

The impact of party organization on electoral outcomes*

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Abstract

We present a model of electoral competition in which parties act as brands and use competition to select their candidates. We show that the forces that shape the competition between party representatives and independents rationalize the positive correlation between inequality and polarization documented by McCarty, Poole and Rosenthal (2006) for the US. We also show that, when voters are badly informed about the quality of candidates, it is optimal for party to use primaries to get an edge on independent candidates. This rationalizes the introduction of the American direct primary in the US at the beginning of the twentieth century.

Nous proposons un modèle de concurrence électorale dans lequel les partis fonctionnent comme des “marques” et peuvent exploiter la concurrence à l’intérieur du parti pour améliorer leur image. Nous démontrons que la concurrence entre les candidats des partis et les candidats indépendants permet d’expliquer la corrélation positive entre inégalités économiques et polarisation politique telle que documentée par McCarty, Poole et Rosenthal (2006) pour les USA. Nous démontrons aussi que, lorsque les électeurs sont mal informés de la qualité des candidats, il est optimal pour le parti d’utiliser un système de primaires de façon à asseoir leur domination et vaincre les candidats indépendants. Ceci permet d’expliquer l’introduction du système des primaires directes aux États-Unis au début du vingtième siècle.

Keywords: parties as a brand, direct primary, intra-party discipline, polarization, political regime, Duverger.

JEL codes: D23, D72, D82.

*We wish to thank the editors, Bruno Amable and Donatella Gatti, as well as two anonymous referees for their careful comments and suggestions.

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1 Introduction

The United States is one of a few countries in which Duverger's Law is vindicated: two parties clearly dominate the political arena. It is in such context, if any, that the median voter theorem would be expected to hold. However, the two parties' ideologies have consistently been distinct. They never fitted the Tweedle-dee/Tweedle-dum description of the "rational choice" school in political science. Platforms remained markedly different even in the period between 1935 and 1970, when inequality and ideological polarization were at a minimum in the electorate. This is documented convincingly in McCarty, Poole and Rosenthal [2006], who also show that such platform polarization goes hand-in-hand with income inequality.

A second peculiarity of the U.S. political system is that the two major U.S. parties are best described as loose organizations that let their politicians enjoy substantial autonomy. Katz and Kolodny [1994, p. 29] even describe the U.S. parties as "empty vessels". Several institutions contribute to this autonomy. First, under the U.S. Presidential regime, the executive does not need the support of a majority party in the legislature to survive and thus does not need to discipline legislators. Second, the selection of Congressional candidates is regulated by the American direct primary. The American direct primary is a set of laws that stipulate that parties "are required by law to choose their candidates through state-administered elections in which any legally qualified person must be allowed to vote" (Ranney [1975, p121]). Third, U.S. legislation stipulates that candidates running in legislative elections must reside in the district in which they run.

These institutions shape the agenda pursued by elected candidates: politicians have incentives to pander to their local constituency, are not constrained by national parties to focus only on nation-wide, general interest, issues. Elected candidates typically pursue policies that are a mix between their party (national) platform, their own preferences, and that of their constituency (see e.g. Levitt [1996] for evidence on senators). Hence, voters judge candidates on their individual preferences, the quality of their projects as well as the platform of their party.

The contribution of the paper is to combine these aspects of political competition to study how party organization impacts on voter information, and thereby on party and candidate behavior. First, we identify how party labels provide useful information to voters.

We show that, because of local constituencies, parties act as brand names (à la Snyder and Ting [2002]) and this leads parties to adopt polarized positions. To the best of our knowledge, our approach provides the first theoretical explanation supporting the empirical regularities identified by McCarty et al. [2006] that platform polarization relates to economic inequality. Second, we study how intraparty competition (primaries) modifies the candidates' incentive to innovate in platform design. We find that local primaries typically reinforce the candidates' incentives inside the party, which further increases the value of the party label. This two-pronged approach thus combines a moral hazard component together with the information component of the party label.

We assume a continuum of districts. Each district elects one legislator under plurality rule. There are at most three local candidates in each district: one for each of the two national parties, and an independent. Candidates' ideologies are private information and drawn from a district-specific distribution. Only party affiliation allows for a (partial) revelation of the future policy of the candidate. In each district, the median voter is pivotal and elects his preferred candidate.

Our first result is that parties only enjoy the support of districts located within a limited ideologic distance from their national platform. Beyond that distance, independent candidates can enter the election successfully and beat the party candidate. The intuition builds on a simple trade-off. Based on national platforms, the median voter can immediately identify which party he prefers. Party labels reduce the uncertainty about future behavior, which gives party candidates an advantage over independents when the preferred policy of the voter is not too distant from the party platform. But, when this distance grows, voters value less and less the party label until the median voter finally prefers the independent who is "closer" to local concerns. This leads the two parties to adopt polarized platforms. By differentiating their platforms, parties win a larger number of districts: if they move too close to the national median, they lose extreme districts to independents.

The model thus provides a novel theoretical rationale behind the dance between polarization and inequality uncovered by McCarty et al. [2006]. Indeed, suppose that inequality (represented in the model by preference heterogeneity between districts¹) is very limited

¹In section 3.3, we show why economic inequality must correlate with preference heterogeneity across districts. See also McCarty et al. [2006].

across districts, then, the Downsian prediction must hold: the lion’s share of the votes is in the centre, inducing both parties to converge to the national median’s preferred policy. If inequality increases, this force towards the center is weakened, and targeting extreme districts becomes more attractive. This increases the distance between parties’ platforms.

While the above explains polarization, the moral hazard considerations introduced in Section 4 explain why parties can dominate the electoral landscape despite the threat of entry by independents. Not only do parties provide an ideological label, they also organize competition between potential candidates within the party. This competition affects policies along a dimension that is orthogonal to ideological party choices. Intraparty competition may be used to select better or more charismatic leaders.² It may also provide incentives to design “better” platform. We focus mainly on the second aspect.

In the spirit of the “valence” dimension introduced by Stokes [1963], we introduce in the model a “vertical” dimension in political platforms. This vertical dimension captures a set of attributes that are orthogonal to ideology: all voters prefer well-designed policies to ill-designed policies. We study the effects of intraparty competition on candidates’ incentives to improve the design of their policies.³ (In Section 4.3, we discuss the academic and real world controversies surrounding the use by parties of primaries from both the moral hazard and the adverse selection perspective)

We show that, when voters are poorly informed about candidates, primaries provide an additional electoral advantage to party candidates over independents. When parties are able to identify good platforms while voters are not, primaries induce candidates to increase effort, which in turn increases the electoral appeal of the party. This allows parties to win more seats and, from the above results, polarize more when inequality increases. This relationship between primaries and polarization is one of the novel results of our analysis. It provides a further rationale for the voluntary adoption of the American direct primary between 1899 and 1915 in the U.S..

²Carrillo and Mariotti [1999] model competition as a selection mechanism for “better” candidates. They however show that parties may be too conservative in equilibrium. That is, they may select “reassuring” candidates that are well known by the public instead of more innovative candidates that are less well known.

³The analysis of such incentives has become a recurrent theme in the Political Economics literature, which recognises that the actions of a politician can also influence such a vertically differentiating variable (see e.g. Persson and Tabellini [2000, ch. 4], for a broad review).

2 The Model

Two parties, D and R , compete in a country-wide election. We assume a continuum of districts with one seat associated with each district. Parties choose their national platform in order to maximize their seat share in Congress. Policy is represented by a position on a line in a Downsian fashion. A district i is characterized by the preferred policy of its median voter, denoted y_i . We assume a uniform distribution of districts y_i from $-a$ to a .

2.1 Voters

On the ideological dimension, the median voter in district i has single-peaked, quadratic, preferences around y_i . In addition, voter preferences incorporate a “valence” component, v_i :

$$u(y_i, x) = -(y_i - x)^2 + v_i, \quad (1)$$

where x is the ideological position of the policy implemented by the winning candidate and v_i his valence.

Voters are uncertain about both x and v_i . Taking expectations, we have:

$$\mathbb{E}_i u(y_i, x) = -(y_i - \mu_i)^2 - \zeta^2 + v_i, \quad (2)$$

where μ_i is the *expected policy position* of the candidate, and ζ^2 is the *variance* of that policy position. Similarly, v_i is the candidate’s *expected valence*. We endogenize these valences in Section 4. Until then, we assume that all candidates have equal valence.

2.2 Candidates

Three candidates are running in each district: one from party D , one from party R and one independent, I_i . Each candidate has privately known policy preferences. If the winning candidate is the independent, his agenda in Congress is entirely determined by his own preferences. Party candidates follow their own agenda on a fraction of the decisions and follow the party’s agenda on the rest. The median voter’s expected utility is a combination of the candidate’s (expected) preferences and of the party platform (see ‘Parties’ below).

Candidate policy preferences x_i are distributed according to some district-specific distribution $g_i(x_i)$.⁴ Following the above notation, the mean of the distribution is μ_i , which

⁴This distribution of candidate preferences may be thought to reflect the distribution of preferences in

we assume equal to the preferred policy of the median voter:⁵ $\mu_i = y_i$.

If the independent is elected, the expected utility of the median voter is:

$$Eu_I \equiv -\zeta^2 + \nu_I,$$

This summarizes the idea that candidate selection is local in the U.S..

2.3 Parties

The two parties choose simultaneously their national platform, x_D and x_R , that voters observe perfectly. Yet, these national platforms only prevail on a fraction of the decisions voted during the term since, party candidates pursue their own (local) agenda on a substantial fraction of the decisions. We denote the fraction of decisions decided by candidates by ϕ .

The distinction between candidates and parties is at the center of our analysis. Cox and McCubbins [1993] and Snyder and Ting [2002] argue convincingly that candidates cannot communicate their future policy as easily as a party (see also Levy [2004]). Hence, by joining a party, they can partly tie their hands and commit to follow pre-announced policies. The parameter ϕ captures the idea that this commitment remains imperfect. The implication for voters is that, for a fraction ϕ of the decisions, the expected utility of electing a party candidate is the same as that of electing an independent. For the remaining fraction $(1 - \phi)$ of decisions, x_P is implemented.

The expected utility if a party candidate $P \in \{D, R\}$ is elected is therefore:

$$Eu(y_i, x_P) = \phi Eu_I - (1 - \phi)(y_i - x_P)^2 + \nu_P,$$

The candidate of a party can be chosen in a primary election. This two-stage competition can have consequences on the valence component of party candidates. We come back to that in section 4.

2.4 Discussion of the model

Voting assumptions

the local electorate. The difference with citizen candidate models is that candidate entry is not strategic as in, e.g., Besley and Coate [1997] or Osborne and Slivinski [1996].

⁵The results would easily extend to a biased candidate selection process, such that $\mu_i = y_i + \delta$, or if the expected preferences of the candidates were a convex combination of local and national preferences.

With three potential candidates in each district, there may be a tension between sincere and strategic considerations at the voting stage. Voters may wish to vote for their preferred candidate, i.e. the candidate who generates the highest expected utility. Under such “sincere” voting, Condorcet winners may garner too few votes to get elected. This may also induce parties to polarize only to “squeeze” independent candidates (see Palfrey [1989] and Callander [2005]). We abstract from such coordination failures and assume instead that voters are sufficiently strategic to elect the Condorcet winner in each district. That is, the candidate preferred by the district median necessarily wins. This stacks the deck against our results, since strategic voting removes an incentive for parties to polarize.

Two-stage Political Competition

The way we model primaries as a two-stage competition is inspired by Caillaud and Tirole [2002]. The role of primaries is to give incentives to candidates to design a good platform and select the candidate with the best platform. Primaries are thus useful to convey to voters information about the valence of party candidates. In our model, primaries play no role in the selection of candidates with some specific ideology. Owen and Grofman [2006] offer a very different model where primaries are used to select candidates with the right ideology to win the election.

Valence as an Additive Term

The way we model valence is in the spirit of Stokes [1963], was first introduced by Enelow and Hinich [1982] and is a standard utility function for modeling voter utility from spatial and non-spatial characteristics of a candidate. Valence represents a “vertical” dimension in political platforms. This vertical dimension captures a set of attributes that are orthogonal to ideology: all voters prefer well-designed policies to ill-designed policies by all the voters. We follow Enelow and Hinich [1982] and model valence as an additive element in the utility function of voters. There are also some models that use multiplicative valence but usually not in Downsian models. For instance, Sahuguet and Persico [2006] use a multiplicative valence in the context of redistributive politics.

Tanvé [2009] analyzes a model with both additive and multiplicative valence. If valence is generalized in such a way, then the model becomes in all respects a model of the choice of internal discipline. Indeed, in that case, Tanvé [2009] shows that voters that are located

very close to the party platform value highly valence, because it reduces uncertainty about which policy will be implemented in equilibrium, whereas voters that are far off the party platform dislike valence because it implies that their preferred policy is unlikely to be chosen by the candidate. Thus, in this sense, our model has related insights, with the two important caveats that we do not allow the additive term ν_P to interact with ϕ ,⁶ whereas she does so by specifying a special utility form for voters and that she does allow for the presence of independents.⁷

3 Platform choices

Parties choose a policy x_P but leave their candidate autonomous on some fraction ϕ of the decisions. The trade-off between policy uncertainty (uncertainty is higher with independent candidates) and party policy centralization (which only prevails for party candidates) shapes a set around the party national position that we call the *party catchment area*: districts outside this set are alienated by party affiliation, and strictly prefer independent candidates. This influences parties' strategy: since their catchment area is limited, both parties prefer to polarize when districts have sufficiently heterogeneous preferences.

3.1 Party catchment area

We now analyze the voting decision of the median voter in each district. We determine the *party catchment area*, that represents the set of districts that favor a party candidate.

Voters choose between a candidate free from party links (the independent) and a candidate whose legislative activity will be (partly) controlled by his party. Hence, a party can only win a district if it provides value added to local voters. In this sense, independent candidates act as an outside option to voters; their potential entry is a constant threat to the parties.⁸

⁶This utility function is given by

$$U = h_j - |v - x_j| h_j^2$$

where h_j is valence, v is the preferred policy of the voter and x_j is the implemented policy.

⁷See Castanheira Crutzen [2010a] for a general model in which parties compete against independents by choosing both their platform and their level of internal discipline.

⁸For simplicity, we assume that the independent always runs, even if he has no chance of winning. Our conclusions are robust to an entry decision. Independents would not enter when they have no chance of winning, and would otherwise enter. Only *potential* entry of local independents is necessary.

In Downsian models, the two parties compete only with one another. The left-wing party wins all the districts to the left of its national policy platform. Likewise, the right-wing party wins all the districts to the right of its platform. This is not true in our setup, because voters have a third option.

Formally, the median voter of district i elects the candidate of party D if he dominates both the candidate of party R and the independent (a similar condition holds for party R):

$$\phi \mathbf{E}u_I - (1 - \phi)(y_i - x_D)^2 \geq \max \left\{ \mathbf{E}u_I, \phi \mathbf{E}u_I - (1 - \phi)(y_i - x_R)^2 \right\}$$

This implies:

Proposition 1 *When all candidates have equal valence, the **catchment areas** $\mathcal{C}_P(x_D, x_R)$ of the two parties are the sets of districts sufficiently close to each national party platform.*

Formally:

$$D \text{ wins in the set of districts } \mathcal{C}_D(x_D, x_R) : |y_i - x_D| \leq \min \{ |y_i - x_R|, \zeta \},$$

$$R \text{ wins in the set of districts } \mathcal{C}_R(x_D, x_R) : |y_i - x_R| \leq \min \{ |y_i - x_D|, \zeta \},$$

Independent candidates win in all other districts:

$$I_i \text{ wins if: } \min \{ |y_i - x_D|, |y_i - x_R| \} > \zeta.$$

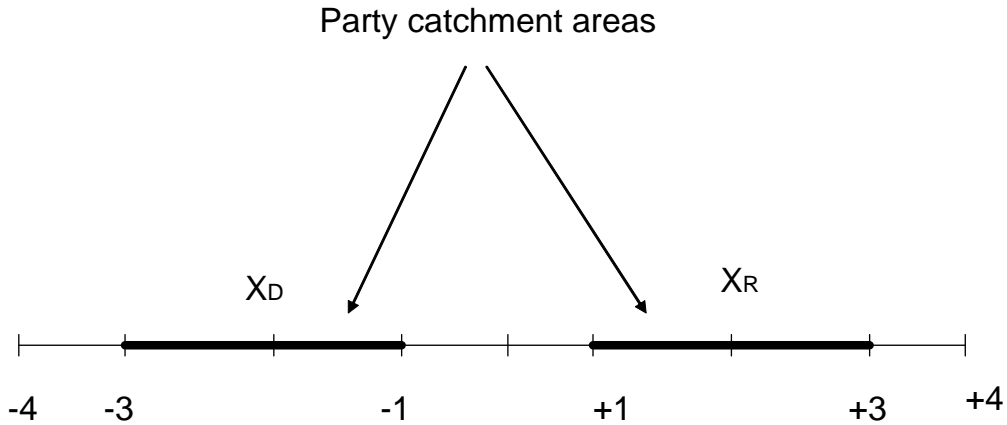
Since the independent candidate is free from party ties, she may have excessive liberty in the agenda she pursues once elected. From an *ex ante* perspective, this freedom of action constitutes a risk. The cost associated with this risk is summarized by ζ , the standard-error of the distribution of candidate preferences.⁹

But freedom of action also has advantages: independent candidates pursue a policy better suited to the preferences of the district. In contrast, party candidates must follow their party *national* policy, which does not depend on *local* preferences. A party label is therefore a handicap in districts too distant from the national party platform. The proposition shows

⁹Castanheira and Crutzen [2010a] consider a more elaborate and realistic candidate selection rule, which relies on national criteria to determine which candidates are sufficiently close to the national party line. In that case, the rule is actually more selective in distant districts than in close districts and that has an influence on voters' valuation of party candidates. In particular, different districts develop different preferences for intra-party discipline.

that the cost of electing the party candidate is summarized by $|y_i - x_P|$, the distance between the national party platform and the preferred policy of the district median.

Voters simply compare this distance to the uncertainty surrounding the preferred policy of an independent candidate: the party candidate is preferred when $\zeta > |y_i - x_P|$. Conversely, the independent is preferred when $\zeta < |y_i - x_P|$. The set of districts electing party candidates always has limits: the *party catchment area* never extends beyond a distance ζ from the party platform (see Figure 1). This contrasts with models that do not explicitly model the process of candidate affiliation. When there is no party alienation effect: all left-wing districts support the left-wing party, and conversely for right-wing districts.



3.2 Equilibrium: platform positioning

We now turn to party platform choices. Parties choose to polarize when their catchment areas intersect.¹⁰ Conversely, they will move towards the center if their catchment area stretches beyond the support of district preferences (from $-a$ to a). The result of this trade-off is that parties will generally adopt polarized platforms, to an extent proportional to the degree of preference heterogeneity across districts.

The intuition is as follows. The party catchment area being bounded, a move to the left (resp.: right) implies that the party loses some districts to its right (or: left). Let us consider party D , with a platform $-a < x_D < \zeta - a$. This platform implies that the left-most district ($y_i = -a$) strictly prefers party D to the independent. Hence, the party cannot lose that

¹⁰This stark result hinges on the uniform distribution of districts. See Castanheira and Crutzen [2010a] for an analysis with more general distributions.

district by slightly moving towards the center. Since the party wins some centrist districts, it strictly prefers a more moderate platform.

Now consider a centrist platform: $\zeta - a < x_D < x_R$. In that case, the party loses in the most extreme districts: a move to the left can be profitable. What is the cost in terms of lost centrist districts? Whenever the two party platforms are close to one another, the swing district is indifferent between the two parties: $y_i = \frac{x_D + x_R}{2}$. In this case, the size of the catchment area must increase when party D moves to the left: for each district won at the tail of the distribution, the party only loses 1/2 district in the centre. Hence, the party strictly prefers a more extreme platform.

Whether the party prefers to adopt a more moderate or a more extreme platform will thus depend on the parties' positions and on the distance between the centre and the most extreme districts.

Formally, the parameter of interest is the position of the most extreme districts, a . To limit the number of cases, we assume that the degree of preference heterogeneity across districts is sufficiently small: $a \leq 2\zeta$. This allows the two parties to cover potentially all districts and to foreclose all independents. Larger values of a will be discussed in the next section.

Starting with symmetric positions: $-x_D = x_R > 0$, Proposition 1 and the informal discussion above reveal that there are two cases to consider.

When platforms are sufficiently polarized, that is when $-x_D = x_R > \zeta$, the two parties' catchment areas are disjoint:

$$\begin{cases} \mathcal{C}_D(x_D, x_R) = [x_D - \zeta; x_D + \zeta] \\ \mathcal{C}_R(x_D, x_R) = [x_R - \zeta; x_R + \zeta]. \end{cases}$$

When platforms are less polarized, that is when $-x_D = x_R \leq \zeta$, the two parties are competing with each other for moderate districts. Proposition 1 shows that centre-left districts then elect a party D candidate, whereas centre-right districts elect a party R candidate:

$$\begin{cases} \mathcal{C}_D(x_D, x_R) = [x_D - \zeta, \frac{x_D + x_R}{2}] \\ \mathcal{C}_R(x_D, x_R) = [\frac{x_D + x_R}{2}, x_R + \zeta]. \end{cases}$$

Knowing that there is one seat associated with each district, how do these catchment areas translate into seat shares? Let $F(y_i)$ denote the cumulated density function of the

distribution of districts. Given the uniform distribution of districts, $F(\cdot)$ is given by:

$$\begin{aligned} F(y_i) &= 0, \quad \forall y_i < -a \\ &= \frac{y_i + a}{2a}, \quad \forall y_i \in [-a, a] \\ &= 1, \quad \forall y_i > a. \end{aligned}$$

To illustrate the incentive for polarization, consider the case in which the two parties are sufficiently close ($-x_D = x_R < \zeta$) and district heterogeneity is sufficiently large ($a > \zeta$). In this case, the two parties are competing in centrist districts but lose extreme districts. The seat share of party D , denoted s_D , is then:

$$\begin{aligned} s_D(x_D, x_R) &= F\left[\frac{x_D + x_R}{2}\right] - F[x_D - \zeta] \\ &= \frac{x_R - x_D + 2\zeta}{4a} \end{aligned}$$

and a similar equation holds for party R . This seat share is strictly decreasing in x_D : the party has a strict incentive to polarize, because it only loses half as many centrist districts as it wins extreme districts.

Conversely, for sufficiently extreme platforms, i.e. for $x_D < \zeta - a$, the party's catchment area stretches beyond the most extreme district: $F[x_D - \zeta] = 0$. In this case, the party can clearly increase its seat share by adopting a more moderate platform. We thus find that:

Proposition 2 *For any $a \geq \zeta$, equilibrium platform positions are: $-x_D^* = x_R^* = a - \zeta > 0$, whereas $-x_D^* = x_R^* = 0$ for $a < \zeta$. That is:*

- a) *the median voter theorem only holds for sufficiently low levels of inequality ($a < \zeta$);*
- b) *for higher levels of inequality ($a \in [\zeta, 2\zeta]$), interparty polarization is increasing in the level of inequality.*

Proof. For $x_D - \zeta < -a$, we have: $s_D(x_D, x_R) = F[\min\{\frac{x_D + x_R}{2}, x_D + \zeta\}]$, which is strictly increasing in x_D . Hence, party D never selects a platform $x_D < \zeta - a$. For the same reason, party R never chooses $x_R > a - \zeta$.

For $x_D - \zeta \geq -a$, we have:

$$s_D(x_D, x_R) = \frac{x_R - x_D + 2\zeta}{4a},$$

which is strictly decreasing in x_D . Hence, party D never selects a platform $x_D > \zeta - a$; its seat share is necessarily maximized in $x_D^* = \zeta - a$. By symmetry, $x_R^* = a - \zeta$. ■

Beyond some level of polarization, some centrist districts are lost without any benefit: all extreme districts are already electing a party candidate. Therefore, the party has an incentive to moderate its platform – this is the standard argument behind the median voter theorem. But there is another force: if platforms are already moderate, the parties’ incentive to move towards the center is actually overshadowed by the desire to win extreme districts. Indeed, when they are sufficiently close to one another, that is when $x_R - x_D \leq 2\zeta$, the two parties are in a “direct competition zone”. If D moves its platform to the right by ε , then it only wins in $\varepsilon/2$ additional centrist districts while it loses ε districts on the tail of the distribution¹¹.

3.3 Application: the American dance of ideology and inequality

McCarty et al. [2006] document the empirical correlation between party polarization and economic inequality. If we interpret higher economic inequality as voters’ preferences being more heterogeneous across districts, proposition 2 gives a theoretical explanation for this phenomenon. Parties increase polarization at times of increased inequality. It is thus interesting to see how inter-district heterogeneity correlates with aggregate economic inequality in the U.S. Our goal, here, is not to present a full-fledge empirical analysis of the link between polarization and inequality, but to produce some data consistent with the results of the model.

The Gini coefficient of income inequality, used by McCarty et al. [2006], is generally considered as a good proxy for the median voter’s preference for redistribution (see for instance Persson and Tabellini [1994], Bolton and Roland [1997], or the summary in McCarty et al., [2006, chapter 3]). We thus use the standard deviation of *within* U.S. state Gini coefficients to proxy the heterogeneity of preferences across districts: a larger variance of these Gini coefficients means that average ideological distance between two typical U.S. States has increased. The *State data on Gini Ratios by State*, from the U.S. bureau of Census provides this information. The Census provides data on both household and family Gini indices for the following three years:¹²

¹¹Castanheira and Crutzen [2010a] show that the same argument is valid in a more general set-up.

¹²The series on families also has data for 1969. The average of Gini ratios and the difference between the highest and smallest Gini ratios are about the same as in 1979. However, the standard deviation is noticeably higher. For all the other years, quartile indicators and standard deviations evolve together.

Table 1: State level Gini indices

		1979	1989	1999
(1)	Average of State-level Gini indices (households)	0.401	0.429	0.448
(2)	Standard deviation between states	0.018	0.023	0.026
(3)	(2)/(1) \times 100	4.41	5.47	5.71
(4)	Average of State-level Gini indices (families)	0.362	0.397	0.416
(5)	Standard deviation between states	0.020	0.026	0.032
(6)	(5)/(4) \times 100	5.64	6.40	7.59

Source: U.S. bureau of Census (<http://www.census.gov/hhes/www/income/histinc/state/state4.html>), and own computations

Both rows (2) and (5) in Table 1 show that our proxy for inter-district preference heterogeneity increases at the same time as within-state Gini coefficients do. An increase in the average of state-level Gini coefficients is also associated with a *more than proportional* increase in interstate heterogeneity (see rows (3) and (6)).

4 Primaries and endogenous candidate valence

In this section, we endogenize the valence of the candidates' platforms. To simplify matters, we assume that the two parties' platform positions, x_D and x_R , are fixed. As in Caillaud and Tirole [2002] and in Castanheira et al. [2010], candidates must invest time and effort to increase the valence (or "quality") of their platform. Clearly, party catchment areas increase in size when party candidates invest more than independents. Compared to previous work, we contribute two new results. First, we show that primaries is a good way for parties to fight the threat of independent candidates. We also show that, the introduction of primaries, by lowering the threat of independent candidates, can lead to further polarization of parties' platforms.

We assume that effort increases the *probability* that a candidate's platform has high valence. Formally, in the absence of effort, valence is always 0. With effort, valence can be either 0 or take a higher value. The probability that valence is high is equal to the effort e supplied by the politician, at a cost $c(e) = e^2/2$. We assume throughout that efforts are not observable: neither the party nor the voters observe the politicians' effort levels. The

objective of politicians is to maximize their election probability, net of effort costs.

Voters do not observe actual valences.¹³ But parties do and primaries may reveal information inside the party. The party primary can thus select the candidate with the highest valence for the general election. Primaries are thus the channel through which candidate effort can be valued. Indeed, effort cannot play a direct role at convincing voters, since they are poorly informed. Yet, voters know that primaries give incentives to candidates. In equilibrium, expected valence will reflect these incentives: a candidate from a party holding primaries gets an expected valence premium.

A regular district is characterized by the median voter position y_i , and the position of the two parties. The independent candidate has an expected position of y_i . The median voter has expectations (ν_I, ν_D, ν_R) about the valence of each of the three candidates and compares the utilities from the three candidates before deciding for whom to cast his ballot. As in Section 2, the party catchment areas correspond to the districts that vote for this party.

With endogenous valences, an equilibrium in district y_i is a list of effort provisions by candidates (e_I, e_D, e_R) , a voting decision by the median voter and a list of consistent beliefs by all players. Beliefs are as follows. Given the effort provision, the median voter has consistent expectations about the expected valence of the candidates. Given the voting decision of the median voter in district y_i , the party candidates hold expectations about their party winning probability in district i and choose their effort to maximize their expected utility.

Since independent candidates cannot directly affect the anticipations of the median voter, their marginal return to effort is zero. Hence, they do not have any incentive to exert effort. It thus follows that:

Remark 1 *In equilibrium, the expected valence of an independent candidate is zero: $\nu_I = 0$.*

Compared to this benchmark, we have:

¹³This assumption is made to simplify the analysis; different information structures can be considered. For instance, Castanheira *et al.* [2010] proposes a model in which voters also get information about platform qualities.

Lemma 1 *For party candidates, equilibrium effort is proportional to the party's expected probability of winning the district. This probability of winning depends on the voters' **expectation** of equilibrium efforts and on the parties' national platforms.*

Proof. *A candidate of party D who is selected wins with probability $P_D(y, (\nu_I, \nu_D, \nu_R))$. The probability to be selected depends on the observed qualities of the two party candidates and is equal to $(e_1^D(1 - e_2^D + \frac{1}{2}e_2^D) + \frac{1}{2}(1 - e_1^D)(1 - e_2^D)) = \frac{1}{2}e_1^D - \frac{1}{2}e_2^D + \frac{1}{2}$. The marginal benefit of increasing effort is thus $\frac{1}{2}P_D(y, (\nu_I, \nu_D, \nu_R))$. The marginal cost is e_1^D . The equilibrium effort is thus $e_D^*(y_i) = \frac{1}{2}P_D(y_i, (\nu_I, \nu_D, \nu_R))$. ■*

The expected valence corresponds to the probability that at least one party candidate has high quality. It is thus equal to $\nu_D = 1 - (1 - e_D^*(y_i))^2$, since $(1 - e_D^*(y_i))^2$ is the probability that both candidates of the party have low quality. We thus find that, the stronger is the party in a district, the larger is the equilibrium level of effort by its candidates. In all cases, the party candidate who wins the local primary ends up being reinforced as compared to a scenario in which there is no primary election. The only exception would be the self-fulfilling case of a party candidate who expects to have exactly zero-probability of winning. In this case, he has no incentive to exert any effort, and his position cannot improve thanks to primaries. Note still that another equilibrium generally coexists with this one: imagine that voters expect party candidates to exert some effort and, in that case, elect the party candidate with strictly positive probability. This shift in expectations is sufficient to give party candidates an incentive to exert positive effort, and thereby beat the independent with a higher probability.

Proposition 3 *The **catchment areas** $\mathcal{C}_P(x_D, x_R)$ of the two parties increase when valence is endogenous, in the sense that independent candidates win in fewer districts.*

Proof. We want to compute the district that is indifferent between party D and the independent. Given that $e_D^*(y_i) = \frac{1}{2}P_D(y_i, (\nu_I, \nu_D, \nu_R))$, when party candidates expect to be elected for sure, that is, when $P_D = 1$, their effort is $e_1^D = 1/2$. The expected valence is then $\nu_D = 1 - (1 - 1/2)^2 = \frac{3}{4}$.

The marginal district is then defined by the following equality:

$$\begin{aligned}
 -\phi\zeta^2 - (1 - \phi)(y_i - x_D)^2 + 3/4 &= -\zeta^2 \\
 (y_i - x_D)^2 &= \zeta^2 + \frac{3}{4(1 - \phi)} \\
 y_i &= x_D \pm \sqrt{\zeta^2 + \frac{3}{4(1 - \phi)}}
 \end{aligned}$$

When party candidates expect to lose the election for sure, they make no effort, the expected valence is thus zero and the party catchment area is the same as in the case of exogenous valence. The marginal district is then $y = x_D \pm \zeta$. ■

4.1 Direct Primaries and the threat of independents

Proposition 2, in the previous section, focused on the case $a \leq 2\zeta$. When a increases above that threshold, the threat of independents is real: the two parties necessarily lose some extreme districts to independents. Proposition 3 shows that introducing competition through primary elections is then a way to recover some of the ground gained by independents. Political parties thus give their candidates two advantages. The first one is the *brand effect* highlighted in the previous section. The second one is the *trust effect* highlighted here. Being part of a party is a way for a candidate to commit himself to work harder at crafting good platforms. Ill-informed voters therefore “trust” more the platform of party candidates: they expect him to have higher valence. As we showed, this valence advantage is a direct result of the additional tournament faced by party candidates: they must first win primary elections before being able to run in the general election. Proposition 3 shows that, when the brand effect is not sufficient, parties can benefit from organizing internal primaries: these are a way to fight against the threat of independent candidates in extreme districts. It is therefore rational for political parties to introduce intraparty competition in the form of primary elections when the political environment becomes more uncertain and districts become more heterogeneous.¹⁴

¹⁴See Castanheira *et al.* [2010] for a more detailed analysis of the incentives to institute primaries, and Castanheira and Crutzen [2010a] for an analysis of the relationship between catchment area size and the optimal positioning of the parties.

4.2 Application: the American Direct Primary

Direct primary elections were introduced at the beginning of the 20th century and changed the structure of the U.S. political system in many ways. In 1899, Minnesota was the first state to introduce a legislation mandating the use of direct primaries; by 1915, all states but three had enacted similar legislations. Before, parties could nominate their candidates through a system involving caucuses and conventions. The main characteristic of this system was that decision powers were in the hands of party delegates, and that there was little intraparty competition. The adoption of the direct primary increased this competition dramatically.

This switch to a competitive, candidate-centered system whose rules are largely outside the span of control of parties is still a puzzle to most political scientists. The classical explanation, put forward by Merriam and Overacker [1928], is that the caucus-convention system was not working anymore and that, under pressure from the public and from outsiders, parties were forced to accept a reform that reduced their power. Ware [2002] casts doubts on this interpretation and argues that the parties were not actually forced into this reform. They willingly adopted the direct primary in response to a change in the environment; they took advantage of these pressures to reinforce their domination on the political scene. Ware centers his analysis on his observation of the incentives that politicians, party leaders, and party elites were facing at the time of this reform. In particular, he argues that the threat of independent candidates was one of the reason behind the adoption of the direct primary. Our model thus also provides a sound theoretical rationale for that reform: Proposition 3 indeed shows that parties benefit most from introducing primaries precisely when the threat posed by independents is more serious.

4.3 On the Controversies About the Effects of primaries

In our model, only parties observe the actual valence of their candidates. It is thus only through primaries that effort can be rewarded. Assuming that voters can sometimes observe the valence of independents would lead to independents also exerting effort to improve their platform. However, as shown in Castanheira *et al.* [2010], the qualitative results of this paper would remain largely unaffected: when there is a low probability that information about the valence of candidates is revealed, primaries remain optimal. Conversely

(and especially if we allow for some ideologic motivation on the part of the candidates), if information about independents is often available to voters, then primaries are not used in equilibrium, and we fall back onto the results of section 3, where valence is the same (in equilibrium) for all three candidates.

We focus mainly on the incentive role of primaries to solve the moral hazard problem of politicians who design platforms. The role of primaries to solve adverse selections problems would also be relevant. The literature argues that primaries are associated with the selection of ideologically more extreme candidates. Thus, primaries are often viewed as having the drawback of polarizing elections. While this view commands a large support among political scientists, it should be acknowledged that all recent empirical studies on the matter not only refute this thesis (see for example Bartels [1988] or Bruhn [2009]) but also show that from a pure selection perspective, there seems to be a valence bonus associated to candidates selected in primaries (see for example Carey and Holga-Hecimovich [2006] or Aragon [2008]). Adams and Merrill [2008] present a model of primaries with a moral hazard and an adverse selection dimension. They show that the (moral hazard) valence effect dominates the (adverse selection) ideology effect and thus that primaries help candidates win elections.

What about open versus closed primaries, that is, primaries that are open to all potential candidates versus those that are restricted to party members only? Some scholars and commentators (see for example Paddock [2008]) believe that compared to open primaries, closed primaries are more likely to select extreme candidates, because the share of party partisans (who are typically viewed as more extreme than the average voter) have a larger say in the vote. Others believe that open primaries (and runoffs, as in France) may open the door to the possibility that the second election round be dominated by either two candidates from the same party or candidates from highly undesirable parties (see for example Kiesling and Reed [2004]). To the best of our knowledge, these competing views still await a systematic scrutiny.

In conclusion, it seems that our argument that the Direct primary was introduced at the turn of the Nineteenth century as a response in the drop in the level of information available to voters about candidates (Castanheira *et al.* [2010]) and in the parties' ability to increase the size of their catchment areas (this paper) fits very well both the historical accounts on

its introduction and the more recent evidence on the effects of primaries on the valence and competence of candidates.

5 Conclusion

In this paper, we put forward a model that emphasizes how the internal organization of parties allows voters to gather information about the future policy choices and the quality of politicians. We have shown that accounting for intraparty politics and allowing for the presence of independents in an otherwise standard model of electoral competition provides a formal rationale behind the dance between inequality and polarization that McCarty *et al.* [2006] document for the US. We have also shown that such an extended model of electoral competition can rationalize the introduction of the American direct primary in the US at the beginning of the twentieth century, a reform that Ranney [1975, p121] (quoted by Ware [2002, pp1 and 95]) describes as “*the most radical of all the party reforms adopted in the whole course of American history*”.

In this paper, we kept voluntarily the model to its bare bones. We now discuss how generalizing several of its aspects impacts on our results and opens avenues for further findings.

Starting with the relationship between candidate selection and the median voters’ decision, how do our results generalize to a setting in which parties cannot force politicians to follow the party line but, rather, the candidate selection rule can only screen out candidates whose preferences are not sufficiently close to the party line, as in the framework of Snyder and Ting [2002]? This is the case studied by Castanheira and Crutzen [2010a], who show that different districts value the capacity of parties to constraint the choices of their politicians differently: districts close to the party line want as much discipline as possible, whereas distant districts want as little discipline as possible. This implies that the optimal level of intraparty discipline is always either of two extremes:¹⁵ *full discipline* (in which case all selected politicians have the party line as their bliss point) or the *minimum* level of discipline allowed by the political system in which parties are embedded.

On top of being able to rationalize the American dance between polarization and inequality, they also show how this result offers novel rationales behind the observed differences in

¹⁵This is the level that maximizes the party’s catchment area.

term of both intraparty discipline and the equilibrium number of parties in representative democracies. When institutions limit the freedom of party members (such as Parliamentary systems with a vote of confidence procedure for the executive), parties will not free ride on these institutions. Rather, they will push intraparty discipline to its maximum. Conversely, absent institutional constraints on party discipline, as in the US presidential system, parties will choose as little intraparty discipline as possible. These findings complement the results of Huber [1996] and Diermeier and Feddersen [1998] and further refine our understanding of the forces underlying the functioning of different political regimes in democracies such as the U.K., India, Canada and the US.

Finally, Castanheira and Crutzen [2010b] also show that Duverger's Law (the proposition that in democracies relying on plurality rule only two parties are likely to be serious competitors) is more likely to hold under presidential regimes, in which parties choose to have as little discipline as possible, than in regimes in which intraparty discipline is high. Thus, their results rationalize the cross-country differences in the effective number of parties and complement the findings of, for example, Morelli [2004].

Turning to the role of primaries in the selection of candidates, we assumed in this paper that their role is a pure signalling one, given that voters never observe the politicians' realized valence levels. This is a special case of the analysis in Castanheira *et al.* [2010]. That paper presents a two-party general equilibrium model of electoral competition in terms of party structures that extends previous work by Caillaud and Tirole [2002] and Carrillo and Castanheira [2008]. It focuses on the relationship between the party's incentives to adopt internal primaries and the amount of information voters have on politicians realized qualities. If their findings qualify proposition 3 above, they do not invalidate what was said in this paper: when voters are badly informed about politicians' qualities, primaries increase their chances of victory and are the parties' dominant strategy.

Castanheira *et al.* [2010] also examine other related issues. They examine how the parties' incentives to adopt primaries vary with the value of the rents from office, the degree of polarization between the parties and the objectives of individual candidates. This allows them to offer novel rationales for why, for example, moderate parties are typically more internally democratic than extreme ones. The data in both Lundell [2004, p36] and in Bille

[2001, p366] indeed show that the more extreme parties are, the less competitive are their candidate selection procedures. The 2007 election in France provides another case in point. The members of the Socialist and the center-right UMP parties elected their respective leading candidates, Ségolène Royal and Nicolas Sarkozy. To the contrary, Jean-Marie Le Pen was the unchallenged leading candidate of the Front National, an extreme right-wing party. Le Pen has been more or less unchallenged since the creation of his party, in October 1972!¹⁶

Where do we go from here? There are many interesting questions that have not received much attention so far but that could be analyzed within a framework similar to the one we proposed here. For example, how will changes in the legislation on campaign finance affect the political forces highlighted in this paper? Will a move to more candidate-centered politics, as seems to be happening in the US, strengthen or weaken parties? Will such a move lead to less party discipline, to the appearance of new parties, to more polarization? Should the US and other representative democracies promote the introduction of open primaries in which voters can select their favored candidate irrespective of whether they are party candidates or not? How do such open primaries compare to other electoral systems such as the French runoff? These are all fascinating questions that still await an answer but that we hope the profession will address in the near future.

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¹⁶Other recent examples of leaders selected through open intraparty competition in moderate parties include the socialists Jose Luis Zapatero and Romano Prodi in Spain and Italy respectively, and the centre-right Stephen Harper in Canada and Didier Reynders in Belgium. The competitive nature of the above selection procedures contrasts with that of extreme parties in the same countries: the Vlaamse Belang in Belgium is dominated by Filip Dewinter and in Italy the extreme left Rifondazione Comunista and the separatist/extreme right Lega Nord are dominated by Fausto Bertinotti and Umberto Bossi respectively.

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