

# Who Emerges from Smoke-Filled Rooms? Political Parties and Candidate Selection

Nicolas Motz\*

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## Abstract

In many countries political parties control who can become a candidate for an election. In this gatekeeping role parties may be tempted to put their own interests first, particularly when voters have little information about candidates. This paper uses a theoretical model to demonstrate that electoral incentives can discipline parties to nominate high-quality candidates even when voters are initially unable to observe quality themselves. In equilibrium voters elect candidates that are ex-ante preferred by the party leader with lower probability. This effectively neutralises the bias of the party leader and induces her to use her superior information to select candidates according to the preferences of the median voter. This result requires that electoral competition is sufficiently strong. If competition is weak, nothing can prevent the party leader from following her own preferences. As ideological alignment between the median voter and a party reduces the degree of competition that this party faces, the median voter can be better off when parties are polarized. Excessively strong competition can be harmful, however, as some politicians cease to be viable candidates and the party leader is less able to select on quality. Allowing the party leadership to nominate candidates strategically makes the benefits of introducing primaries less clear than previously argued in the literature.

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# 1 Introduction

Before the emergence of primary contests, U.S. presidential candidates were selected by the leadership of their respective parties. The popular cliché of the nominee being chosen in “smoke-filled rooms” by men in dark suits with big cigars captures the sentiment that this process was undemocratic, intransparent, and ultimately to the disadvantage of voters. Other observers have held that party establishments consist of professional politicians who know their potential candidates well and can judge which politician has the best chances of getting into office. Which of these competing views is closer to reality? With candidate selection in many countries firmly under the control of party leaderships even today, this remains a vital question.

This paper contributes to the debate outlined in the previous paragraph through constructing a theoretical model of candidate selection through party elites. A key feature of this model is that the leadership of the party is better informed about potential candidates than voters are. In general, this enables parties to use their superior information to make informed decisions on behalf of voters. Whether they will do so, however, is not immediately clear. Parties often have interests that differ from those of voters and this is the second central assumption of the model. In this setting, can it ever be expected that parties will select the candidate that voters prefer?

The answer, as it turns out, depends crucially on the degree of political competition. When competition is low, the party will win the election no matter which candidate it puts forward and will consequently decide the nomination based on its own preferences. As competition increases, the party is forced to take into account which candidate voters prefer. Interestingly, this does not simply mean that the party leader more often chooses the candidate that voters prefer based on their own information. Instead, the party leader increasingly frequently nominates the candidate that voters would choose if they had the same information as the leader does.

Providing an intuition for this result requires a closer look at the model: The party leader chooses among two potential candidates and these politicians differ along two dimensions: Their ideological position and their quality<sup>1</sup>. Voters are not fully informed about these characteristics of politicians, while the party

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<sup>1</sup>Quality here describes a characteristic of politicians that is valued by voters independently of the implemented policy, such as honesty or competence. The political economics literature often uses the term “valence” instead of quality.

leader is. The conflict of interest between the party leadership and voters is assumed to be particularly strong along the ideological dimension, such that the median voter and the party leader would choose different candidates if the choice was purely based on ideology. On the other hand, everyone agrees that candidates of higher quality are more desirable, even though the weight that the party leader places on quality may be arbitrarily small.

Now suppose that the election is competitive, meaning that there exists a second party whose candidate is sufficiently attractive to voters in a sense to be made precise below. This enables voters to play a strategy such that the politician whose ideological position is further away from the one favoured by the median voter is less likely to be elected. In equilibrium, this lower electability of more extreme candidates neutralises the ideological bias of the party leader and as a result the nomination is decided based on quality.

A party with polarized interests can thus be induced to select candidates in the interest of voters as long as competition is sufficiently strong. In fact, it may even be the case that the ideological bias of the party leader works to the benefit of voters. This result requires that the weight that the party leader attaches to quality is small. In this case competition is always required to induce the party leader to select candidates of high quality. Eliminating the ideological bias of the party leader has the effect that she more frequently nominates the politician that the median voter prefers based on ideology. But this effectively reduces competition, resulting in the selection of candidates of lower quality.

The relationship between political competition and candidate quality that forms one of the key result of this paper has also been found to hold empirically (Galasso & Nannicini 2011, Dal Bó et al. 2016). With the exception of Galasso & Nannicini (2011) themselves, who also provide a model in their paper, no theoretical justification for this link can be found in the literature. The explanation put forward by Galasso & Nannicini is that parties will allocate high-quality candidates to competitive districts to increase their chances of winning seats in parliament. However, their model features the assumption that voters are fully informed about the quality of candidates, which is unlikely to be the case in reality. In contrast, this paper shows how competition can induce parties to nominate candidates of high quality even when quality is not observable to voters.

Other papers that analyze the role of parties in nominating candidates have considered how different methods of selecting candidates induce homogeneous candidates to supply effort (Caillaud & Tirole 2002, Castanheira et al. 2010) or

have focused exclusively on either the quality/valence dimension or the policy dimension. Quality is the centre of attention in Mattozzi & Merlo (2015), and Snyder & Ting (2011), while Cadigan & Janeba (2002) and Jackson et al. (2007) are concerned with policy.<sup>2</sup> Contributions that feature both quality and policy are Adams & Merrill (2008), Serra (2011), and Boleslavsky & Cotton (2015). None of these papers feature a party leadership with superior information about the characteristics of politicians, while Snyder & Ting (2011) is the only paper where the degree of competition that the party faces plays an important role.

There are other papers that do not deal with candidate selection directly, but are nevertheless related. Callander (2008) and Carrillo & Castanheira (2008) show how more extreme platforms can be used to signal high quality under certain circumstances. The same may be true here, but the relationship between quality and ideology is more subtle: When competition is weak, nominating a more ideologically extreme candidate can actually be a signal of low quality. Caillaud & Tirole (1999) argue that ideological conflict within a party is required for platform choice to reveal information about quality. This paper shows that all that is required for voter learning is superior information on the side of the party leadership.<sup>3</sup>

Among the papers given above, Adams & Merrill (2008), Serra (2011), and Snyder & Ting (2011) investigate the question of why parties may choose to adopt primaries to select their candidates. They take the benefit from primaries to be that they reveal information about the quality of politicians, with the most competent one going on to win the nomination. This can give the party a competitive edge. The benchmark that this is compared to, however, is that the party has only one potential candidate or chooses randomly. As Snyder & Ting (2011) point out (p. 783, footnote 8), "Naturally, introducing a primary would benefit a party less electorally if it had an alternative selection mechanism that more frequently generated the voter's preferred candidate."

The answer that this paper provides to the point raised by Snyder and Ting is that the revelation of information during a primary campaign may not benefit the party at all when compared to candidate selection through an informed leadership, as demonstrated in Section 3.4. This is true even when the interests

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<sup>2</sup>These last two papers are quite similar to the current one in that they extend a citizen-candidate model by candidate nomination through parties. Compared to those contributions, the results here show that there is less policy convergence when candidates also differ in quality.

<sup>3</sup>There is voter learning even when the party leader has the same ideal policy as the median voter, as discussed in Section 3.5.2.

of the primary electorate are perfectly aligned with the party leadership and primaries are very effective at revealing information to the general electorate. The reason for this is that having more information than the electorate can work in favour of the party leadership. As long as voters are uncertain about the quality of a candidate, even an incompetent one can get elected.

The basic model will be presented in the next section. Section 3 describes the different shapes that equilibrium takes depending on the degree of competition. In addition, results on welfare and some comparative statics are presented. Subsequently, Section 4 relaxes some of the assumptions made in the basic version of the model. Section 5 concludes.

## 2 The Model

$N$  voters ( $N$  odd) care about two characteristics of politicians. The first is their policy preference: Each politician has an ideal policy  $i \in \mathbb{R}$ . The second characteristic is quality. A politician can either be of low or high quality  $q \in \{0, 1\}$ .<sup>4</sup> While the quality of policy maker enters the utility function of voters directly, they care about policy preferences because it is assumed that elected politicians implement their ideal policy. This assumption is supported by a number of empirical studies (Levitt 1996, Chattopadhyay & Duflo 2004, Lee et al. 2004, Bhalotra & Clots-Figueras 2014). The utility of a voter with ideal policy  $i$  from a policy  $x$  implemented by a policy maker with quality  $q$  is

$$u_i(x, q) = -(i - x)^2 + q .$$

In this setting the outcome of the election is determined by the median voter, whose ideal policy is assumed to equal zero. More general utility functions could easily be accommodated. The utility of voters over policies could be given by any concave function that is uniquely maximized at  $i$ . It would also be possible to introduce a weight on quality. These changes would merely shift the boundaries where different equilibria occur in the parameter space but not the nature of the equilibria themselves. The additive separability between policy and quality is discussed in Section 4.

Politicians belong to either one of two parties. The current incumbent belongs to party  $I$  and through acting as policy maker has already revealed her

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<sup>4</sup>It would also be possible to let quality be a continuous variable. The binary representation of quality is chosen for simplicity.

quality  $q_I$  and ideal policy, which is also denoted by  $I$  and assumed to be smaller than zero. An incumbent is introduced purely to simplify the exposition. It would also be possible to let two parties compete by choosing candidates, which would yield qualitatively very similar results. Denote by

$$\mathcal{I} \equiv -I^2 + q_I$$

the utility that the median voter would receive from re-electing the incumbent.

The second party, party  $C$ , has a party leader whose role it is to nominate one of two politicians as the party's candidate for the election. The ideal policies of these two politicians lie in the interval  $[0, 1]$ . The politician located further away from zero is referred to as the extremist and her most preferred policy is given by  $E \in (0, 1]$ . Her competitor for the party nomination is called the moderate, with ideal policy given by  $M$  with  $0 \leq M < E$ . Politicians are identified by their ideal policies. Voters know that their respective qualities,  $q_M$  and  $q_E$ , independently take the value one with probability  $\pi$ , which is also the unconditional expectation of quality. The party leader, on the other hand, observes qualities directly. All other variables are common knowledge.

The party leader can be thought of as representing the group at the top of the party hierarchy, which controls the nomination process. The ideal policy of the party leader is different from the one preferred by the median voter and assumed to be equal to one. The utility function of the leader is given by

$$u_C(x, q) = -(1 - x)^2 + w \cdot q + \mathbb{1}_{\omega \in \{M, E\}} Y,$$

where  $\omega$  indicates the winner of the election,  $Y \geq 1$  is a payoff that the leader receives if the winner belongs to her party, and  $w \in (0, 1]$  is the weight that the party leader attaches to quality.  $Y$  is introduced to make sure that the party leader never prefers the re-election of the incumbent over the election of one of the politicians belonging to party  $C$ . Allowing  $w$  to be smaller than one implies that the party leader may put less weight on policy than voters do, which yields the most interesting results.<sup>5</sup>

It is worth pausing here for a moment to further discuss some of the features of the model. The assumption that the ideal policy of the party leader is one is made for simplicity. What is actually crucial for the results is that the party

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<sup>5</sup>One reason why the party leader may put less weight on quality is that she faces pressure to nominate the extremist from the more radical members of the party, who may withdraw their support if they feel that their interests are not sufficiently taken into account.

leader is located closer to the extremist than to the moderate. Regarding the politicians of party  $C$ , a noteworthy assumption is that the moderate and the extremist are never at a distance greater than one. This implies that competition takes place in a range where quality trumps policy: Voters always prefer any high quality politician over any low quality politician. Allowing politicians to be further away from each other would not introduce any additional types of equilibria. Finally, restricting attention to two potential candidates is necessary to keep the model tractable. It would seem though that the qualitatively important feature is that the number of politicians competing for the candidacy is “small”. As the number of competing politicians grows the trade-off between policy and quality that the party leader faces disappears as high quality candidates become more and more abundant. The assumed scarcity of potential nominees seems, however, to also be a realistic choice. Parties rarely recruit outsiders and in order to be considered for nomination for a higher office party members typically need to have gained some experience as well as a public profile through serving in regional or local offices. Another restriction is that regional offices seem to require regional candidates.<sup>6</sup> Only a limited number of politicians will satisfy these criteria at any point in time. Finally, the assumption that voters perfectly observe policy preferences of politicians while they know little about quality may seem strong. It could be argued that the careers of politicians prior to being considered for a nomination are more informative about policy than quality. After all, politicians make political decisions along similar ideological fault lines throughout their career. On the other hand, higher offices may require skills that a politician was not able to demonstrate before. This argument notwithstanding, section 4.2 suggests that the results are robust to uncertainty along the policy dimension as well.

The strategic players in this game are the party leader and the median voter. After observing the quality of her politicians the party leader nominates one of them as the party’s candidate for the election. The party leader’s strategy is given by the function  $\eta_M(q_M, q_E)$ , which gives the probability that the leader will nominate the moderate given any realization of the qualities of both politicians. While this is sufficient to fully describe the strategy of the party leader, it will be convenient to directly refer to the probability of nomination of the extremist as well, which is given by  $\eta_E(q_M, q_E) = 1 - \eta_M(q_M, q_E)$ . After the

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<sup>6</sup>Members of the U.S. senate, for example, are almost always native to the state where they were elected. Furthermore, they also tend to highlight this fact in the biographical section of their website or even directly on the homepage.

nomination decision has been made, voters update their priors and vote for the incumbent or the challenger nominated by party  $C$ . The outcome of the election is driven by the median voter and it is therefore sufficient to focus on her behaviour. Let  $r(p)$  be the probability that the median voter elects the candidate of party  $C$  given that politician  $p$  has been nominated.

The structure of the game is that of a signalling game, where the party leader is the sender and the median voter is the receiver. In the language of signalling games, the type  $q_C \equiv (q_M, q_E)$  of the party leader is the combination of qualities she observes and the type-space is  $Q \equiv \{0, 1\}^2$ . The posterior probability that the nominated politician is of high quality is denoted by  $\bar{\pi}_p$ .

Signalling games typically have many perfect Bayesian equilibria, as it is possible to assign any belief that supports an equilibrium at information sets that are off the equilibrium path. The same is true here: For example, if voters believe that the extremist has quality zero, always nominating the moderate independent of actual qualities is an equilibrium. To be able to make sharper predictions it is therefore imposed that beliefs off the equilibrium path satisfy the refinement of Universal Divinity due to Banks & Sobel (1987), which has previously been applied in the literature (Banks 1990, Callander 2008). To give an informal description of the requirements of Universal Divinity, suppose that voters observe that the party leader unexpectedly nominates a certain politician. Voters then believe with certainty that the quality of the unexpectedly nominated politician must be such that it makes the leader most likely to gain from this move. The notion of “most likely to gain” is formalized as the type of leader that gains in utility for the greatest set of voter responses: Let  $\Lambda(p|q_C)$  be the set of election probabilities such that the party leader of type  $q_C$  receives a greater expected utility from nominating politician  $p$  rather than her competitor. If politician  $p$  never gets nominated then  $\bar{\pi}_p$  is restricted to be consistent with the belief that  $q_C \in Q^*$ , where  $Q^*$  contains all  $q^*$  that satisfy  $\Lambda(p|q^*) \supseteq \Lambda(p|q') \forall q' \in Q$ .

An additional issue more specific to this particular model is that the party leader is indifferent between all possible strategies once neither politician belonging to party  $C$  can get elected. As a consequence the party leader could be playing the strategy “always nominate the politician with the lowest quality”, which in turn could make it a best response for the median voter to re-elect the incumbent with certainty. However, it seems implausible that voters would expect the party leader to behave in this way. In order to circumvent this issue all equilibria that feature weakly dominated strategies are excluded. As



intended this requirement only affects equilibria where both the extremist and the moderate get defeated by the incumbent with certainty.

### 3 Results

Whether or not a candidate nominated by the leader of Party  $C$  stands a chance of getting elected depends on her political position as well as the expectation of voters regarding the quality of that candidate. Candidates that are very close to the median voter's most preferred policy can get elected even if they are perceived as being of low quality. Conversely, even a candidate far from the centre can be appealing to the median voter if her expected quality is high enough. However, this expectation of high quality is difficult to maintain. Suppose that the extremist gets elected with certainty once nominated because voters believe that the party leader nominates the moderate if the extremist turns out to be of low quality. Given this high probability of winning, the leader then actually prefers to nominate the extremist even when she is of low quality, since the extremist is politically closer to the leader. This undermines the initial expectation that the extremist is of high quality.

The exact shape of equilibrium therefore depends on the positions of both potential candidates of party  $C$ . If both are located close enough to the median the incumbent never gets re-elected. This case is referred to as “No Competition”. The case labelled “Limited Competition” describes the situation where only the moderate can get elected. This requires that the moderate is close to the centre while the extremist is indeed too extreme and the median voter can never be persuaded to elect her. The most interesting case, called “Full Competition”, features a positive probability of election for either politician belonging to party  $C$  as well as the incumbent. The next three sections explore each case in more detail. Finally, it is also possible that neither the moderate nor the extremist stands a chance of being elected. Obviously, this requires that both politicians are relatively far from the centre. Determining the exact conditions under which this is an equilibrium, however, is a rather technical exercise, which is therefore relegated to Appendix A.

#### 3.1 No Competition

Characterizing this equilibrium is straightforward: If both politicians of party  $C$  are located close enough to the median voter the incumbent never gets re-

elected:  $r(M) = r(E) = 1$ . Depending on the distance between the moderate and the extremist, the party leader may then behave in two different ways. In the first case, the two potential candidates are located so far from each other that the party leader always nominates the extremist independent of qualities. Accordingly, voters expect that the extremist has average quality:  $\bar{\pi}_E = \pi$ .<sup>7</sup> The second case applies if the two politicians are so close to each other ideologically that the party leader prefers a moderate of high quality over an extremist of low quality, but nominates the extremist in all other cases.<sup>8</sup> This implies that voters expect the moderate to have high quality if nominated ( $\bar{\pi}_M = 1$ ) while the posterior quality of a nominated extremist is given by

$$\bar{\pi}_E = \frac{\pi}{\pi + (1 - \pi)^2} .$$

Both versions of this equilibrium exist as long as the median voter at least weakly prefers the extremist over the incumbent, which is equivalent to the condition  $E \leq \sqrt{\bar{\pi}_E - \mathcal{I}}$ .

In this equilibrium the median voter has no means to discipline the party leader who chooses her preferred politician without having to worry about electability. Consequently, the median voter would be better off if the ideal policy of the party leader was closer to her own ideal policy. The threshold on the position of the party leader at which her nomination strategy changes is the point at which she is equidistant from both politicians: A party leader who is located closer to the moderate than to the extremist would nominate the moderate whenever both politicians have the same quality.

### 3.2 Limited Competition

When only one politician in Party  $C$  can successfully challenge the incumbent this is also the only politician that can get nominated. Nominating the candidate that loses for sure could only be optimal for the party leader if the utility from the other candidate getting elected was lower than the utility from the

<sup>7</sup>To give a complete description of this equilibrium the belief of voters over the quality of the moderate would have to be specified as well. According to Lemma 1 below, Universal Divinity implies  $\bar{\pi}_M = 1$ , which makes  $r(M) = 1$  the best response of the median voter to the nomination of the moderate: As the median voter prefers an extremist of average quality over the incumbent, she must also prefer a moderate of high quality over the incumbent.

<sup>8</sup>This case applies if and only if

$$w > -(E - 1)^2 + (M - 1)^2 .$$

incumbent being re-elected. Due to the assumption that the payoff  $Y$  from winning the election is at least one this is impossible. It follows that the party leader must always be nominating the politician that wins with positive probability.

In this situation voters cannot use Bayes' rule to update their belief over the quality of the politician that never gets nominated. The restrictions imposed on this off-equilibrium path belief by Universal Divinity are given by the following lemma.

**Lemma 1.** *Fix some  $p \in \{M, E\}$ . An equilibrium in which  $\eta_p(q_C) = 0$  for all  $q_C \in Q$  satisfies Universal Divinity if and only if  $\bar{\pi}_p = 1$ .*

*Proof.* Let  $p'$  denote the competitor for the party nomination of politician  $p \in \{M, E\}$ . The interim utility of the party leader under a strategy profile  $\sigma = (\eta_p, r)$  where  $\eta_p(q) = 0$  for all  $q \in Q$  (politician  $p$  is nominated only off the equilibrium path) is given by

$$r(p')[-(p' - 1)^2 + w \cdot q_{p'} + Y] + (1 - r(p'))[-(I - 1)^2 + w \cdot q_I] .$$

Suppose politician  $p$  would be elected with probability  $\lambda$  if nominated. The utility of the party leader from nominating  $p$  would then be

$$\lambda[-(p - 1)^2 + w \cdot q_p + Y] + (1 - \lambda)[-(I - 1)^2 + w \cdot q_I] .$$

Equating the two utilities and solving for  $\lambda$  yields the probability of electing politician  $p$  that makes the party leader indifferent between nominating either politician:

$$\lambda_p(q_c) = \frac{r(p')[-(p' - 1)^2 + (I - 1)^2 + w(q_{p'} - q_I) + Y]}{[-(p - 1)^2 + (I - 1)^2 + w(q_p - q_I) + Y]}$$

As  $q_p$  only shows up in the denominator of this expression, the minimum of  $\lambda_p(q_c)$  can only be attained for  $q_p$  equal to one. Universal Divinity therefore implies  $\bar{\pi}_p = 1$  as it holds that  $\Lambda_p(q_c) = (\lambda_p(q_c), 1]$ .  $\square$

Intuitively, as the party leader puts a positive weight on quality, she is most likely to gain from nominating a candidate if that candidate has high quality. Universal Divinity accordingly requires that voters believe that unexpectedly nominated politicians have high quality. The politician that never gets elected must consequently be the extremist. Otherwise the median voter would strictly prefer an unexpectedly nominated moderate over the incumbent and  $r(M) = 0$  would not be a best response to the nomination of the moderate.

As the moderate is always nominated she is expected to be of average quality:  $\bar{\pi}_M = \pi$ . The median voter has to at least weakly prefer her over the

incumbent in order to elect her with positive probability, which is equivalent to the condition  $M \leq \sqrt{\pi - \mathcal{I}}$ . Whenever this holds as a strict inequality the moderate is elected with certainty. In addition, not electing the extremist must be a best response. This requires that the median voter at least weakly prefers the incumbent over an extremist of high quality, which is the posterior implied by Universal Divinity. This implies the condition  $E \geq \sqrt{1 - \mathcal{I}}$ .

Limited Competition is the exact opposite of No Competition in the sense that in the former case the party leader is completely constrained in her choice of which politician to nominate. Accordingly, the preferences of the party leader over policies are of no consequence for the outcome of the nomination process.

### 3.3 Full Competition

In the two previously discussed cases electoral incentives were either too weak to discipline the party leader or too strong to enable her to choose candidates based on quality. The type of equilibrium discussed in this section falls in between those extremes. Here, the extremist is not clearly better or worse than the incumbent from the perspective of the median voter, who prefers the extremist only if she believes her to be of sufficiently high quality. The choice of the party leader to nominate the extremist must then be a credible signal that this is indeed the case. This becomes possible because in equilibrium the extremist is less likely to be elected than the moderate. This lower electability offsets the ideological bias of the party leader, with the consequence that the extremist is chosen only if her quality is high enough. The following theorem states the conditions under which this equilibrium exists. In particular, the extremist must be located such that the median voter would prefer her over the incumbent if she had high quality with certainty but not if she had average quality. In addition, the moderate cannot be located too far from the median either.

**Theorem 1.** *An equilibrium where both politicians belonging to party C and the incumbent get elected (i.e.  $r(M) > 0$ ,  $r(E) > 0$ , and  $r(M) + r(E) < 2$ ) exists whenever  $\sqrt{\pi - \mathcal{I}} \leq E \leq \sqrt{1 - \mathcal{I}}$  and*

$$M \leq \sqrt{\frac{\pi(\mathcal{I} + E^2)}{\mathcal{I} + E^2 - \pi(1 - \pi)}} - \mathcal{I}.$$

Furthermore,  $r(M) = 1$  in any such equilibrium.

*Proof.* First of all, it is stated without formal proof that it is impossible that  $0 <$

$r(M) < 1$  and  $0 < r(E) < 1$  simultaneously. This would require that the median voter is indifferent between all candidates, which in turn would require that the party leader plays a mixed strategy under more than one combination of politician qualities. Otherwise it is impossible to generate the posterior beliefs that make the median voter indifferent. As should become clear below, however, indifference of the party leader between her pure strategies can only hold for one pair of politician qualities at a time.

Next, assume that the politician getting elected with certainty was the extremist. This would imply that the moderate either never gets nominated or is chosen only in the case  $q_C = (1, 0)$ , depending on the value of  $w$ . Both cases lead to the posterior belief  $\bar{\pi}_M = 1$ . But if the median voter is willing to elect the extremist then she must certainly prefer a moderate of high quality over the incumbent as well, contradicting that  $r(M) + r(E) < 2$ .

It must therefore be true that  $r(M) = 1$  and  $r(E) < 1$ . This can only hold if the median voter is indifferent between the incumbent and the extremist, which requires

$$\bar{\pi}_E = \mathcal{I} + E^2 . \quad (1)$$

To generate this posterior expected quality of the extremist the party leader must be playing a mixed strategy. In equilibrium mixing is only possible for one particular realization of qualities, as different combinations of qualities require different election probabilities to achieve indifference of the party leader. As the moderate gets elected with certainty the expected utility of the party leader from nominating the moderate is

$$-(M - 1)^2 + w \cdot q_M + Y$$

while nominating the extremist gives

$$r(E)[-(E - 1)^2 + w \cdot q_E + Y] + (1 - r(E))[-(I - 1)^2 + w \cdot q_I] .$$

Equating the two utilities it is possible to derive the following identity:

$$r(E) = \frac{[-(M - 1)^2 + w \cdot q_M + Y] - [-(I - 1)^2 + w \cdot q_I]}{[-(E - 1)^2 + w \cdot q_E + Y] - [-(I - 1)^2 + w \cdot q_I]} . \quad (2)$$

Given the restrictions on parameters the expression on the right-hand side is always positive. In the case of  $q_M = q_E = 0$  the numerator is smaller than the denominator and accordingly there exists an election probability  $r(E)$  that leaves the party leader indifferent between nominating either a moderate or an extremist of low quality.

Indifference between politicians of low quality implies that under the quality combinations  $(1, 0)$  and  $(0, 1)$  the party leader nominates the politician of high quality, while in the case of both having high quality the party leader strictly prefers to nominate the moderate. The last point can be seen by recognizing that in this case the

utility from nominating the moderate is equal to the utility of nominating a moderate of low quality plus  $w$  and the utility from nominating the extremist equal to the utility of nominating an extremist of low quality plus  $r(E)w$ . Hence, indifference in the  $(0, 0)$ -case implies that the difference in utilities from nominating the moderate and the extremist is equal to  $w(1 - r(E))$  in the  $(1, 1)$ -case, which is positive. Given this strategy of the party leader, posterior expectations are given by

$$\bar{\pi}_M = \frac{\pi}{\pi + (1 - \pi)^2(1 - \eta_E(0, 0))} \quad (3)$$

and

$$\bar{\pi}_E = \frac{\pi}{\pi + (1 - \pi)\eta_E(0, 0)} .$$

Solving this last equality for  $\eta_E(0, 0)$  and using Equation (1) to substitute for  $\bar{\pi}_E$  gives

$$\eta_E(0, 0) = \frac{\pi(1 - \mathcal{I} - E^2)}{(1 - \pi)(\mathcal{I} + E^2)} . \quad (4)$$

For this expression to be no greater than 1, it must be true that  $\mathcal{I} \geq -E^2 + \pi$ . This first necessary condition for the existence of this equilibrium implies that the denominator is positive. The second condition, which ensures that the numerator is non-negative, is  $\mathcal{I} \leq -E^2 + 1$ . Finally, it has to be true that the median voter weakly prefers the moderate over the incumbent:  $\mathcal{I} \leq -M^2 + \bar{\pi}_M$ . After substituting Equation (4) into Equation (3) this condition can be written as

$$\mathcal{I} \leq -M^2 + \frac{\pi(\mathcal{I} + E^2)}{\mathcal{I} + E^2 - \pi(1 - \pi)} .$$

If the election strategy of the median voter was such that the party leader was indifferent if  $q_M = 0$  and  $q_E = 1$ , then the party leader would strictly prefer to nominate the moderate whenever the quality of the extremist is zero. This implies  $\bar{\pi}_E = 1$  and contradicts that the median voter could be indifferent between the incumbent and the extremist.

Indifference under  $q_M = 1$  and  $q_E = 0$ , on the other hand, is possible only if  $w$  is sufficiently small. As a consequence the extremist would be nominated whenever she has high quality and when both politicians have low quality. The posterior beliefs are then

$$\bar{\pi}_M = 1$$

and

$$\bar{\pi}_E = \frac{\pi}{\pi + (1 - \pi)^2 + (1 - \pi)\pi\eta_E(1, 0)} .$$

Solving this last equality for  $\eta_E(1, 0)$  and using Equation (1) to substitute for  $\bar{\pi}_E$  gives

$$\eta_E(1, 0) = \frac{\pi - [\pi + (1 - \pi)^2](\mathcal{I} + E^2)}{(1 - \pi)\pi(\mathcal{I} + E^2)} . \quad (5)$$

The necessary and sufficient conditions for this expression to be positive and no greater than one are

$$-E^2 + \pi \leq \mathcal{I} \leq -E^2 + \frac{\pi}{\pi + (1 - \pi)^2}.$$

The requirement that the median voter at least weakly prefers the moderate over the incumbent in this case is equivalent to the condition  $\mathcal{I} \leq -M^2 + 1$ .

Finally, suppose the party leader is indifferent between nominating either politician if both are of high quality. Proceeding as before, an equilibrium with this feature can be shown to exist under the same conditions as in the previous paragraph  $\square$

As the preceding proof shows, there are up to three equilibria that satisfy the definition of Full Competition. All of them require that the median voter does not always vote for the extremist. In other words, the median voter must be playing a mixed strategy in case the extremist is nominated. In order to achieve the required indifference between the incumbent and the extremist the party leader herself must be playing a mixed strategy under a particular combination of qualities. In one possible equilibrium the party leader is indifferent between nominating either politician if both are of low quality (“low quality indifference”) while in the other two cases indifference holds for other combinations of qualities. The equilibrium with low quality indifference exists more widely, as can be seen in Figure 1, which exemplifies the existence conditions for the different types of equilibria for given values of  $\mathcal{I}$ ,  $\pi$ , and  $w$ .<sup>9</sup>

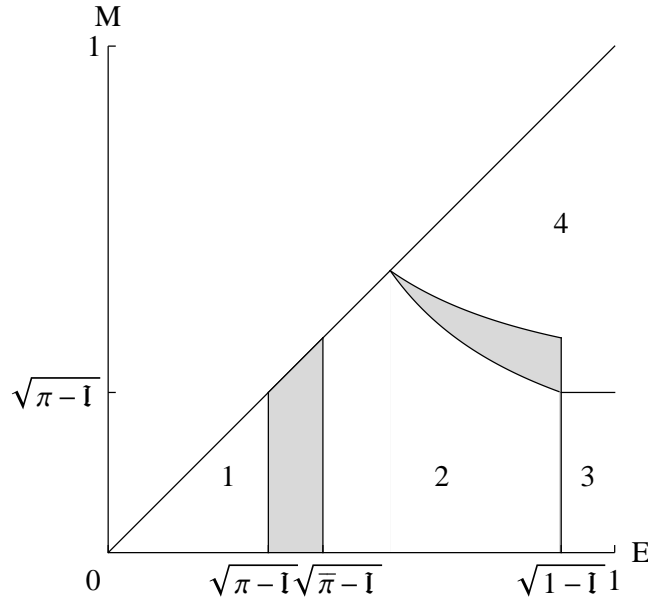
The possible combinations of  $M$  and  $E$  lie below the 45-degree line, as it holds that  $M < E$ . All regions where more than one equilibrium exists are shaded. The No Competition equilibrium exists in region 1, when both politicians are relatively close to zero. Full Competition occurs in region 2 and both shaded regions. Within this region, the equilibrium with low quality indifference exists everywhere while the other two cases are confined to the shaded region bordering on region 1. In region 3, where the extremist is located far from the median, the Limited Competition equilibrium is the unique equilibrium. Finally, in region 4 and the bordering shaded region equilibria exist where no politician of party  $C$  can get elected as both of them are too far from zero.<sup>10</sup>

Not all equilibria that exist under Full Competition discipline the party leader to act in the interest of the median voter to the same extent. However, as the degree of competition increases eventually the equilibrium with low

<sup>9</sup>For simplicity, the figure shows the limit case as  $w$  approaches zero. Otherwise region 1 would have to be subdivided according to the two different types of No Competition-equilibria.

<sup>10</sup>The boundaries on this region are derived in Appendix A.

Figure 1: Equilibrium for Different Positions of Politicians



quality indifference becomes the unique equilibrium.<sup>11</sup> In this equilibrium electoral incentives work very well in disciplining the party leader. This is in line with general message of the paper that electoral competition needs to be sufficiently strong in order to induce the part leader to select “good” candidates. For the remainder of the paper it will therefore implicitly be the equilibrium with low quality indifference that is referred to when Full Competition is mentioned. Under this equilibrium, the only case where the party leader does not always nominate the politician preferred by the median voter is the case of both politicians having low quality. Importantly, the fact that the party leader otherwise follows the preference of the median voter in her nomination choice is not driven by the party leader’s own preference for politicians of high quality. In fact,  $w$  can be arbitrarily small as long as it remains positive. This is because the ideological appeal of the extremist is neutralised by her lower electability in equilibrium. The party leader’s decision is therefore driven by quality even

<sup>11</sup>The degree of competition is captured by the strength of the incumbent  $\mathcal{I}$ , as will be discussed in more detail in Section 3.5.1.



when she attaches little value to quality in general.<sup>12</sup>

While the expected quality of the extremist is always such that the median voter is indifferent between the extremist and the incumbent, the relationship between the expected quality of the moderate and of the extremist depends on the utility that the median voter gets from re-electing the incumbent,  $\mathcal{I}$ , which can be interpreted as the degree of competition. If  $\mathcal{I}$  is relatively low and there is only moderate competition, expected quality is higher for the moderate than for the extremist as in the No-Competition case described above. As  $\mathcal{I}$  becomes larger and competition intensifies this relationship reverses. In short, it is electability that determines which choice of nominee signals higher quality. The ideological preferences of the party have a tendency to make the extremist look like the weaker candidate, but this is not true if this nomination choice implies a significant drop in the chance of winning the election.

The mixed strategy that the median voter plays when the extremist is nominated reflects the difficulty in maintaining the expectation that the extremist has high quality. Electing her any more frequently would make the extremist too attractive from the perspective of the party leader, which in turn would lower her expected quality and render this candidate a sure loser. A second interpretation of the mixed strategy is that the party leader is uncertain over the exact position of the median voter, which shows that the assumption of full information about the distribution of voters can be relaxed.<sup>13</sup>

### 3.4 Comparison to Primaries

A number of papers have argued that primaries reveal information about participating politicians and thus allow parties to select candidates of higher quality (Adams & Merrill 2008, Serra 2011, Snyder & Ting 2011). The way that candidates are generated in the absence of primaries in these papers, however, is that either there is only one candidate or that the nomination occurs at random, while the quality of the nominee remains unknown in either case. If parties were instead selecting candidates as described here, the advantage of primaries would be much less clear. To demonstrate this point, this section will compare the results presented so far to the outcomes under a simple version of primaries

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<sup>12</sup>Even though the re-election of the incumbent is certainly the worst outcome for the party leader, she does not always nominate the politician who is most likely to defeat the incumbent. This is noteworthy as observers sometimes chide primary voters for not voting for the candidate with the highest chance of winning the general election.

<sup>13</sup>This possibility will be discussed in more detail in Section 4

where the nomination is decided by a vote among the party's rank and file. It will be assumed that the median voter among primary voters is decisive and thus effectively chooses between the extremist and the moderate. Two additional assumptions skew the odds heavily in favour of primaries. First of all, the disadvantage of holding primaries from the perspective of the party leadership in Adams & Merrill (2008) and Serra (2011) is that primary voters may have differing ideological preferences. This disadvantage will be eliminated here by positing that the median voter in the primary election has the same utility function as the party leader. Secondly, it will be assumed that campaigning in the run-up to the primary perfectly reveals quality. Despite these assumptions the party leadership may still prefer to retain control over the nomination, as will be shown below. The timing of the game under primaries is as follows: First, nature draws qualities and these then become perfectly observable to all players during the campaign leading up to the primary election. Subsequently the primary election is held, followed by the general election between the incumbent and the winner of the primary.

The outcome of the primary election can be easily summarised: Under any realisation of qualities, the median voter in the primary selects the politician she most prefers among those politicians who are able to defeat the incumbent at the general election. As the median party member has the same preferences as the party leader, this is also the politician that the party leader would select if there was no asymmetric information. Primaries in this simple setting are therefore essentially as if the party leader was giving up her informational advantage. To understand the consequences for the party leader, note that without primaries there is always at least some pooling going on. That is, there is always a chance from the perspective of voters in the general election that the nominee of party  $C$  is of high quality. This enables the party leader to get even politicians of low quality elected. If the quality of candidates becomes observable, this may no longer be the case. If the incumbent is particularly strong, on the other hand, pooling may be a disadvantage if it makes all potential candidates of party  $C$  unelectable. Primaries may then enable the party to get at least politicians of high quality into office. A second potential advantage is that primaries increase the electability of an extremist of high quality relative to the case of Full Competition, which makes it worthwhile to nominate such an extremist more frequently as well. If  $\pi$  is large and candidates are likely to be of high quality, primaries will therefore tend to work in the party leader's favour. But if average quality is low, the disadvantages of primaries will outweigh the benefits and the

party leader is better nominating candidates herself. Importantly, this is true despite the assumption that there is no gap in terms of ideological preferences between the party leadership and primary voters. If such a gap existed, the party leader would be even less likely to be willing to give up control over the nomination.<sup>14</sup>

### 3.5 Comparative Statics

This section presents two comparative statics exercises. In particular, the effects of changes in the level of political competition and in the ideological bias of the party leader are analysed.

#### 3.5.1 Increasing Competition

A crucial determinant of the shape that equilibrium takes is the strength of the incumbent, as given by the utility  $\mathcal{I}$  that the median voter experiences in the case of re-election of the incumbent. A natural interpretation of  $\mathcal{I}$  is that it represents the degree of electoral competition that the party of the challenger faces. From this perspective the model generates a prediction about the relationship between electoral competition and the expected quality of politicians. This can be seen by fixing a combination of political positions for the moderate and the extremist, i.e. a point in Figure 1. For low enough values of  $\mathcal{I}$  any such point will lie in region 1, where party  $C$  faces No Competition. Increasing  $\mathcal{I}$  (increasing competition) shifts the boundaries that separate the different types of equilibria towards the origin. Therefore, eventually the case of Full Competition applies. Increasing competition even further can have either one of two effects. If the moderate and the extremist are located close to each other (their positions generate a point close to the 45-degree line in Figure 1) increasing  $\mathcal{I}$  will make the incumbent the certain winner of the election. If, on the other hand, there is a clear political difference between the moderate and the extremist, there exists an interval for values of  $\mathcal{I}$  in which equilibrium takes the shape of what was labelled Limited Competition, where only the moderate has a chance of defeating the incumbent.

The relationship between competition and the expected quality of the candidates of party  $C$  is illustrated in Figure 2 for a particular choice of parameter

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<sup>14</sup>An example of parameter values under which holding a primary makes the party leader better off is  $M = 1/2$ ,  $E = 3/4$ ,  $\pi = 4/5$ ,  $w = 1/2$ , and  $Y = 2$ . Reducing  $\pi$  to  $1/4$  while holding all other parameters constant implies that the party leader is better off selecting candidates herself.

values. The solid and dashed lines indicate expected quality in different equilibria, while dotted lines separate regions in which different types of equilibria apply. When  $\mathcal{I}$  is low and competition is weak, the “No Competition” equilibrium applies (region 1). In the example in the figure the party leader places little weight on quality and the absence of competition therefore results in candidates of low quality. As competition increases and the equilibrium switches to Full Competition (region 2), average quality increases as higher competition forces the incumbent to select candidates of higher quality.<sup>15</sup> In fact, the expected quality of the candidate of party  $C$  reaches its highest possible value in this equilibrium. To see this, note that under Full Competition the party leader never nominates a politician of low quality when a politician of high quality is available. The step from Full Competition to Limited Competition (region 3), in contrast, leads to a reduction in the quality of nominated politicians. At this point the extremist ceases to be a viable candidate as the median voter always prefers the incumbent. As the party leader is then forced to nominate the moderate, selection is no longer based on quality and the expected quality therefore drops back to average. Figure 3 shows that this drop in quality can also translate into a drop in the utility of the median voter. Put differently, higher political competition can be bad for voters.<sup>16</sup>

It should be noted that competition has been framed from the perspective of one party in this discussion. More generally speaking, one would actually consider the most competitive situation to be the one in which both parties face equal chances. In this perspective the model indeed predicts higher competition to lead to the nomination of candidates of higher quality. The unexpected result here is that reduced competition leads to worse outcomes both on the advantaged and the disadvantaged side.

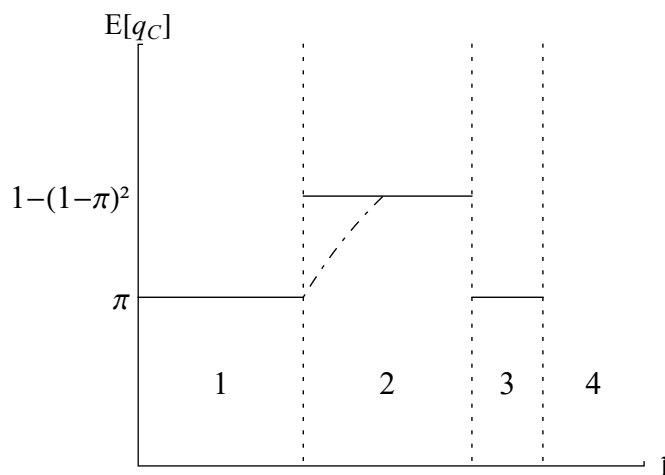
### 3.5.2 Common Interests

A central question raised in the introduction was whether the special interests of the party imply that it will select “bad” candidates. As was pointed out in previous sections, in the case of No Competition the median voter would indeed be better off if the party leader shared her political interests. In the case of Limited Competition, on the other hand, the preferences of the party

<sup>15</sup>This statement is true irrespective of which of the three equilibria that satisfy the definition of Full Competition is selected.

<sup>16</sup>The effect on all voters depends on the distribution of ideal points, but the possibility that the utility of the median voter can decrease as competition increases certainly implies that the same can be true for the sum of all voter utilities as well.

Figure 2: Effects of an Increase in Competition on the Expected Quality of Candidates of Party  $C$



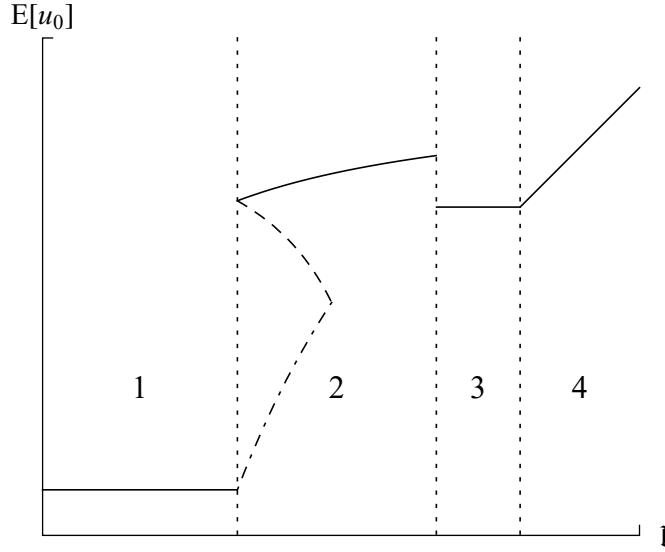
leader over policies were of no consequence. What has not been taken into account so far though is that the existence conditions for the different types of equilibria also depend on the preferences of the party leader. These boundaries are shown in Figure 4 for a party leader located at zero.<sup>17</sup> The boundaries on the equilibrium where the incumbent always gets re-elected (region 4) and the Limited Competition equilibrium (region 3) are unchanged. In contrast, the equilibrium where both the moderate and the extremist get elected with certainty exists much more widely, namely in region 1 in Figure 4. Previously, the binding constraint on the existence of the No Competition equilibrium was that the median voter had to prefer an extremist of average quality over the incumbent. A party leader with the same preferences as the median voter, in contrast, always selects the moderate while the extremist is believed to be of high quality according to Lemma 1. This shifts the boundary on the existence of this equilibrium outwards. Full Competition occurs in region 2.

When the party leader puts a relatively small weight on quality,<sup>18</sup> the change of the welfare of the median voter in the region where under diverging interests

<sup>17</sup>The derivation of the equilibria in the  $C = 0$ -case will not be given here as it proceeds exactly as in the case of  $C = 1$ . The figure again displays the limit case as  $w$  approaches zero.

<sup>18</sup>That is,  $w$  is below the threshold at which the party leader nominates a moderate of high quality under No Competition when the extremist has low quality.

Figure 3: Effects of an Increase in Competition on the Expected Utility of the Median Voter



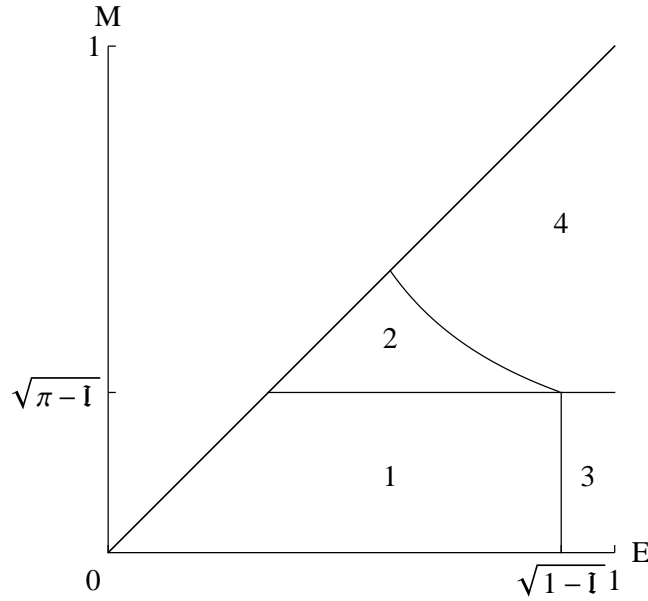
Full Competition applies while under common interests the moderate is always nominated is not immediately clear. Diverging interests lead to the nomination of higher quality candidates, while common interests result in the nomination of the preferred politician in terms of policy. In the latter case, the utility of the median voter is  $-M^2 + \pi$ . Under diverging interests, the expected utility of the median voter is given by

$$\tilde{\eta}_M(-M^2 + \bar{\pi}_M) + \tilde{\eta}_E[r(E)(-E^2 + \bar{\pi}_E) + (1 - r(E))\mathcal{I}] ,$$

where  $\tilde{\eta}_p$  denotes the ex-ante probability that politician  $p$  gets nominated. Replacing all strategies with their equilibrium expressions, some tedious but straightforward algebra shows that the difference in the utilities can be written as  $-\mathcal{I} - M^2$ . Therefore, the median voter is better off under common interests in this particular case if and only if  $-M^2 > \mathcal{I}$ . In words, the median voter has to prefer a moderate of low quality over the incumbent - a rather strong condition.

Similarly, common interests can work to the advantage or the disadvantage of

Figure 4: Equilibrium under Common Interests



the median voter in the case where Full Competition applies both under common and diverging interests, which will not be shown formally here. Without knowing the distributions that the characteristics of politicians are drawn from, it is therefore not clear whether the special interests of the party make the median voter better or worse off. However, there seems to be substantial possibility of the former at least in the case where the party leader attaches little weight to quality. The reason for this is that a party leader is more likely to nominate a candidate who is ex-ante attractive to the median voter if they share the same political interests. This, however, reduces competition and therefore leads to the selection of candidates of worse quality.

## 4 Robustness

The model features a number of assumptions that can be relaxed. First of all, the results are robust to adding some uncertainty over the position of the median voter. As was already mentioned in the discussion of the case of Full

Competition, it is possible to interpret the mixed strategy that the median voter is playing in this vein. The belief of the party leader over the position of the median voter would have to be given by a smooth density, which would make the election probability of the extremist a smooth function of her posterior quality. In contrast, all other equilibria do not feature mixing by the median voter but are nevertheless robust in a similar way. Here the differences between the possible candidates are so large that uncertainty over the position of the median voter would not translate into uncertainty over the outcome of the election.

Two further assumptions that will be discussed in more detail in the following two subsections are the additive separability of quality in the utility function of voters and the discrepancy between full information over politicians' positions and uncertainty over their quality.

#### 4.1 Non-Additive Quality

Specifying quality as additively separable from policy has received criticism in the past. The main argument is that it seems implausible that, for example, a left-wing voter would want a right-wing candidate to be very effective at implementing policy. Put differently, quality should become a bad for a sufficiently high political distance. It would be possible to allow for this effect by giving voters the following utility function:

$$-(i - x)^2 + h(|x - i|) \cdot q$$

where the function  $h : \mathbb{R}_+ \rightarrow \mathbb{R}$  is decreasing and positive at zero. The difficulty that arises with this specification is that the median voter may no longer be decisive, which would at the very least complicate the analysis of the model. However, additional assumptions would ensure the applicability of the median voter theorem (a proof can be found in Appendix B) while still allowing for an interaction between ideology and quality as described above. These assumptions are that the function  $h$  is concave and all voters are located in an interval  $[-d, d]$  with  $d > 0$  such that  $h(d) \geq 0$ .

If it is assumed in addition that  $d \geq 1$ , all the results remain qualitatively the same. A recent paper by Gouret et al. (2011) lends empirical support to the latter assumption. Using data from the French presidential election of 2007 the authors find that a utility function that allows for an interaction between quality and policy fits the data well while the simple additive utility function is



rejected. However, the parameter estimates indicate that the main candidates are well within the range in which higher quality is beneficial to the median voter.

## 4.2 Uncertainty about Politicians' Policy Preferences

The distribution of information imposed in the model may seem to lack a strong justification. While voters know much about the policies a candidate stands for they know little about quality. Furthermore, many of the findings seem to rest on this skewed information structure: Voters observe policy preferences and are able to make inferences about the quality of candidates based on this observation. This section will argue that it is possible to introduce uncertainty about the policy positions of politicians while leaving the main results intact.

To this end, suppose that the policy positions of the candidates of party  $C$ ,  $M$  and  $E$ , are drawn from the distributions functions  $F_M$  and  $F_E$  respectively. For the moment these will not be specified any further. A party leader confronted with a particular draw of positions and qualities will decide whom to nominate based on a comparison of the expected utility resulting from either choice. This utility depends on the chance of each politician winning the election. To keep things reasonably simple, the disutility from policy will now be given by the absolute value, rather than the square, of the difference between policy and ideal position of an agent. Furthermore, assume that the party leader expects that the moderate would get elected with certainty while the extremist would get elected with probability  $r(E)$ , as in the Full Competition case above. The decision rule of the party leader is then to nominate the moderate if and only if

$$-|M - 1| + w \cdot q_M + Y \geq r(E)[-|E - 1| + w \cdot q_E + Y] + (1 - r(E))[-|I - 1| + w \cdot q_I]$$

or equivalently

$$\begin{aligned} M - r(E)E &\geq r(E)[w \cdot q_E + Y] + (1 - r(E))(I + w \cdot q_I) - w \cdot q_M - Y \\ &\equiv K(q_C) . \end{aligned}$$

This choice rule implies that under different quality combinations politicians will be nominated with different probabilities and the nomination choice can therefore still be a signal of quality. The expected quality of a moderate nominated

according to this rule is

$$\bar{\pi}_M = \frac{\sum_{q \in \{0,1\}} \pi \Pr[q_E = q] \Pr[M - r(E)E \geq K(q_C)|q_C = (q, 1)]}{\sum_{q \in Q} \Pr[q_C = q] \Pr[M - r(E)E \geq K(q_C)|q_C = q]},$$

which is simply the probability that the moderate gets nominated conditional on being of high quality divided by the unconditional nomination probability. One way to find an expression for  $\Pr[M - r(E)E \geq K(q_C)]$  is to first derive the density of the random variable  $M - r(E)E$  at some point  $t$ . This is given by

$$\int_{\text{supp}(F_E)} f_E(e) f_M(t + r(E)e) de .$$

Appropriately integrating over this density one obtains the desired probability. The expression for the posterior quality of the extremist can be derived analogously.

Beyond quality the nomination choice can now also be a signal of the policy position of a candidate. Considering the decision rule of the party leader, one observation is immediate: If all possible candidates are closer to the median than the party leader, then it is impossible that the expectation of the posterior distribution of the policy position of a nominated politician is below the expectation of the prior distribution. If the party leader prefers to nominate the moderate for a given  $M$  then she must *ceteris paribus* prefer to nominate the moderate for any higher  $M$  as well, implying that the posterior distribution first order stochastically dominates the prior distribution. The same holds for the extremist. Therefore, if a nomination tells voters anything about the policies a candidate stands for then that these are more extreme than previously thought. In other words, politically extreme parties are bad for the median voter in terms of the political views of the candidates they select.

To find an expression for the expected policy position of a moderate nominated according to the decision rule above, first note that according to Bayes' rule the posterior probability density over  $M$  conditional on a certain quality combination  $q$  is given by

$$f_{M|q}(m) \equiv f_M(m) \frac{\Pr[M - r(E)E \geq K(q_C)|M = m, q_C = q]}{\Pr[M - r(E)E \geq K(q_C)|q_C = q]}$$

with

$$Pr[M - r(E)E \geq K(q_C)|M = m, q_C = q] = F_E([m - K(q_C)]/r(E)) .$$

The unconditional expected policy position of a nominated moderate is then given by the weighted sum of the conditional expectations:

$$\frac{\sum_{q \in Q} Pr[q_C = q] Pr[M - r(E)E \geq K(q_C)|q_C = q] \int_{\text{supp}(F_M)} m f_{M|q}(m) dm}{\sum_{q \in Q} Pr[q_C = q] Pr[M - r(E)E \geq K(q_C)|q_C = q]} .$$

Again, the expected policy position of the extremist follows analogously.

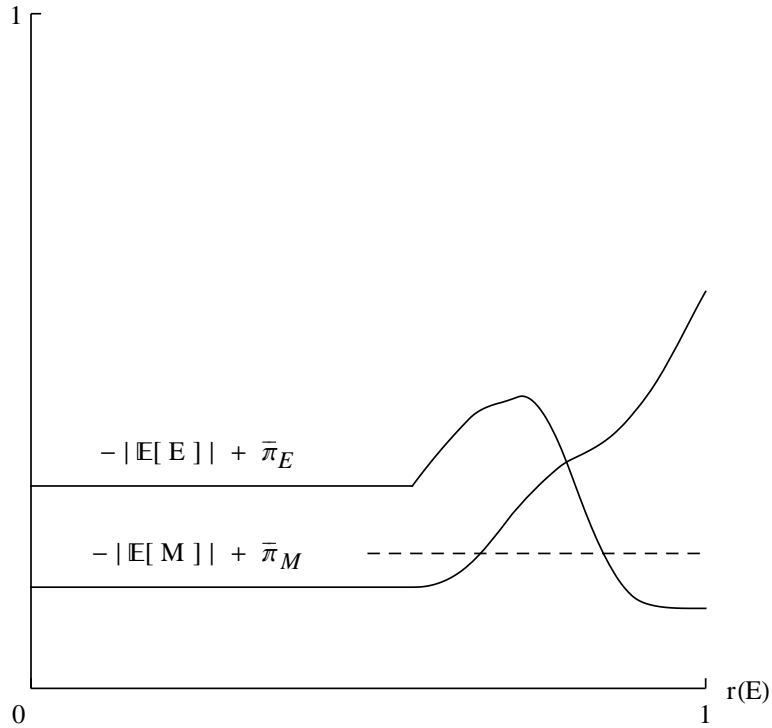
Giving a general description of equilibrium is beyond the scope of this paper. Instead, a specific example will be given to illustrate that the characteristics of the Full Competition equilibrium emphasized above remain unchanged in the extended model. It is assumed that both  $M$  and  $E$  are uniformly distributed with support  $[0.2, 0.5]$  and  $[0.4, 0.7]$ , respectively, while incumbent is located at  $-0.8$  and has high quality. Note that the moderate is expected to be closer to the median than the extremist, but the opposite might be the case in actuality. In addition,  $\pi = w = 0.5$  and  $Y = 1$  will be used.

Figure 5 plots the expected utility of the median voter from electing either politician of party  $C$ , which can be calculated using the expressions above, as a function of the probability  $r(E)$  that the extremist will get elected. The dashed line represents the utility that the incumbent receives in case the incumbent is re-elected. For low values of  $r(E)$  the party leader always selects the moderate and both expected utilities are flat in this region.<sup>19</sup> As  $r(E)$  increases the party leader finds it worthwhile to nominate the extremist for high values of  $E$  in the case where the extremist has high quality and the moderate has low quality, and eventually also for lower values of  $E$ . This makes the extremist less extreme in expectation and explains the initial increase in the expected utility from electing her. For even higher values of  $r(E)$  the extremist gets nominated under other quality combination as well, which lowers her expected quality and results in a decrease in utility for the median voter. The increase in the expected utility from electing the moderate, on the other hand, stems from the fact that her expected quality increases as it becomes more attractive to nominate the extremist.

The figure shows that there is an election probability of the extremist such

<sup>19</sup>In the extended model Universal Divinity implies that an unexpectedly nominated politician  $p$  is of high quality and located as close to the party leader as possible given the distribution  $F_p$ .

Figure 5: Expected Utilities with Uncertain Policy Positions



that the median voter is indifferent between the extremist and the incumbent while strictly preferring the moderate. This is equivalent to the Full Competition equilibrium described above.

## 5 Conclusion

This paper has presented a model of candidate selection through party elites where the central premise was that the party leadership has more information about the characteristics of potential candidates than voters do. Given that the party leadership itself has preferences over these characteristics, the nomination choice often reveals information about the chosen candidate to voters. What exactly voters learn depends on the degree of competition a party faces. When competition is low, the nomination of an extreme candidate serves as a signal

of low quality, while the opposite can be true when competition is more intense. In the latter case, electoral incentives strongly discipline the party leadership to select candidates in the interest of the median voter. Voters can therefore benefit when parties are polarized as this tends to increase competition compared to a situation where one party is located in the political centre.

An important implication of these results is that parties do not necessarily need to introduce primaries in order to generate candidates of high quality. In the model presented here the party leadership is often better off retaining control over the nomination of candidates even when many of the disadvantages of primaries discussed in the literature are absent. This raises the question whether alternative explanations for the introduction of primaries should be given closer consideration. For example, Hortala-Vallve & Mueller (2015) argue that primaries could help heterogeneous parties to prevent factions from defecting.

From the perspective of voters, the potential downside of candidate selection through party elites is that parties prioritize ideology and select low quality candidates when competition fails. Such failure is common at sub-national levels of government where often only one party stands a realistic chance of holding office. This seems to occur in districts where the electorate is politically more aligned with one particular party than at the national level. From this perspective, what is problematic about political parties is not that they select “bad” candidates per se, but their ability to insulate themselves from competition at least at the regional or local level.

# Appendix

## A Weakly Dominated Strategies

This appendix derives bounds on the existence of equilibria where the incumbent is re-elected with certainty. When no politician of party  $C$  is elected with positive probability the party leader is indifferent between any of her pure strategies. Given the restrictions on equilibrium strategies, whether this case can be an equilibrium crucially depends on which posterior beliefs can be generated by weakly undominated strategies.

Fix an arbitrary nomination strategy  $\eta$  and let  $m(\eta)$  be the ex-ante probability that the moderate gets nominated under  $\eta$ . A second strategy  $\eta'$  weakly dominates  $\eta$  only if  $m(\eta) = m(\eta')$ : In the case  $m(\eta) > m(\eta')$  the expected utility of the party leader under  $\eta$  would be strictly higher under  $\eta$  than under  $\eta'$  given that  $\varepsilon(M) = 1$  and  $\varepsilon(E) = 0$ , i.e. the median voter elects the moderate for sure and never elects the extremist. Similarly, if  $m(\eta) < m(\eta')$   $\eta$  gives a strictly higher utility for  $\varepsilon(M) = 0$  and  $\varepsilon(E) = 1$ .

Given this first result, the intuition for which strategies are weakly dominated can be given as follows: A strategy  $\eta$  is weakly dominated if and only if it is possible to find a second strategy  $\eta'$  such that  $m(\eta) = m(\eta')$  and  $\eta'$  nominates politician  $p$  more frequently when this politician is of high quality and less frequently when this politician is of low quality, relative to  $\eta$ . The remainder of the proof formalizes this idea.

It is claimed that any nomination strategy that features  $\eta_M(0, 1) > 0$  and  $\eta_M(1, 1) < 1$  is weakly dominated. Construct a second strategy  $\eta'_M$  by setting  $\eta'_M(1, 1) = \eta_M(1, 1) + \varepsilon$  and  $\eta'_M(0, 1) = \eta_M(0, 1) - \frac{\pi}{1-\pi}\varepsilon$  with  $\varepsilon > 0$  and leaving all other nomination probabilities unchanged relative to  $\eta_M$ . Choosing  $\varepsilon$  sufficiently small ensures that all probabilities in the new strategy  $\eta'_M$  are well defined. By construction, both politicians ex-ante get nominated with the same probability under  $\eta_M$  and  $\eta'_M$ . The only difference between the two strategies is that for the quality combination  $(1, 1)$  the moderate is nominated more frequently under  $\eta'_M$  than under  $\eta_M$ , while for the quality combination  $(0, 1)$  the moderate is nominated less frequently. The expected utility of the party leader under the

strategy  $\eta_M$  can be written as

$$\begin{aligned} \sum_{q \in Q} Pr[q_C = q] \left\{ \eta_M(q) [r(M)(-(M-1)^2 + Y + w(r(M), r(E))q_M) \right. \\ \left. + (1 - r(M))(-(I-1)^2)] \right. \\ \left. + (1 - \eta_M(q)) [r(E)(-(E-1)^2 + Y + w(r(M), r(E))q_E) \right. \\ \left. + (1 - r(E))(-(I-1)^2)] \right\}. \end{aligned}$$

Define  $U_M \equiv -(M-1)^2 + Y$ ,  $U_E \equiv -(E-1)^2 + Y$ , and  $U_I \equiv -(I-1)^2$ . The difference in the expected utilities under  $\eta'_M$  and  $\eta_M$  is

$$\begin{aligned} \pi^2 \varepsilon \left\{ r(M)(U_M + w(r(M), r(E))) + (1 - r(M))U_I \right. \\ \left. - r(E)(U_E + w(r(M), r(E))) - (1 - r(E))U_I \right\} \\ - \pi(1 - \pi) \frac{\pi}{1 - \pi} \varepsilon \left\{ r(M)U_M + (1 - r(M))U_I \right. \\ \left. - r(E)(U_E + w(r(M), r(E))) - (1 - r(E))U_I \right\}, \end{aligned}$$

which is equal to  $\pi^2 \varepsilon r(M) w(r(M), r(E))$  and non-negative for any election strategy  $r$ . This shows that  $\eta'_M$  weakly dominates  $\eta_M$ .

By analogous arguments any strategy such that either  $\eta_M(0, 0) > 0$  and  $\eta_M(1, 0) < 1$ ,  $\eta_M(0, 0) < 1$  and  $\eta_M(0, 1) > 0$ , or  $\eta_M(1, 0) < 1$  and  $\eta_M(1, 1) > 0$ , is weakly dominated as well. Now consider a strategy such that  $\eta_M(1, 0) < 1$ . For this strategy not to be weakly dominated it must be true that  $\eta_M(0, 0) = 0$  and  $\eta_M(1, 1) = 0$  by the second and fourth rule above, which in turn leads to the requirement  $\eta_M(0, 1) = 0$  by the third rule. Any resulting strategy is not weakly dominated, as the construction of a weakly dominating strategy would require reducing the probability of nominating a high quality moderate.

Next, consider a strategy such that  $\eta_M(1, 0) = 1$  and  $\eta_M(0, 1) > 0$ . By the first and third rule given above it must hold that  $\eta_M(1, 1) = 1$  and  $\eta_M(0, 0) = 1$  for this strategy to not be weakly dominated. Similar to before, to find a strategy that could weakly dominate this strategy it would be necessary to reduce the probability of nominating a high quality extremist, which would reduce utility against most strategies of the party leader.

Finally, let  $\eta_M(1, 0) = 1$  and  $\eta_M(0, 1) = 0$ . None of the conditions above

imposes any restrictions on  $\eta_M(0, 0)$  and  $\eta_M(1, 1)$ . Furthermore, any strategy of this kind is not weakly dominated. Raising the probability of nominating a high quality politician while keeping the ex-ante nomination probabilities constant necessarily implies reducing the probability of nominating the second politician when she is of high quality by an equivalent amount.

To summarize, there are only three different types of nomination strategies that are not weakly dominated:

- $\eta_M(1, 0) = 1, \eta_M(0, 1) = 0, 0 \leq \eta_M(0, 0) \leq 1, 0 \leq \eta_M(1, 1) \leq 1$
- $\eta_M(1, 0) = 1, \eta_M(0, 1) > 0, \eta_M(0, 0) = 1, \eta_M(1, 1) = 1$
- $\eta_M(1, 0) < 1, \eta_M(0, 1) = 0, \eta_M(0, 0) = 0, \eta_M(1, 1) = 0$

The second of these strategies nominates the extremist only if she has high quality and consequently  $\bar{\pi}_E = 1$  in this case. For the moderate this strategy implies

$$\bar{\pi}_M = \frac{\pi}{\pi + \pi(1 - \pi)\eta_M(0, 1) + (1 - \pi)^2} .$$

This expression achieves its minimum of  $\pi$  for  $\eta_M(0, 1) = 1$ . The conditions  $\mathcal{I} > -M^2 + \pi$  and  $\mathcal{I} > -E^2 + 1$  are therefore jointly sufficient for the existence of an equilibrium where  $r(M) = r(E) = 0$ . Similarly, the third strategy nominates the moderate only if she has high quality and  $\bar{\pi}_M = 1$  must hold, while the lowest posterior expectation over the quality of the extremist that this strategy can generate is  $\pi$  for  $\eta_M(1, 0) = 0$ . This implies the joint sufficient conditions  $\mathcal{I} > -M^2 + 1$  and  $\mathcal{I} > -E^2 + \pi$ , where the second condition is satisfied whenever the first condition holds.

For the first of the weakly undominated strategies given above the posterior expectations are

$$\bar{\pi}_M = \frac{\pi(1 - \pi) + \pi^2\eta_M(1, 1)}{\pi(1 - \pi) + \pi^2\eta_M(1, 1) + (1 - \pi)^2\eta_M(0, 0)} \quad (6)$$

and

$$\bar{\pi}_E = \frac{\pi(1 - \pi) + \pi^2(1 - \eta_M(1, 1))}{\pi(1 - \pi) + \pi^2(1 - \eta_M(1, 1)) + (1 - \pi)^2(1 - \eta_M(0, 0))} . \quad (7)$$

This strategy generates  $\bar{\pi}_E = 1$  if and only if  $\eta_M(0, 0) = 1$  and the lowest value of the posterior expectation  $\bar{\pi}_M$  that can be achieved in this case is  $\pi$ , which implies the same sufficient conditions as the first set of conditions given in the previous paragraph. On the other hand, the lowest value that the right-hand



side of Equation (7) can take is  $\pi$ . Together with the previous results this shows that no undominated strategy can lead to a posterior expected quality below  $\pi$  for any politician. It remains to show which sufficient conditions the current strategy yields if  $E$  is such that  $-E^2 + \pi \leq \mathcal{I} \leq -E^2 + 1$ . This requires for any such  $E$  to find the lowest  $M$  such that the median voter is indifferent between the incumbent and both politicians of party  $C$ . This  $M$  satisfies  $\mathcal{I} = -M^2 + \bar{\pi}_M^*$ , where  $\bar{\pi}_M^*$  is the solution to the minimization problem

$$\begin{aligned} \min_{0 \leq x, y \leq 1} & \frac{\pi(1-\pi) + \pi^2 x}{\pi(1-\pi) + \pi^2 x + (1-\pi)^2 y} \\ \text{s.t.} & -E^2 + \frac{\pi(1-\pi) + \pi^2(1-x)}{\pi(1-\pi) + \pi^2(1-x) + (1-\pi)^2(1-y)} = \mathcal{I} \end{aligned}$$

## B Non-Additive Quality

This appendix provides a proof for the claim in Section 4.1 that the median voter theorem applies if the utility function of voters is given by

$$-(i-x)^2 + h(|x-i|) \cdot q$$

as long as the following assumptions are satisfied: the function  $h : \mathbb{R}_+ \rightarrow \mathbb{R}$  is decreasing and concave, there exists a positive constant  $d$  such that  $h(d) \geq 0$ , and all voters are located in the interval  $[-d, d]$ . It needs to be shown that either all voters to the left or all voters to the right of the median voter agree with the preference ordering of the median voter for all possible combinations of candidates. Without loss of generality, assume that the median voter prefers the extremist over the incumbent: For  $i$  equal to zero it then holds that

$$-(E-i)^2 + h(|E-i|) \cdot \bar{\pi}_E > -(I-i)^2 + h(|I-i|) \cdot q_I. \quad (8)$$

Consider voters such that  $i \in [0, E]$ . As  $I < 0$  and  $E > 0$ , Inequality (8) must hold for these voters: The right-hand side of the expression is decreasing in  $i$  while the left-hand side is increasing on this interval.

Now consider voters located in the interval  $(E, d]$  in the case where  $d > E$ . These voters clearly prefer the extremist over the incumbent on ideological grounds. As  $h(|E-i|) \geq 0$  for any of these voters, the only way that they could prefer the incumbent over the extremist was if the quality  $q_I$  of the incumbent was larger than the expected quality  $\bar{\pi}_E$  of the extremist. But this, together

with the result shown above that a voter located at  $i = E$  must prefer the extremist over the incumbent, implies that all voters in the interval  $(E, d]$  must prefer the extremist as well. To see this note that it follows from  $h$  being concave and decreasing,  $q_I > \bar{\pi}_E$ , and  $I < E$  that the function  $h(|I - i|) \cdot q_I$  decreases at least as fast as the function  $h(|E - i|) \cdot \bar{\pi}_E$  in  $i$  on the interval  $(E, d]$ . It is then clear that Inequality (8) holds for all  $i \in (E, I]$ .

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