending.

[4]For some recent evidence on the effect of democracy on growth and well-being see Barro (1996), Rodrik and Wacziarg (2005), Papaioannou and Siourounis (2008) and Kudamatsu (forthcoming). The effect of electoral rules and form of government is thoroughly studied in Persson and Tabellini (2003) and Persson et al. (2003).

[5]In a recent paper, Cruz and Keefer (2010) find evidence that countries with programmatic parties (i.e. parties with a well defined ideology) are more successful in implementing public sector reforms.

2   Background

2.1   Presidential primaries in Latin America

The empirical analysis focuses on the nomination procedures to select presidential candidates in Latin American democracies. These countries have presidential regimes where the executive holds significant power and presidency is the most important public office. In this context, selecting the presidential candidate is an important party decision.

Latin American parties use different procedures to nominate presidential candidates. For example, between early 1980s and 2008, around 21 percent of Latin American presidents were nominated in a primary and a third of elections involved at least one primary-nominated candidate.

The data I use distinguishes nomination procedures in two broad categories: primaries and non-primaries. Primaries include both open and closed primaries. In a primary, either voters or affiliated party members vote to select the candidate. In contrast, non-primaries include less democratic procedures such as nomination in party conventions or by party leaders. While this measure may be quite coarse, it captures a key distinction in nomination procedures: the degree of intra-party competition.[6]

In most countries there is not a legal requirement to use primaries (Alcántara Sáez, 2002; Freidenberg, 2003). Only since mid 1990s some countries -such as Uruguay, Paraguay and Panama- have included mandatory primaries in their electoral codes. This situation raises relevant identification concerns given that the use of primaries is a party decision and may be influenced by other factors also related to the subsequent government performance.

2.2   Why would nomination procedures matter?

Theory suggests several reasons why the candidate nomination procedure would affect quality of government.[7]

A first channel is through its effect on political representation. Democratic nomination procedures -such as primaries- may change the selectorate and, hence, the identity of the median

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[6]The political science literature refers to this feature of selection methods as internal democracy or inclusiveness (Hazan and Rahat, 2006).

[7]The discussion of possible channels in this section is not exhaustive. I focus the attention on the main arguments discussed in the political economics literature.

voter. In turn, this may affect the policies chosen by competing candidates or the set of candidates willing to run in internal elections.[8] To the extend that primaries increase representation of groups who prefer better government, they would be associated to an improvement in quality of government. This is the argument put forward by Gerber and Morton (1998) and Besley and Case (2003) to explain differences in U.S. state policies associated to open primaries.

A second channel is through the effect of nomination procedures on political competition. Primaries may increase the degree of (intra-party) political competition faced by candidates. In turn, this may shape candidates' incentives. For example, Caillaud and Tirole (2002) and Castanheira et al. (2010) develop models where candidates can exert some effort to improve policy design, and their electoral performance. In these models, parties use primaries to regulate political competition and elicit the optimal level of effort from candidates.

The increase in intra-party competition may also improve political selection. In this view, primaries act as screening devices giving parties an early opportunity to observe the quality of politicians and to pick the best candidate. This argument is formally developed by Adams and Merrill (2008) and Serra (2011).

The previous discussion put forward arguments for primaries to increase quality of government. There are, however, several reasons why nomination procedures may not matter. First, the change in political representation may not be relevant for governance if non-economic issues are more salient. Second, there may be constraints in the ability of the president to affect policy. Third, other democratic checks and balances may attenuate the effect of nomination process. For example, electoral competition between parties may be more important in shaping candidates' incentives and selection. Finally, even if nomination procedures matter, their effect may be small and not translate into significant changes on the measures of quality of government.

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[8]This would depend of whether we use a standard Downsian electoral competition model or a citizen-candidate approach.

3 Data and empirical strategy

3.1 Data

I use a panel data of 18 Latin American countries that covers the period since early 1980s to 2008.[9] The measure of nomination procedures is a dummy indicating whether a president was nominated as party candidate using a primary (open or close) or not (*primary*). I also obtain information about the nomination procedures used by other presidential candidates (*primary opposition*). The source of this data is Carey and Polga-Hecimovich (2007). This indicator varies at president-level, while other measures -such as quality of government- have an annual frequency. To link both variables, I identify the years of a president's mandate and assign annual data to each year. In case there are two presidents in power (e.g. transition years) I assign the year to the president that ruled most of the time.

As a measure of quality of government, I construct an index of government anti-diversion policies using annual data from the International Country Risk Guide (ICRG). The index is composed of three indicators of political risk: quality of bureaucracy, corruption in government, and rule of law. All these indicators are constructed such that higher values represent better quality, less corruption, or better rule of law, respectively. I normalize these indicators using a minimax approach, so their values range between 0 and 1, and aggregate them using a simple average. I interpret larger values of the index of government anti-diversion policies as an indicator of better quality of government. This index is similar to the one used by Hall and Jones (1999) as a measure of the quality of "the institutions and government policies that determine the economic environment" (Hall and Jones, 1999, p. 97).[10]. The components of this index have also been used in the political economics literature as measures of government efficiency (Knack and Keefer, 1995; La Porta et al., 1999).

In addition, I use a measure of the popular perception of the president's performance from the Latinobarómetro. In particular, I use the proportion of the population, in a given year, that reports having a lot or some trust in the president.[11] This variable is highly correlated to

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[9]This period corresponds to the re-introduction of democratic elections in many countries, after failed military dictatorships in the 1960s and 1970s.

[10]Hall and Jones (1999) use the average of these three indicators plus risk of expropriation and an index of government repudiation of contracts. Data on these indices, however, is available until 1997 only. This reduces the sample size by half. Nonetheless, including this information for the period when it is available produces similar results.

[11]The survey question is: "How much trust do you have in the President? . There are four possible answers:

the president's approval (correlation=0.91) and has the advantage of having been collected for a longer period.[12] To control for trust in politicians in general, I also construct a measure of trust in political parties.

Finally, I collect data on variables that may be correlated both to the use of primaries and quality of government to include as control variables. These variables include country characteristics -such as degree of democracy, and legal requirement to use primaries- as well as party features like ideology, age and seat share.

Table 1 presents summary statistics of the main variables. Descriptions of all variables and data sources are available in Appendix A.

Table 1: Summary statistics

Variable	Mean	St. Dev.
I. Nomination procedures		
Primary	0.218	0.415
Primary opposition	0.178	0.385
II. Quality of government and popular trust		
Index of gov. antidiv. policies	0.535	0.172
Quality of bureaucracy	0.587	0.248
Corruption in government	0.556	0.174
Rule of law	0.463	0.259
Trust in president	0.395	0.133
Trust in political parties	0.211	0.074
III. Additional variables		
Democracy index	7.6	1.3
Mandatory primaries	0.178	0.385
Party age	49.2	45.5
Coalition party	0.182	0.388
Seat share	0.445	0.128
Previous seat share	0.257	0.208
Pre-electoral coalition	0.101	0.303
Centrist party	0.125	0.328

Note: See Appendix A for definition of variables and data sources.

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a lot, some, a little, or none.

[12]Trust in president has been collected since 1997, while president's approval only since 2002.
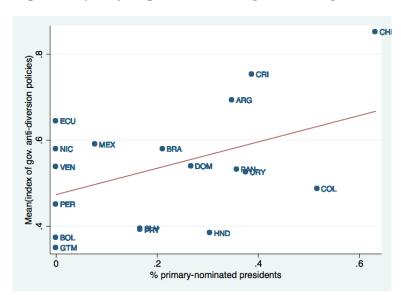
Figure 1: Quality of government and presidential primaries

3.2 Empirical strategy

The aim of the empirical analysis is to estimate the relation between the use of primaries and quality of government. More precisely, it involves assessing whether there is a difference in the quality of government during the mandate of primary and non-primary nominated presidents. Figure 1 depicts this relation. It shows the average quality of government plot against the proportion of primary-nominated presidents for each country. The correlation is positive which suggests that the use of primaries is associated to better governance.

This simple cross-country correlation, however, may not be informative of the effect of candidate nomination procedures. The main identification concern is the presence of omitted variables. There are other factors that may affect both the party institutional choice and quality of government such as a party ideology, political environment or a country's democratic traditions. In that case, we would not know whether a positive correlation, as the one depicted in Figure 1, reflects the the use of primaries or the influence of these other factors.

I address this concern twofold. First, I include a rich set of control variables at country and party level. Second, I exploit within country variation and include country fixed effects in the main regression. This approach reduces the scope of omitted variables. It may not, however, fully address relevant identification concerns. For instance, there might still be time-variant unobserved heterogeneity driving the results. In section 5 I improve upon this identification

strategy by exploring why parties use primaries and using the suggested determinants as instrumental variables.

A second concern relates to the estimation of standard errors. Recall that the measure of primary varies at president's mandate level, while the outcome variables vary at annual level. Thus, the explanatory variable (primary) is constant within the aggregated unit (president's mandate). In this case, I need to allow for errors to be correlated within each aggregated unit (Moulton, 1990). Otherwise, I may underestimate the standard errors and over-reject the null hypothesis of no significance.

One approach is to cluster the errors at mandate level using the cluster-correlated Huber-White covariance matrix estimator. An alternative, and more conservative, approach, is to recognize that the main source of variation is at mandate level, aggregate the annual data accordingly, and use weighted OLS (Angrist and Pischke, 2008, Ch. 8.2.1.).

In the main exposition in this paper I use this more conservative approach. In particular, I collapse the annual data by taking the average over a president's mandate.[13] Then I estimate the following baseline regression:

$$y_{ij} = \eta_j + \beta primary_{ij} + \gamma \mathbf{X}_{ij} + \epsilon_{ij}, \tag{1}$$

where y_{ij} is the measure of quality of government (or other outcomes) during the mandate of president i in country j, and $primary_{ij}$ is the candidate nomination procedure used to select the ruling president. η_j is a set of country fixed effects, while $\mathbf{X}_{ij}$ is a vector of control variables. In the full specification $\mathbf{X}_{ij}$ includes country characteristics such as an index of democracy and an indicator of mandatory primaries, as well as features of the president's party such as size -measured using its seat share during the president's mandate-, age, and an indicator whether the party is a coalition. All regressions include quinquennium fixed effects to account for the time trend.[14] Since the observations are averages over a president's mandate, I estimate the model using weighted OLS. As weights, I use the number of annual observations.

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[13]Table 7 in Appendix B). replicates the baseline results using annual data and clustering the errors by president's mandate. This alternative procedure produces similar results.

[14]The quinquennium indicators are associated to the year of the presidential election. I consider the following periods: 1980-84, 1985-89, 1990-1994, and so on. The last period is 2005-2008.

4 Main results

Table 2 presents the estimates of the baseline regression. Column 1 is a benchmark regression without any control variable. Column 2 adds several country and party controls. Of particular interest are covariates that may also explain the use of primaries such as party size (*seat share* and *seat share*^{2}), legal mandate to use primaries (*mandatory primaries*) and a country's level of democracy (*democracy index*). Column 3 estimates the full specification including country fixed effects.[15]

In all cases, there is a positive and significant correlation between primaries and quality of government. The most conservative estimate suggests that the quality of government increases by 0.058 during the mandate of of primary-nominated presidents. This is equivalent to an increase of 0.16 standard deviations. For the average country, this represents an increase of 10 percent in the measure of quality of government.

To the extent that the covariates and country fixed effects control for unobserved heterogeneity, this result could be interpreted as evidence of a positive effect of primaries on quality of government. Note that the inclusion of country fixed effects reduces the estimates of β by almost half. This is consistent with the presence of relevant country-specific omitted variables and motivate the use of country fixed effects.

Next, I explore in more detail the relation between primaries and quality of government. Recall that the measure of quality is composed by three indicators: quality of bureaucracy, corruption in government, and rule of law. Columns 4 to 6 estimate the baseline regression, with the full set of controls, using these three indicators as outcome variables. There is a positive correlation only between primaries and quality of bureaucracy and corruption in government.[16] These two measures have been used as proxies of government efficiency in previous work (Knack and Keefer, 1995; La Porta et al., 1999). In contrast, the lack of relation with rule of law may be due to this indicator reflecting more stable institutions, which are less likely to be affected by the president's actions.

Columns 7 and 8 perform a placebo test. In both regressions, I replace *primary* by the nomination procedure of the candidate from the main opposition party (*primary opposition*). If

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[15]The democracy index is dropped in this specification since it is the average over a country and thus does not have within country variation.

[16]Note that higher values of the indicator of corruption in government represent a perception of *less* corruption.

the positive relation between primaries and quality of government is driven by election-specific factors then we should expect to find a similar relation with *primary opposition*. For example, it could be that there is an increase in overall electoral competition or a surge in a country's demand for democracy.

The estimates using *primary opposition*, however, are not significantly different than zero. Moreover, when including both *primary* and *primary opposition* in the same regression (column 8) I find that the correlation with quality of government is entirely driven by *primary*. This finding suggests that what matters is the nomination procedure of the winning candidate, not of other presidential candidates.[17]

A limitation of the previous measures of quality is that it captures the overall performance of the government, not necessarily the performance of the president. To address this limitation, I use a measure of the popular perception of the president's performance (*trust in president*). This variable measures the proportion of the population that reports having a lot or some trust in the president, and it is highly correlated to a president's approval rate. A main caveat, however, is that this variable is available since 1997 onwards. For that reason the number of available observations is smaller.

Table 3 estimates the baseline regression using trust in the president as outcome variable. To overcome the loss of power, I do not include country fixed effects.[18] Column 1 includes controls of party size and trust in political parties. This last variable proxy for the general trust of the public in politicians. Column 2 adds other controls used in the baseline results such as an index of democracy and party characteristics. Columns 3 and 4 perform a placebo test using *primary opposition*.

Consistent with the previous results, I find that primary-nominated presidents also enjoy higher popular trust. The increase in popular trust is significant: around 6 percentage points or 0.4 standard deviations. Note that this increase in trust is associated to the president's nomination procedure, not to the use of primaries by other parties.

Taken together the previous results suggest that primaries are associated to better government. The results are driven by the nomination procedure of the elected executive, not by the use of primaries in general.

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[17]The results area similar using alternative indicators such as "use of primaries by any party".

[18]Including fixed effects produces similar point estimates, but the results are statistically insignificant.

Table 2: Primaries and quality of government

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Index of government anti-diversion policies			Components of the index			Index of government antidiversion policies	
				Quality of bureauc.	Corruption in gov.	Rule of law		
Primary	0.097**	0.106**	0.058*	0.097**	0.082**	-0.004		0.055*
	(0.044)	(0.040)	(0.033)	(0.045)	(0.039)	(0.047)		(0.033)
Primary opposition							0.030	0.012
							(0.037)	(0.035)
Seat share		1.568**	1.030*	2.607***	0.577	-0.093	0.914	1.024*
		(0.726)	(0.549)	(0.761)	(0.440)	(1.006)	(0.555)	(0.556)
Seat share^2		-1.535*	-1.189*	-2.952***	-0.587	-0.027	-1.048*	-1.175*
		(0.892)	(0.613)	(0.824)	(0.494)	(1.227)	(0.609)	(0.620)
Mandatory primaries		-0.094*	-0.060	-0.110	-0.000	-0.071	-0.053	-0.064
		(0.051)	(0.051)	(0.070)	(0.053)	(0.072)	(0.050)	(0.050)
Ln(party age)		-0.014	-0.015	-0.020	-0.030*	0.004	-0.016	-0.015
		(0.010)	(0.016)	(0.022)	(0.015)	(0.028)	(0.017)	(0.017)
Coalition party		0.102*	-0.058	0.023	-0.120	-0.077	-0.064	-0.057
		(0.053)	(0.090)	(0.107)	(0.072)	(0.137)	(0.091)	(0.091)
Democracy index		0.033**						
		(0.014)						
Country fixed effects	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Observations	96	80	80	80	80	80	80	80
R-squared	0.135	0.327	0.745	0.757	0.792	0.762	0.736	0.746

Notes: Robust standard errors in parenthesis. * denotes significant at 10%, ** significant at 5% and *** significant at 1%. All regressions include quinquenium fixed effects and are weighted using the number of annual observations. See Appendix A for definition of variables.

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Table 3: Primaries and trust in president

	(1)	(2)	(3)	(4)
	Trust in president			
Primary	0.055*	0.062*		0.078**
	(0.032)	(0.034)		(0.038)
Primary opposition			-0.047	-0.061
			(0.033)	(0.038)
Seat share	-1.849***	-1.142	-0.889	-0.835
	(0.655)	(0.909)	(0.963)	(0.856)
Seat share^2	2.272**	1.490	1.179	1.103
	(0.843)	(1.061)	(1.131)	(0.999)
Trust in political parties	0.936***	0.923***	1.104***	0.987***
	(0.196)	(0.200)	(0.193)	(0.186)
Mandatory primaries		-0.036	0.011	-0.021
		(0.038)	(0.037)	(0.037)
Ln(party age)		-0.002	0.001	-0.005
		(0.011)	(0.011)	(0.011)
Coalition party		0.045	0.067	0.031
		(0.048)	(0.049)	(0.050)
Democracy index		0.008	0.008	0.008
		(0.010)	(0.010)	(0.010)
Country fixed effects	No	No	No	No
Observations	48	48	48	48
R-squared	0.663	0.701	0.696	0.726

Notes: Robust standard errors in parenthesis. * denotes significant at 10%, ** significant at 5% and *** significant at 1%. All regressions include quinquenium fixed effects and are weighted using the number of annual observations.

5 Exploring the mechanism

The results in the previous section suggest a positive relation between primary-nominated candidates and quality of government. A crucial question, however, is why democratic nomination procedures -such as primaries- would affect the performance of elected politicians.

While the list of explanations is potentially quite large, I focus the attention on explanations related to the party decision to use primaries. Studying primary determinants may shed some light on the mechanisms through which primaries affect governance. Moreover, it may also give us guidelines on how to improve the identification strategy.

The literature on primary determinants suggests at least two main reasons why parties may use primaries: increase in candidates' incentives (incentive effect) and improvement in political selection (selection effect).[19] The incentive effect comes from the increase in political competition associated to primaries. In this view, parties use primaries to increase competition and regulate incentives among candidates to exert effort during the electoral campaign e.g. investing in policy design (Caillaud and Tirole, 2002; Castanheira et al., 2010). Too much competition, or too little, would deter candidates to invest in policy design.

A complementary explanation focuses on political selection. In this view, primaries act as screening devices helping parties to select the best candidate (Adams and Merrill, 2008; Serra, 2011). In these models, quality of candidate can be interpreted in a broad sense as valence, charisma or ideological preference. Notice that we can include improvement in political representation in this argument e.g. allowing parties to select politicians with preferences closer to the median voter. Either effect (incentive or selection) would improve a party's electoral performance and may also explain the increase in quality of government.

In a companion paper (Aragón, 2011), I develop and test a model of endogenous primaries that links these two effects to the partisan support enjoyed by a vote-maximizing party.[20] I define partisan support as the proportion of voters who vote for the party regardless of the quality of its candidate or economic policies. This variable can also be interpreted as an inverse measure of inter-party political competition: parties with greater partisan support face lower competition.

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[19]There are other possible effects (positive or negative) of using primaries. I focus on these two mechanisms because they have been explicitly incorporated in models of endogenous primary adoption, see for example Castanheira et al. (2010) and Serra (2011).

[20]See Appendix C for a formal exposition of the model.

The main insight of the model is that the relation between partisan support and primary adoption depends of which effect (selection or incentive) is more important. In particular, when the selection effect is stronger the relation is *negative*. Intuitively, parties with large partisan support have less to win from improving the type of their candidate since they already obtain a large vote share. Hence, everything else constant, they will be less likely to adopt primaries.

In contrast, when the incentive effect is more relevant, the relation may be *positive*. In this case, a candidate from a party with a large partisan support has less incentives to exert effort, since her electoral performance is less dependent of her actions. Hence, the party can elicit more effort by adopting primaries and increasing intra-party political competition.[21]

To explore whether incentives or selection effects are more relevant, I analyze the determinants of primary adoption among Latin American presidents. The regression I estimate is:

$$primary_{ij} = \phi support_{ij} + \psi \mathbf{W}_{ij} + \nu_{ij}, \tag{2}$$

where $primary_{ij}$ is the nomination procedure used to select president i in country j, and $support_{ij}$ is a measure of the partisan support of the president's party before the presidential elections. As a measure of partisan support I use the average party's seat share in the previous two legislative elections (*previous seat share*). $\mathbf{W}_{ij}$ is a vector of other possible primary determinants such as use of primaries by the opposition party, status of party as pre-electoral coalition, party age and party ideology.[22]

Table 4 presents the results estimated using a linear probability model. Column 1 estimates the most parsimonious specification. Columns 2 to 4 add controls variables and country fixed effects. In all cases, there is a positive and significant correlation between the measure of partisan support (*previous seat share*) and the probability of using a primary.[23] I interpret this result as evidence that a main reason why parties use primaries is to increase incentives among candidates e.g. to invest in policy design. In turn, this may explain the positive relation observed between primaries and quality of government.

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[21]In the model, candidates can exert effort on policy design and attract non-partisan voters. For that reason, the party strictly prefers candidates exerting higher effort.

[22]These variables have already been discussed in the literature of primary determinants. For example, using a sample of Latin American presidential candidates, Kemahlioglu et al. (2009) documents a positive relation between primary adoption and previous vote share, status as pre-electoral coalition and centrist ideology.

[23]Exploiting within party variation and a larger sample, Aragón (2011) finds a similar positive relation between partisan support and primary adoption.

Table 4: Primary determinants

	(1)	(2)	(3)	(4)
		Primary		
Previous seat share	0.613***	0.578***	0.390*	0.599**
	(0.196)	(0.193)	(0.219)	(0.238)
Primary opposition		0.245**	0.218*	0.342**
		(0.120)	(0.111)	(0.128)
Pre-electoral coalition			0.528***	0.726***
			(0.130)	(0.187)
Centrist party			-0.176	-0.257*
			(0.112)	(0.150)
Ln(party age)			0.035	-0.011
			(0.029)	(0.043)
Country fixed effects	No	No	No	Yes
Observations	101	101	88	88
R-squared	0.202	0.246	0.382	0.582

Notes: Robust standard errors in parenthesis. * denotes significant at 10%, ** significant at 5% and *** significant at 1%. All regressions include quinquenium fixed effects.

The previous findings about primary determinants suggest a way to improve the identification strategy. In particular, they point out to measures of partisan support as instruments for primary adoption.

Table 5 displays the results of that exercise. It estimates the baseline regression (1) by 2SLS and using *previous seat share* as an instrument for the use of primaries. Column 1 to 3 replicate the baseline results presented in Table 2. Column 1 estimates the most parsimonious specification, while columns 2 and 3 populate the model with control variables, such as party's size and age and country's democracy index, well as country fixed effects. Column 4 adds as included instruments other primary determinants discussed in Table 4 such as party ideology, status as a pre-electoral coalition, and use of primaries by the main opposition party. The panel at the bottom displays the first stage and confirms the positive relation between partisan support and primary adoption.[24]

Note that in all the cases, the results confirm the positive and significant correlation between primaries and quality of government. The estimates are even larger than in the OLS regressions. A possible explanation is that the instrumental variable estimates the local average treatment

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[24]See Table 6 in Appendix B for the full first-stage results.

effect. Hence, it reflects the effect of primaries in cases when the president's party adopt them mainly to increase intra-party competition and not for other reasons. The magnitude of the effect in this case is likely to be larger than for the average party.

These results, however, should be interpreted with caution. The instrument would be valid to the extent that, conditional on other control variables, partisan support affects quality of government only through its effect on the party choice of nomination procedure. I do control for other possible primary determinants and factors that may influence quality of government such as current party size (seat share), age, ideology, etc. There is the possibility, however, that there are other unobserved variables correlated both to the measure of partisan support and quality of government.

6   Final remarks

This paper studies empirically the relation between party nomination procedures and quality of government. Using the case of Latin American presidential candidates, I find evidence of a positive and robust correlation between the use of democratic procedures such as primaries- and quality of government. This relation seems to be driven by the increase in intra-party competition, and the subsequent increase in candidates pre-electoral incentives e.g. to invest in policy design.

The main contribution of the paper is to take a step towards studying empirically the importance of party organizations for governance. This is an aspect of democracies which is still not well understood, but that may be relevant to understand the effectiveness of other checks and balances such as competitive elections or informative media.

I focus only on candidate nomination procedures. In reality, party organizations have much richer institutional features. There are, for example, differences in the procedures to recruit and train politicians, communicate with citizens, or finance their activities. Studying this institutional heterogeneity may help us understand how parties work and, ultimately, how they contribute to the functioning of democracy. While beyond the scope of this paper, these questions deserve further investigation.

Table 5: Primaries and quality of government: IV approach

	(1)	(2)	(3)	(4)
	Index of government anti-diversion policies			
Primary	0.258*	0.741*	0.354*	0.397*
	(0.145)	(0.387)	(0.190)	(0.207)
Seat share		1.970	1.605*	1.578*
		(1.284)	(0.837)	(0.918)
Seat share^2		-2.018	-1.810*	-1.987*
		(1.499)	(0.967)	(1.163)
Mandatory primaries		-0.326*	-0.152*	-0.167*
		(0.176)	(0.087)	(0.097)
Ln(party age)		-0.062*	-0.008	0.004
		(0.035)	(0.022)	(0.024)
Coalition party		-0.014	-0.015	0.049
		(0.121)	(0.093)	(0.094)
Democracy index		0.017		
		(0.025)		
Primary (opposition)				-0.120
				(0.100)
Pre-electoral coalition				-0.126
				(0.128)
Centrist party				-0.090
				(0.097)
Country fixed effects	No	No	Yes	Yes

First stage: Dependent variable = Primary

	(1)	(2)	(3)	(4)
Previous seat share	0.629***	0.458**	0.613**	0.580**
	(0.187)	(0.223)	(0.293)	(0.274)
F-stat excl. instruments	11.26	4.22	4.37	4.47
Observations	96	80	78	70

Notes: Robust standard errors in parenthesis. * denotes significant at 10%, ** significant at 5% and *** significant at 1%. All regressions include quinquenium fixed effects. First stage only reports estimates of excluded instruments. See Table 6 in Appendix B for full results of first stage. All regressions are estimated using 2SLS and are weighted using the number of annual observations.

References

Adams, James and Samuel Merrill, "Candidate and Party Strategies in Two-Stage Elections Beginning with a Primary," *American Journal of Political Science*, 2008, *52* (2), 344–359.

Alvarez, R. Michael and Betsy Sinclair, "Electoral Institutions and Legislative Behavior: The Effects of Primary Processes," mimeo 2011.

Angrist, Joshua D. and Jörn-Steffen Pischke, *Mostly Harmless Econometrics: An Empiricist's Companion*, Princeton University Press, December 2008.

Ansolabehere, Stephen, John M. Hansen, Shigeo Hirano, and James M. Snyder Jr., "Primary Elections and Partisan Polarization in the U.S. Congress," *Quarterly Journal of Political Science*, 2010, *5* (2), 169–191.

——— , **Shigeo Hirano, and James M. Snyder Jr.**, "What did the direct primary do to party loyalty in Congress?," in David Brady and Matthew D. McCubbins, eds., *Process, Party and Policy Making: Further New Perspectives on the History of Congress*, Stanford University Press, 2006.

Aragón, Fernando M., "The Benefit of Primaries: Political Selection or Candidate Incentives?," mimeo 2011.

Barro, Robert J., "Democracy and growth," *Journal of Economic Growth*, 1996, *1*, 1–27. 10.1007/BF00163340.

Besley, Timothy and Anne Case, "Political Institutions and Policy Choices: Evidence from the United States," *Journal of Economic Literature*, 2003, *41* (1), pp. 7–73.

——— , **Torsten Persson, and Daniel M. Sturm**, "Political Competition, Policy and Growth: Theory and Evidence from the US," *Review of Economic Studies*, 2010, *77* (4), 1329–1352.

Bille, Lars, "Democratizing a Democratic Procedure: Myth or Reality?. Candidate Selection in Western European Parties, 1960-1990," *Party Politics*, 2001, *7* (3), 363–380.

Caillaud, Bernard and Jean Tirole, "Parties as Political Intermediaries," *The Quarterly Journal of Economics*, November 2002, *117* (4), 1453–1489.

Carey, John M. and John Polga-Hecimovich, "Replication data for: Primary Elections in Latin America Project," `http://hdl.handle.net/1902.1/10472`, 2007.

Castanheira, Micael, Benoît Crutzen, and Nicolas Sahuguet, "Party organization and electoral competition," *The Journal of Law, Economics and Organization*, 2010, *26* (2), 212–242.

Cruz, Cesi and Philip Keefer, "Programmatic Political Parties and Public Sector Reform," APSA 2010 Annual Meeting Paper 2010.

Duverger, Maurice, *Political parties: their organization and activity in the modern state*, 2nd edition ed., New York: Wiley, 1965.

Freidenberg, Flavia, *Selección de Candidatos y Democracia Interna en los Partidos de América Latina* Biblioteca de la Reforma Política, Lima: Asociación Civil Transparencia, September 2003.

Gerber, Elisabeth R. and Rebecca B. Morton, "Primary Election Systems and Representation," *Journal of Law, Economics, and Organization*, 1998, *14* (2), 304–324.

Hall, Robert E. and Charles I. Jones, "Why Do Some Countries Produce so Much More Output Per Worker Than Others?," *The Quarterly Journal of Economics*, 1999, *114* (1), 83–116.

Hazan, Reuven Y. and Gideon Rahat, "Candidate Selection: Methods and Consequences," in Richard S. Katz and William Crotty, eds., *Handbook of Party Politics*, London: SAGE, 2006, chapter 10, pp. 109–121.

Jackson, Mathew O., Laurent Mathevet, and Kyle Mattes, "Nomination Processes and Policy Outcomes," *Quarterly Journal of Political Science*, 2007, *2* (1), 67–94.

Kemahlioglu, Ozge, Rebecca Weitz-Shapiro, and Shigeo Hirano, "Why Primaries in Latin American Presidential Elections?," *The Journal of Politics*, 2009, *71*, 339–352.

Klumpp, Tilman and Mattias K. Polborn, "Primaries and the New Hampshire Effect," *Journal of Public Economics*, August 2006, *90* (6-7), 1073–1114.

Knack, Stephen and Philip Keefer, "Institutions And Economic Performance: Cross-Country Tests Using Alternative Institutional Measures," *Economics and Politics*, November 1995, *7* (3), 207–227.

Knight, Brian and Nathan Schiff, "Momentum and Social Learning in Presidential Primaries," *Journal of Political Economy*, 2010, *118* (6), 1110 – 1150.

Kudamatsu, Masayuki, "Has Democratization Reduced Infant Mortality in sub-Saharan Africa? Evidence from Micro Data," *Journal of the European Economic Association*, forthcoming.

La Porta, Rafael, Florencio López de Silanes, Andrei Shleifer, and Robert Vishny, "The Quality of Government," *Journal of Law, Economics and Organization*, 1999, *15* (1), 222–279.

Meirowitz, Adam, "Informational Party Primaries and Strategic Ambiguity," *Journal of Theoretical Politics*, 2005, *17* (1), 107–136.

Moulton, Brent R, "An Illustration of a Pitfall in Estimating the Effects of Aggregate Variables on Micro Unit," *The Review of Economics and Statistics*, May 1990, *72* (2), 334–38.

Papaioannou, Elias and Gregorios Siourounis, "Democratisation and Growth," *The Economic Journal*, 2008, *118* (532), 1520–1551.

Persson, Torsten and Guido Tabellini, *The Economic Effects of Constitutions*, Cambridge, MA: MIT Press, 2003.

___ , ___ , **and Francesco Trebbi**, "Electoral Rules and Corruption," *Journal of the European Economic Association*, 2003, *1* (4), 958–989.

Rodrik, Dani and Romain Wacziarg, "Do Democratic Transitions Produce Bad Economic Outcomes?," *The American Economic Review Papers and Proceedings*, 2005, *95* (2), pp. 50–55.

Sáez, Manuel Alcántara, "Experimentos de Democracia Interna : Las Primarias de Partidos en América Latina," Kellogg Institute Working Paper 293, Helen Kellogg Institute for International Studies April 2002.

Serra, Gilles, "Why primaries? The party's tradeoff between policy and valence," *Journal of Theoretical Politics*, 2011, *23* (1), 21–51.

White, John Kenneth, "What is a Political Party?," in Richard S. Katz and William Crotty, eds., *Handbook of Party Politics*, London: SAGE, 2006, chapter 1, pp. 5–15.

A Variables and data sources

I. Nomination procedures

Variable	Description	Source
Primary	1 if president was nominated in a primary	Carey and Polga-Hecimovich (2007)
Primary opposition	1 if candidate of main opposition party was nominated in a primary	Carey and Polga-Hecimovich (2007). Definition of main opposition party comes from Database of Political Institutions 2010.

II. Quality of government and popular trust

Variable	Description	Source
Quality of bureaucracy	Assessment of the institutional strength and quality of the bureaucracy. Value normalized to 0-1. Higher values reflect better bureaucracy.	International Country Risk Guide (ICRG)
Corruption in government	Assessment of corruption within political system. Value normalized to 0-1. Higher values reflect lower corruption.	International Country Risk Guide (ICRG)
Rule of law	Assessment of the strength and impartiality of the legal system and popular observance of the law. Original name in ICRG is "Law and Order". Value normalized to 0-1.	International Country Risk Guide (ICRG)
Index of government anti-diversion policies	Average of previous 3 variables.	
Trust in president	Percentage of population that has a lot or some trust in president. Omitted categories are: little or no trust in president.	Latinobarómetro
Trust in political parties	Percentage of population that has a lot or some trust in political parties. Omitted categories are: little or no trust in political parties.	Latinobarómetro

III. Other variables

Variable	Description	Source
Democracy index	Country average of index of institutionalized democracy. Score 0-10.	Polity IV
Mandatory primaries	1 if country's electoral legislation required use of primaries.	Alcántara Sáez (2002), Freidenberg (2003) and Carey and Polga-Hecimovich (2007)
Centrist party	1 if president's party is centrist (e.g. party advocates strengthening private enterprise in a social-liberal context)	Database of Political Institutions 2010 ?
Seat share	Proportion of (lower house) seats obtained by the president' party in the legislative election held simultaneously or immediately before the presidential election.	Center on Democratic Performance and Political Database of the Americas
Previous seat share	Average seat share obtained by the president's party in two legislative elections before the presidential election.	Center on Democratic Performance and Political Database of the Americas
Party age	Age of president's party in the year of presidential election (years)	Political Database of the Americas
Coalition party	1 if president endorsed by more than one political party before or after the selection process.	Carey and Polga-Hecimovich (2007)
Pre-electoral coalition	1 if president was endorsed by more than one political party before the selection process.	Carey and Polga-Hecimovich (2007) and Kemahlioglu et al. (2009).

B Additional results

Table 6: Primaries and quality of government: first stage

	(1)	(2)	(3)	(4)
		Primary		
Previous seat share	0.629***	0.458**	0.613**	0.580**
	(0.187)	(0.223)	(0.293)	(0.274)
Seat share		-0.594	-1.889	-2.126
		(1.635)	(1.860)	(1.724)
Seat share^2		0.420	1.634	2.642
		(1.877)	(2.200)	(2.089)
Mandatory primaries		0.321**	0.256	0.163
		(0.147)	(0.174)	(0.186)
Ln(party age)		0.047	-0.055	-0.057
		(0.032)	(0.052)	(0.051)
Coalition party		0.158	-0.134	-0.077
		(0.138)	(0.146)	(0.196)
Democracy index		0.035		
		(0.033)		
Primary (opposition)				0.277
				(0.181)
Pre-electoral coalition				0.338*
				(0.193)
Centrist party				-0.137
				(0.169)
Country fixed effects	No	No	Yes	Yes
Observations	96	80	78	70
R-squared	0.233	0.372	0.369	0.501

Robust standard errors in parenthesis. * denotes significant at 10%, ** significant at 5% and *** significant at 1%. All regressions include quinquenium fixed effects. The results are the first stage estimates of regressions in Table 5.

Table 7: Primaries and quality of government - using annual data

	(1)	(2)	(3)	(4)	(5)
	Index of government anti-diversion policies				
Primary	0.097**	0.110***	0.049**		0.048*
	(0.043)	(0.036)	(0.024)		(0.024)
Primary (opposition)				0.027	0.006
				(0.029)	(0.027)
Seat share		1.439*	0.840*	0.703	0.835*
		(0.822)	(0.455)	(0.450)	(0.453)
Seat share^2		-1.336	-0.951*	-0.798	-0.942*
		(1.016)	(0.526)	(0.513)	(0.522)
Mandatory primaries		-0.111**	-0.051	-0.045	-0.053
		(0.047)	(0.044)	(0.044)	(0.043)
Ln(party age)		-0.012	-0.011	-0.010	-0.011
		(0.009)	(0.014)	(0.014)	(0.014)
Coalition party		0.084*	-0.073	-0.079	-0.073
		(0.048)	(0.074)	(0.074)	(0.074)
Democracy index		0.032**			
		(0.013)			
Country F.E.	No	No	Yes	Yes	Yes
Observations	388	327	327	327	327
R-squared	0.145	0.312	0.707	0.700	0.707

Notes: Robust standard errors in parenthesis. Standard errors are clustered at president's mandate level. * denotes significant at 10%, ** significant at 5% and *** significant at 1%. All regressions include year fixed effects.

C A model of endogenous primaries

This section is based on a model developed in Aragón (2011). The model analyzes the party decision to use primaries and stresses two possible benefits: gains from creating incentives among candidates (incentive effect) and gains from improving candidate selection (selection effect).

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

C.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 candidate depends of the quality of the candidate q_c, the effort exerted by the party candidate during the electoral campaign e, and the relative size of the party's partisan support (i.e. citizens who will vote for the party regardless of the candidate's type or effort) λ.[25] In particular, the party's vote share is

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

The parameters ϕ_s and ϕ_i capture the relative importance of selection and 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 candidate due to is quality q_c or effort e.

I define e as the effort exerted by the candidate during the electoral campaign. In Caillaud

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[25]Alternatively, we can interpret λ as an inverse measure of inter-party political competition, as in Besley et al. (2010)

and Tirole (2002) and Castanheira et al. (2010), this effort is interpreted as investments on improving policy design. More broadly, it can represent any pre-electoral action that increases the candidate's electoral performance such as participation in public debates, canvassing, or campaign spending. In contrast, quality represents an 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 needs to choose a nomination procedure. There are two nomination procedures $\mathcal{N} = (P, NP)$, where P stands for primary and NP for non-primary, respectively. If the party uses NP, a politician is randomly selected and automatically becomes the party candidate. In contrast, under P, two randomly drawn politicians compete in internal elections and the party picks up its preferred candidate. The party observes both politicians' quality and effort perfectly. The level of effort, however, is decided by the politician before the nomination takes place.

Let us denote the expected vote share under 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 probability of using a primary is increasing on V.

The timing of events is as follows:

1. Party chooses a nomination procedure.
2. Politicians are randomly chosen to be considered in the party nominations.
3. Politicians decide level of effort.
4. Party nominates a candidate.
5. Candidate runs in general election.

C.2   Selection effect

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

Politicians' quality is uniformly distributed, $q \sim U[0, 1]$. In a non-primary, a random politician becomes the party candidate, thus $E(q_c|NP) = \frac{1}{2}$. In contrast, in a primary, 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 $E(q_c|P) = E(\max\{q_1, q_2\}) = \frac{2}{3}$.[26]

Note that primaries improve political selection by giving the the party the opportunity to observe the quality of the potential candidates. The improvement in candidate selection translates into better electoral performance. In particular, the expected electoral gain from using primaries is $V = (1 - \lambda)(E(q_c|P) - E(q_c|NP)) > 0$.

The electoral gain from primaries is decreasing in λ. Intuitively, a party with a large electoral advantage benefits less from improving candidate's quality, and thus the selection benefit 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 λ.

C.3   Incentive effect

Let us consider now an alternative scenario where only incentives 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 $\mathcal{N}$.

The politicians' utility depends of some egorents from office, normalized to 1, 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 nomination. For simplicity, I assume that the probability the party wins the election is equal to the party vote share and a quadratic cost of effort. 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 high enough to guarantee $e_P, e_{NP} < 1$. A politician's outside option gives her a utility of zero.

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

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

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

Under a primary, however, the optimal effort can be thought of as the outcome of a sequential game between politicians and the party. In a first stage, the politicians simultaneously decide their level of effort. In a second stage, the party picks up the best available candidate. Recall that the effort level, similarly to the politician's quality in the previous case, is perfectly observable by the party.

Since the party maximizes vote share, it strictly prefers the candidate with the higher e. By symmetry, both politicians exert the same level of effort, and thus have the same probability of nomination. This setup resembles a Bertrand competition where two identical politicians compete between them for the party nomination by promising to exert some effort.

In the unique SPNE, both politicians exert the maximum possible level of effort such that their expected utility is zero. Hence, e_P solves:[27]

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

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

Proof. 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 lemma, 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 $e_P > e_{NP}$. ∎

Similar to the models by Caillaud and Tirole (2002) and Castanheira et al. (2010), primaries increase internal competition and candidate's effort. A less obvious result is that the difference

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[27]To see this consider a possible strategy where 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 1 by a small increase in effort $e_a + \epsilon$, a politician will find it a profitable unilateral deviation, and the strategy profile will not be an equilibrium. Similar argument applies for strategies with different effort level.

increases with the party electoral advantage. Intuitively, the increase in λ reduces the marginal benefit of effort, and hence e_{NP}. In contrast, higher λ increases the expected benefit from holding office and hence the maximum effort that politicians are willing to exert in a competitive primary.

The increase in candidate's effort translates into better electoral performance. In particular, the party expected gain from using primaries (the incentive gain) 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:

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

Proof. Using the proof of Lemma 1 and the 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 $\frac{dV}{d\lambda} \lessgtr 0$, but if $e_P < 2e_{NP}$, then $\frac{dV}{d\lambda} > 0$, but if $e_P < 2e_{NP}$ we can unambiguously state that $\frac{dV}{d\lambda} \lessgtr 0$. 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 $\bar{\lambda} = 1 + \frac{c}{4} - \frac{\sqrt{(c/2+2)^2 - 4}}{2}$. $\blacksquare$

C.4   Summary

The model highlights two electoral benefits from primaries: selection and incentive gains. More importantly, it predicts a differentiated effect of the party electoral advantage (λ) 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 benefits, V, then:*

1. *when the selection effect dominates, the probability of using primaries is decreasing in λ,*

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

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