Electoral systems and programmatic parties: The institutional underpinnings of parties' ideological cohesion *

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Abstract

Conventional wisdom suggests candidate-centered electoral systems are associated with less cohesive parties, but little evidence supports this expectation. We show that, when accounting for incentives of party leaders, candidate-centered systems have the counterintuitive effect of promoting cohesion to achieve voting unity as a means to avoid relying on discipline. Our model derives implications of control over list rank held by leaders for cohesion under open lists (OLPR) and closed lists (CLPR). Because discipline is costlier in OLPR due to leaders' minimal control over list rank, leaders seeking voting unity propose policies that promote cohesion among members. Meanwhile, in CLPR, leaders can achieve unity by relying on discipline and therefore lack incentives to promote cohesion. These results hold after allowing for different sources of vote share and allowing leaders to recruit new members. We conclude that candidate-centered systems offer stronger incentives for ideological cohesion and programmatic party development compared to party-centered systems.

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1 Introduction

A large literature in comparative politics has emphasized the effect of electoral systems on the internal politics of political parties. Conventionally, the literature suggests that candidate-centered electoral systems, such as those using preferential voting to rank party lists, create incentives to cultivate a "personal vote" (Carey and Shugart, 1995; Katz, 1985). The personal vote is particularly associated with preferential voting under proportional representation, especially with "open lists," where individual candidate vote shares determine whether candidates win seats. A ballot structure in which candidates' votes are pivotal to winning a seat encourages an emphasis on individual reputations, and this incentive is known to be important in explaining many aspects of legislative behavior (Andr, Depauw and Shugart, 2014) and types of candidates Shugart, Valdini and Suominen (2005). Among the most prominent of these arguments is that candidate-centered electoral systems produce parties that have more difficulty in enforcing party discipline in legislative voting than party-centered electoral systems. Consequently, in this line of reasoning, the former will enjoy lower party unity than the latter. An array of work on the topic has found associations between candidate-centered party systems and less unified parties (Carey, 2008; Hix, 2004; Raunio, 2007; Mejía-Acosta et al., 2006; Depauw and Martin, 2005), although some studies fail to find strong evidence for this relationship (Santos, 2007; Desposato, 2006; Sieberer, 2006; Coman, 2015).

One of the possible mechanisms underlying such expectations is the notion that candidate-centered electoral systems should undermine not only voting unity but *ideological cohesion* by increasing the diversity of preferences within the party. As Kitschelt and Smyth (2002) argue, "party cohesiveness is least likely in multimember districts that use preferential votes to choose individual candidates on party lists;" and, further, "candidate-centered competition opens the door to clientelist party formation." Scheiner (2006) similarly states that "where institutions encourage personalistic competition, coherent and complex programmatic parties are slow to develop because of the differing, personal agendas of their members."[1] The expected link between personalized electoral systems and ideological cohesion has also led to an array of arguments regarding the policy implications of personal vote electoral systems (e.g. Golden and Chang 2001; Bowler et al. 1999; Colomer 2011; Picci, Golden and others 2007; Lyne 2008; Crisp et al. 2004; Cox and McCubbins 2001; Hallerberg and Marier 2004).

Taken together, the extant literature implies two related pieces of received wisdom. First, the higher discipline costs associated with candidate-centered electoral systems should lead to less party unity in voting in parliament (e.g. Hix 2004; Carey 2008). Second, the candidate-centered contexts in which disciplining members is more costly should also be associated with lower ideological cohesion (Kitschelt and Smyth, 2002), suggesting we should expect to see more heterogeneity in the policy preferences among party members under such systems. These arguments further imply that the party advantages in disciplining legislators in party-oriented electoral systems should facilitate ideological cohesion and, by extension, provide an advantage in the development of more programmatic parties. As noted, some empirical evidence shows that legislative voting unity is indeed more difficult to achieve in candidate-centered electoral systems, at least when incorporating the role of party nomination practices. However, although this is less well studied, there is little systematic evidence that party-centered rules directly encourage more cohesive, more ideological or more programmatic parties (Jones, 2005; Mejía-Acosta et al., 2006). In recent comparative work, Carroll and Kubo (2017) find no overall difference in party-level heterogeneity between parties elected under party-centered rules and those with intraparty competition.

Why do parties in preferential vote systems not produce less ideologically cohesive parties? To understand the incentives for producing cohesive parties, the fact that behavioral *unity* is more difficult for parties to achieve in a candidate-centered environment must be disentangled from the impact of such rules on preference *cohesion* (Hazan, 2003). Here,

[1]Of course, these expectations are not treated as deterministic relationships and these authors and many others in the literature point out important caveats. Still, if any systematic difference is expected, virtually all literature to our knowledge presumes that party-oriented electoral systems relatively more likely to encourage more programmatic parties.

we propose that parties' control over rank and desire for unity means that the very same mechanism that can reduce legislative voting unity—the cost of disciplining members—increases the likelihood of members' agreement with party proposals. We argue that parties seeking unity have an incentive to promote cohesion to offset these discipline costs. Counter-intuitively, then, electoral systems in which parties have *less* control over member's electoral rank actually encourage greater party cohesion. We present a formal model to assess the role played by party control over list rank—the leadership's ability to determine the priority with which party members enter the legislature—in channeling incentives for party cohesion. The key mechanism at work is that, as their electoral leverage over members declines, party leaders will seek policies requiring the least discipline. This further implies that leaders have a greater incentive to avoid recruiting members that reduce cohesion and therefore require more effort at discipline.

To the extent that programmatic parties are based on ideologically cohesive parties, our model suggests that preferential voting systems produce incentives in equilibrium that would offer a *greater* likelihood for programmatic party development than those with purely party voting, such as fully closed-lists. Although electoral systems are only one factor in determining party cohesion, our account provides an important contribution to understanding the empirical record on parties and electoral systems.

2 A Model of Discipline and Cohesion

Our game-theoretic model isolates the role played by electoral institutions in channeling incentives for a party's ideological cohesion. We exploit the fact that there are two ways parties may achieve voting unity. One is for party leaders to employ discipline—and thus modify the incentives of individual members to vote with the party. The second is for party leaders to increase the proximity between the preferences of members and the policies introduced by the party leadership. We address the question of when party leaders have incentives to seek cohesion to produce voting unity instead of relying on sheer discipline.

Our model thus focuses on the party leader's incentives for setting policies, and power over influencing MPs' ranking, to reduce the distance between MP preferences and the leader's policy proposals, therefore producing both unity and ideological cohesion. We focus first on leaders' endogenous agenda-setting powers as a key strategy to compensate for lack of control over a member's rank on the ballot.

The model is based on the idea that how cohesion is achieved hinges on distinguishing between the control over rank held by leaders within list systems.[2] It focuses on the interaction between the party leadership and a party member, where the leader first proposes a policy and the member's responds with a choice of vote, "aye" or "nay," and the outcome is then implemented. Following the vote, the leader has an opportunity to influence a candidate's nomination, which depends on the power over rank afforded to the leader by the electoral system. While ranking high a supportive member conveys a benefit to the leader, a member voting against the leader is a liability that negatively impacts party unity.

2.1 Comparison to existing models

Several authors working on related topics have modeled the effect of the electoral rules on party behavior or organization, each of which is partly related to the topic at hand but differs from our focus in important ways. Matakos, Troumpounis and Xefteris (2016) for instance, investigate the effect of the disproportionality of electoral rules on inter-party polarization—the spatial distance between the most extreme party platforms. We are interested in a similar concept at the intraparty level—the distance of policy proposals to the ideal points of members of the same party. Closer to this focus, Adams and Merril III (1999) investigate the effect of voter preferences on intraparty processes that ultimately move parties' policies away from convergence with the median voter and adopt more extreme positions than their

[2]Note that, in our discussion, the leader's control over rank is limited by the personal vote element of the electoral system. However, the logic of the argument applies also to nomination rules that could interact with the electoral system to produce the overall degree of rank control.

voting base. In an extension below, we incorporate voters to make predictions related to the findings of these authors.

There is also work that deals directly with the related topic of party nomination institutions, such as primaries, but again with a different emphasis. In a model that treats the choice of nomination practices as an endogenous party decision, Serra (2011) finds that primaries will emerge as the choice of parties that are dealing with relatively moderate electorates because primaries increase the expected valence of a candidate that is nominated this way. Ascencio-Bonfil (2017) also compares direct and indirect nomination procedures but uncovers instances where the leadership benefits from primaries even though they know with certainty which candidate is the higher-quality one. Finally, a model presented by Jackson, Mathevet and Mattes (2007) separates methods of candidate nomination, ranging from primaries to nominations by party leaders to a fundraising competition, and looks at the consequences of these nomination procedures for policy outcomes.

None of these authors look directly at the intraparty consequences of electoral rules and generally differ in modeling approach. Our model builds most directly on agenda-setting work by Krehbiel (2010) and Romer and Rosenthal (1979), in that it exploits the asymmetry between the agenda-setting party leader and agenda-taking member (whose actions are limited to a simple up or down vote). We extend the agenda-setting and pivotal politics models by equipping the agenda-setting party leader with the tools to promote or hinder the member's career in reaction to his response and allow the ability to sanction members to vary from one electoral rule to another.

2.2 Baseline Model

The goal of the baseline model is to formalize the intuition presented above to derive our main result that high party control over rank (as seen in CLPR systems), decreases party cohesion. This occurs as a byproduct of how cheaply leaders can get their party members to support legislation that those members oppose. We are able to obtain this result without modeling the sources of individual members' vote share. We also propose three extensions of our model. The goal of these extensions is to specify in more detail under what conditions (defined in terms of sources of individual vote share or additional recruitment opportunities) the result about the effects of electoral rules on party cohesion will hold. In the first extension, we endogenize vote share making it a function of legislative behavior (the representative's action) and ranking decisions (the Leader's actions). In the second extension, we allow for vote share to be determined by factors beyond legislative behavior and ranking decisions. In the third extension, we speculate what would happen if the leader could recruit members with different ideal points than the representatives currently in his party.

2.2.1 Players

In the model, there are two players: the Leader L, characterized by an ideal point $l = 0$ and a member of his party, whom we call "Representative," R, with an ideal point $r \epsilon \Re$. The ideal points of the Leader and Representative are in a uni-dimensional policy space, which also contains a status quo, $s < 0$. To ensure that there is some conflict between the Leader and Representative, such that the problem is interesting to model, we assume $r < \frac{s}{2}$.[3]

2.2.2 Timing and Strategies

The game has four stages. In the first stage, L chooses a policy $x \epsilon \Re$ that serves as an alternative to the exogenously given status quo, s. Following L's decision, in the second stage, R decides whether to vote for the policy selected by L or for its alternative. Following R's decision, the policy he voted for is implemented. In stage three, before elections take place L, decides whether to rank the representative "High" or "Low." What "High" and "Low" actually mean is defined by the thresholds that R's vote share needs to exceed in

[3]We leave aside the question of the origin of the leader's policy position as extreme relative to that of the representative. We note that leaders' positions need not overlap with that of party medians. For instance, in a recent paper Patty et al. (2018) model a situation where the most effective way of signaling a politician's valence is promoting to a leadership position a member whose ideal point does not correspond to that of the party. This signal is credible because it shows that the member's valence qualities are *so* high to compensate for his divergent preferences.

order for the Representative to be reelected. The leader's choice of 'High" rank means that R's vote share will have to exceed threshold $\underline{v}$ in order to be reelected. The Leader's choice of "Low" rank means that R's vote share will have to exceed the threshold $\bar{v}$ in order for the Representative to be reelected and $0 < \underline{v} < \bar{v} < 1$. This way of operationalizing control over rank was originally proposed by (*Competing Principals? Legislative Representation in List PR Systems*, 2017) In the fourth stage the representative's vote share, v is drawn from a uniform distribution over the interval $[0, 1]$. If $v > \underline{v}$ (if the Leader ranked the Representative "High") or if $v > \bar{v}$ (if the Leader ranked the Representative "Low"), the Representative is reelected to the legislature. Otherwise, he is replaced.

The party leadership's control over rank is represented by how far apart the exogenously given $\underline{v}$ and $\bar{v}$ are located. The greater $\bar{v} - \underline{v}$, the closer the electoral system is to Closed-list PR as the leader has substantial control over the representative's prospects for reelection. As $\bar{v} - \underline{v}$ approaches 0, the closer the electoral system is to open-list PR, as the leader's control over rank is less consequential for the representative's reelection. Intermediate values of $\bar{v} - \underline{v}$ correspond to "flexible list" systems.

The representative has two actions in the second stage of the game: $\{yes, no\}$. Following Romer and Rosenthal (1979) the Representative's strategy set is the set of all the partitions of the policy space into an acceptance region and a rejection region, where the acceptance region contains policies the representative will support over the status quo. Thus, the strategy space of the representative is defined as $S_R = \{Y \subset \Re : x \epsilon Y \implies R \text{ accepts } x\}$.

A strategy of a leader is a pair (x, p), where $x \epsilon [s, 0]$ and $p \epsilon \{High, Low\}$. p is the action of the Leader taken in the third stage and is a function of the Leader's action in the first stage and the Representative's action. Thus $p(x, a_R) : \Re \times P(\Re) \rightarrow \{High, Low\}$. The leader's strategy space is defined as: $S_L = \Re \times \{High|x, High|s, Low|x, Low|s\}$.

2.2.3 Payoffs

The utility functions of L and R depend on the proximity of the players' ideal points to the policy alternative that is implemented as a result of the game as well as three parameters representing information about vote share and the effects of electoral systems on control over rank. Below they are defined in terms of the final policy outcome, y:

$$U_L(y) = -|y - 0|$$

$$U_R(y) = -|y - r| + f(w)$$

, where w is the payoff from reelection, so that:

$$f(w) = \begin{cases} w & \text{if } v \geq \bar{v} \text{ and p=Low;} \\ w & \text{if } v \geq \underline{\text{v}} \text{ and p=High;} \\ 0 & \text{otherwise.} \end{cases}$$

2.2.4 Analysis

This model is one of complete information and can be solved for subgame perfect equilibria by backward induction.

First, we show that it is optimal for L to play:

$$p(a_r) = \begin{cases} High & \text{if Representative votes x;} \\ Low & \text{if Representative votes s.} \end{cases}$$

This means that after v is drawn, the representative gets reelected provided he voted for x and $v > \underline{\text{v}}$ or if he voted for s but $v > \bar{v}$.

This strategy is optimal because there is no cost the Leader pays for disciplining the Representative. Furthermore, note that none of the other three actions that the Leader could take in the third stage would yield a higher payoff. To see this, note first that if the

Leader did not discriminate between actions following x and s, R would always choose s (because of the conflict assumption we made above). Second, it cannot be optimal for the Leader to play $low|x$ and $high|s$, because that would persuade the representative never to support x. But under the $High|x$ and $low|s$ he could be convinced to vote for x sometimes, which is better for the Leader than s.

To solve for the optimal strategy in the second stage, note that the representative will accept $x > s$ if and only if

$$-|x-r| + Pr(reelection|high) * w \geq -|s-r| + Pr(reelection|low) * w \tag{1}$$

Note also that:

$Pr(reelection|high) = Pr(v > \underline{\text{v}}) = 1 - \underline{\text{v}}$ and $Pr(reelection|low) = Pr(v > \bar{v}) = 1 - \bar{v}$

In order to reduce the absolute values in expression 1, we have to consider two cases:

1. $r < s$, where equation 1 reduces to

   $-x + r + (1 - \underline{\text{v}}) * w \geq -(s - r) + (1 - \bar{v}) * w$, which simplifies further to:

   $x \leq s + w(\bar{v} - \_v)$.

2. $s \leq r$: where equation 1 reduces to:

   $-x + r + (1 - \underline{\text{v}}) * w \geq -r + s + (1 - \bar{v}) * w$, which simplifies further to:

   $x \leq 2r - s + w(\bar{v} - \_v)$.

In stage 1, the Leader benefits from the outcome closest to his ideal point, so in equilibrium, he will choose $x^* = s + w(\bar{v} - \_v)$ if $r < s$ and he will choose $x^* = s - 2r + w(\bar{v} - \underline{\text{v}})$ if $r \geq s$. To see that this is better for the Leader than choosing any $x > x^*$, note that by assumption, $w > 0$ and $(\bar{v} - \_v) > 0$. Furthermore since $2r - s > s$, x^* gives the leader a higher payoff that $x > x^*$. In the case of very high control over rank, however, which is operationalized by the $\bar{v} - \_v$ differential or a very high value of winning, w, when $r > s$, it is possible for

$x^* > 0$, which is the leader's ideal point. Thus in this case, his optimal strategy should be written as $x^* = min\{s - 2r + w(\bar{v} - \underline{v}), 0\}$

Our first proposition describes this equilibrium as follows:

Proposition 2.1 *Let*

$$x^* \equiv \begin{cases} 2r - s + w(\bar{v} - \underline{v}) & \textit{if } r > s; \\ s + w(\bar{v} - \underline{v}) & \textit{if } s > r. \end{cases}$$

In Equilibrium, the Leader proposes x^*, which is accepted by the Representative. This proposal approaches the ideal point of the representative as the Leader's control over rank, $(\bar{v} - \underline{v})$, declines.[4]

The proposition above describes the equilibrium of this model and a critical comparative static. Namely, increasing control over rank, that is, changing the electoral system from open-list to closed-list PR, which is represented in the model as an increase in $(\bar{v} - \underline{v})$ allows the leader to make proposals that are further removed from the representative and get them accepted. This means that electoral systems where control over rank is high, such as CLPR, give leaders the power to make proposals that party members systematically disagree with and expect those proposals made by the leadership to be accepted. And conversely, when control over rank is low, that is, as $\bar{v}$ approaches $\underline{v}$, Leaders in equilibrium make proposals that are closer to their representatives' ideal points, increasing party cohesion.

Recall, that we interpret party cohesion here as the situation where proposals are supported by representatives because they are better aligned with those representatives' ideal points and not because they fear for being ranked low and losing the election. The first implication of our model can be stated as follows:

Implication 1 Because control over rank is inversely related to party cohesion, CLPR

[4] We assume here that s is sufficiently small relative to w that the leader never "hits" his ideal point. Without that assumption, the optimal strategy in each case would be written as

$$x^* \equiv \begin{cases} min\{0, 2r - s + w(\bar{v} - \underline{v})\} & \text{if } r > s; \\ min\{0, s + w(\bar{v} - \underline{v})\} & \text{if } s > r. \end{cases}$$

systems, produce less cohesive parties than OLPR systems.

2.3 Extension I: Endogenous Vote Share

So far, in our baseline model, we allowed the vote share of the representative to come from a uniform distribution defined over the interval $[0, 1]$ and to be independent of the actions taken by the Representative and the Leader. In the extension discussed in this section, we build on a strategy originally proposed in (*Competing Principals? Legislative Representation in List PR Systems*, 2017) making the probability with which a Representative is elected to office depend on legislative behavior (the Representative's action) and ranking decisions (the Leader's action) as follows:

$F(v|yes, High) = U[0, \alpha]$

$F(v|yes, Low) = U[0, \beta]$

$F(v|n, High) = U[0, \gamma]$

$F(v|n, Low) = U[0, \delta]$,

where $0 < \beta, \gamma, \delta < \alpha < 1$. Next, we let the specific relationship between $\alpha, \beta, \gamma, \delta$ represent different ways in which legislative behavior and ranking decisions affect representatives' vote share.

A second difference we introduce in this extension relative to the baseline model is a benefit accrued to the Leader from the representative's vote share if the representative is reelected. This is reflected by q in the new payoff of the leader:

$$U_L(x, p) = -|0 - a_R| + f(w) * q * v$$

, where $f(w)$ is defined as above. q can be interpreted as a measure of how much the Leader values having more votes (and down the line, more seats) relative to party unity. The thresholds of $\underline{v}, \bar{v}$ and the Representative's utility function are defined as before.

We can express the probability with which the Representative's vote share exceeds the threshold to be reelected as a function of the actions of the Representative and the Leader as follows:

$Pr(reelection|High, yes) = Pr(v > \underline{v}|yes) = \frac{\alpha - \underline{v}}{\alpha}$

$Pr(reelection|Low, yes) = Pr(v > \bar{v}|yes) = \frac{\beta - \bar{v}}{\beta}$

$Pr(reelection|High, no) = Pr(v > \underline{v}|yes) = \frac{\gamma - \underline{v}}{\gamma}$

$Pr(reelection|Low, no) = Pr(v > \bar{v}|yes) = \frac{\delta - \bar{v}}{\delta}$.

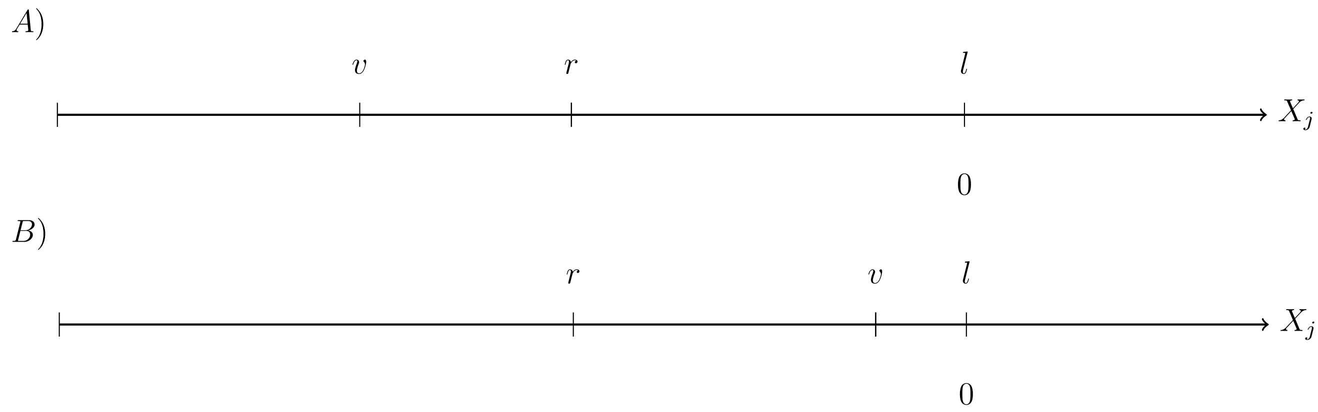
In order to compare this model with the baseline, we will find the equilibrium outcomes for two general scenarios, which can be interpreted to reflect the placement of the party's electorate vis a vis the Leader and the Representative, as represented below in Figure 1.

Before discussing these scenarios, we make a (highly plausible) assumption that when the Representative supports the Leader and the Leader ranks him high, his vote share is higher than in any other circumstances. In terms of the relationship between $\alpha, \beta, \gamma, \delta$, this can be expressed as $\alpha = max\{\alpha, \beta, \gamma, \delta\}$.

Consider now panel A of Figure 1. Here, the electorate is more extreme than the Representative, who is in turn more extreme than the Leader. Thus, when the Representative votes against the Leader and is punished by the Leader with a lower rank, he is likely representing the interests of the electorate. Therefore, it is highly likely that in this scenario, she will gain more vote share than if the Leader ranked him high following insubordination. In terms of the relationship between $\alpha, \beta, \gamma, \delta$, we can express this as $\delta \geq \gamma$. We strengthen this expression just slightly in order to streamline our calculations and express it as $\gamma - \delta < \bar{v} - \underline{v}$. We first solve the model for the $\bar{v} - \underline{v} < \delta - \gamma$ case. In this scenario, as derived above, the Leader plays High—yes and Low—no. Following this, we will solve it for $\bar{v} - \underline{v} > \delta - \gamma$.

Scenario A $\tilde{v} - \underline{\mathbf{v}} < \delta - \gamma$: Under this scenario, supporting the leader and being ranked high provides the Representative with the highest vote share. At the same time, withholding

Figure 1: Two scenarios for sources of vote share



support for the Leader is associated with more vote share when the Representative is ranked low than when he is ranked high. This profile of distributions corresponds to an extreme party base and a moderate party leadership with the Representative negotiating between the two. This scenario resembles Carey's "dual principals" model of legislative accountability Carey (2009), in which party leaders and voters simultaneously hold legislators accountable for their votes. In our model, every time the Representative caters to the voters he is rewarded for it with higher vote shares, especially when the Leader ranks him low.

We begin solving this scenario by showing that the optimal action in the last period for the Leader is to rank the Representative who supports the Leader high and to rank the representative who does not support the Leader low. To demonstrate this, we need to compare the expected utility of the Leader from the different ranking decisions under the yes scenario and under the no scenario.

First, under the "no" scenario:

$E_L(High|no) = -|0-s| + Pr(v > \underline{v}|High, no) * E(v|High, no) * q < E_L(Low|no) = -|0-s| + Pr(v > \bar{v}) * E(v|Low, no) * q >$ reduces to:

$-s + \frac{\gamma - \underline{v}}{\gamma} * \frac{\gamma}{2} q < -s + \frac{\delta - \bar{v}}{\delta} * \frac{\delta}{2} q$, which further reduces to

$\bar{v} - \underline{v} < \delta - \gamma$.

This condition means that the difference between the vote share prospects of the naysayers ranked low (from the distribution limited by δ) and the vote share prospects of the naysayers ranked high (from the distribution limited by γ) has to be greater than control over rank, expressed by $\bar{v} - \underline{v}$.

Second, under the "yes" scenario:

$E_L(High|yes) = -|0 - s| + Pr(v > \underline{v}) * E(v|High, yes) * q > E_L(High|no) = -|0 - s| + Pr(v > \underline{v}) * E(v|High, no) * q >$

reduces to

$-s + \frac{\alpha - \underline{v}}{\alpha} * \frac{\alpha}{2} * q > -s + \frac{\beta}{2} * \frac{\beta - \bar{v}}{\beta} * q$, which reduces to

$\bar{v} - \underline{v} > \beta - \alpha$, which is always true, given that the left hand side of the inequality is non-negative and the right hand side is positive (by virtue of our assumption $\alpha = max\{\alpha, \beta, \gamma, \delta\}$).

As in the baseline model, when considering the optimal action of the Representative in the second stage, we must consider two cases: (1) $r < s$ and (2) $r > s$.

1. $r < s$

   The Representative will say yes to proposal x provided that:

   $-|x - r| + w * (\frac{\alpha - \underline{v}}{\alpha} \geq -|r - s| + w * \frac{\delta - \bar{v}}{\delta}$, which reduces to:

$$x \leq s + w * \frac{\alpha \bar{v} - \delta \underline{v}}{\alpha \delta} \tag{2}$$

   Since $\bar{v} > \underline{v}$ and $\alpha > \delta$, the representative will accept proposals to the right of the status quo, s. How far right these proposals are located will depend on the control over rank. The greater the control over rank, the more tolerant of departures away from his ideal point will the Representative be.

2. $s \leq r$

   The Representative will say yes to proposal x provided that:

$-|x-r|+w*(\frac{\alpha-\underline{v}}{\alpha}) \geq -|r-s|+w*(\frac{\delta-\bar{v}}{\delta})$, which reduces to:

$$x \leq 2r - s + w * \frac{\alpha\bar{v} - \delta\underline{v}}{\alpha\delta} \tag{3}$$

Since $2r-s > s$ and $\bar{v} > \underline{v}$ and $\alpha > \delta$ are both positive, the Leader can gain support for a proposal that is closer to his ideal point than s and have it accepted. Again, given that how far from the representative's ideal point these proposals are located will depend on the control over rank. The greater the control over rank, the more tolerant of departures away from his ideal point will the Representative be.

In the last step we need to check that the proposal that would be accepted, specified in equations 3 and 2 is indeed better for the Leader than proposing some $x > x^*$ This means that in case 1 ($r < s$):

$EU_L(x^*) = s + w(\frac{\alpha\bar{v}-\delta\underline{v}}{\alpha\delta}) + q * E(v|high, yes) * Pr(v > \underline{v}|high, yes) > E(x > x^*) = s + q * E(v|low, no) * Pr(v > \bar{v}|low, no)$, which is equivalent to:

$s + w(\frac{\alpha\bar{v}-\delta\underline{v}}{\alpha\delta}) + q * \frac{\alpha-\underline{v}}{2} > s + q * \frac{\delta-\bar{v}}{2}$, which reduces to

$$0 \leq \frac{(\alpha - \delta + \bar{v} - \underline{v})\alpha\delta}{(\alpha\bar{v} - \delta\underline{v})w} * \frac{q}{2} \tag{4}$$

Since all the components of the right hand side of this inequality are positive, we conclude that the leader's optimal strategy in the first stage is to propose $x^* = s + w * \frac{\alpha\bar{v}-\delta\underline{v}}{\alpha\delta}$.

For the case 2 ($r > s$), we have to first note that the Leader will only propose $x = x^*$ if $x^* < 0$, otherwise he will simply propose 0. Furthermore, we can show that $(2r-s+w(\frac{\alpha\bar{v}-\delta\underline{v}}{\alpha\delta})$ is greater than s, because otherwise, the representative would prefer the status quo. Thus it suffices to compare $q * E(v|high, yes) * Pr(v > \underline{v}|high, yes)$ to $q * E(v|low, no) * Pr(v > \bar{v}|low, no)$, that is show that $\frac{q(\alpha-\underline{v})}{2} \geq \frac{q(\delta-\bar{v})}{2}$, which is always the case by assumptions $\bar{v} > \underline{v}$ and $\alpha > \delta$.

Thus, we conclude that when control over rank is lower than the vote share differential between naysayers ranked low and the naysayers ranked high (i.e., $\bar{v}-\underline{v} < \delta-\gamma$), the outcome of this scenario is:[5]

$$x^* \equiv \begin{cases} 2r - s + w * \frac{\alpha\bar{v} - \delta\underline{\text{v}}}{\alpha\delta} & \text{if } r > s; \\ s + w * \frac{\alpha\bar{v} - \delta\underline{\text{v}}}{\alpha\delta} & \text{if } s > r. \end{cases}$$

Scenario B $\bar{v} - \underline{\mathbf{v}} \geq \delta - \gamma$: Now suppose that the assumption we used to establish the Leader's strategy as $High|yes$ and $Low|no$ above is not satisfied and instead $\bar{v} - \underline{\text{v}} > \delta - \gamma$. This could be interpreted as corresponding to the situation in Panel B of Figure 1, where the party leadership is moderate, but the Representative is more extreme than the party base. The empirical interpretation of this is that when the leadership punishes the naysayers with a low rank, the voters withdraw their support for the representative relative to the situation where the leadership would have ranked the Representative high. If this is the case, then the Leader plays $High|yes$, $High|no$. Under this scenario, the remainder of the game can be solved for SPE as follows:

1. $r < s$

   The representative accepts x iff

   $-|r-x| + Pr(v > \underline{v}|High, yes) * w \geq -|r-s| + Pr(v > \underline{\text{v}}|High, no) * w$, which reduces to:

$$x \leq s + w\underline{\text{v}}\frac{\alpha - \gamma}{\alpha\gamma} \tag{5}$$

2. $s < r$

   The representative accepts x iff

   $-|x-r| + Pr(v > \underline{\text{v}}|High, yes) * w \geq -|s-r| + Pr(v > \underline{\text{v}}|High, no) * w$, which reduces to:

[5] In order to avoid specifying the equilibrium using the "minimum function", we assume that s is sufficiently low relative to w to prevent the Leader exceeding his ideal point, 0 with the optimal proposal x^*. Relaxing this assumption would not change our main conclusions from the model.

$$x \leq 2r - s + w\underline{\text{v}}\frac{\alpha - \gamma}{\alpha\gamma} \tag{6}$$

In the final step we have to show that the Leader prefers making the proposal described in equations 6 and 5 is better for Leader than proposing something closer to his ideal point, that is: $EU_L(x^*) > EU_L(x > x^*)$, which in case $r < s$ means that:

$-|0 - (s + w\underline{\text{v}}(\frac{\alpha-\gamma}{\alpha\gamma})| + q\frac{\alpha}{2} * \frac{\alpha-\underline{\text{V}}}{\alpha} \geq -|0 - s| + q\frac{\gamma}{2}\frac{\gamma-\underline{\text{V}}}{\gamma}$.

This reduces to:

$w\underline{\text{V}}\frac{\alpha-\gamma}{\alpha\gamma} \geq q\frac{\gamma-\alpha}{2}$.

Since the left-hand side of the above inequality is always positive and the right hand of the inequality is always negative, this is always satisfied.

Turning to case $r > s$, note that $EU_L(x^*) > EU_L(x > x^*)$ reduces to

$-|0 - (2r - s + w\underline{\text{v}}(\frac{\alpha-\gamma}{\alpha\gamma})| + q\frac{\alpha}{2} * \frac{\alpha-\underline{\text{V}}}{\alpha} \geq -|0 - s| + q\frac{\gamma}{2}\frac{\gamma-\underline{\text{V}}}{\gamma}$.

This reduces to:

$2r - 2s + w\underline{\text{V}}\frac{\alpha-\gamma}{\alpha\gamma} \geq q\frac{\gamma-\alpha}{2}$.

Since both terms on the left hand side of this inequality are positive, while the term on the right hand side is negative, this expression is always true. We conclude that when the vote share differential between naysayers ranked low and the naysayers ranked high is smaller than control over rank (i.e., $\bar{v} - \underline{\text{v}} > \delta - \gamma$), the outcome of this scenario is

$$x^* \equiv \begin{cases} 2r - s + w * \underline{\text{v}}(\frac{\alpha-\gamma}{\alpha\delta}) & \text{if } r > s; \\ s + w * \underline{\text{v}}(\frac{\alpha-\gamma}{\alpha\delta}) & \text{if } s > r. \end{cases}$$

The key insight from solving this scenario is that the outcome of the interaction between the Leader and Representative does not depend on control over rank at all. We now collect the insights from these two scenarios, by sketching the equilibrium outcome, as a function of the $\bar{v} - \underline{\text{v}}$, which approximates control over rank. We do this in Figures 2. Since the equilibria in cases $r < s$ and $s < r$ are identical save for a constant (s in case $r < s$ is substituted with $2r - s$ in case $s < r$) we can show the results in one figure, after separating scenario A from scenario B with a dashed line. We will fix the parameters defining the vote share distributions for the Representative as follows:

$\alpha = .8$

$\beta = .2$

$\gamma = .3$

$\delta = .6$

In addition, for ease of calculation, we set $w = .96$ and since we our constrained to two dimensions, we will set $\bar{v} = .8$, and allow $\underline{\mathrm{v}}$ to vary from .8 (where $\bar{v} - \underline{\mathrm{v}}$ approaches 0, representing OLPR) to 0 (where $\bar{v} - \underline{\mathrm{v}}$ approaches .8, representing CLPR). To reflect the transition from scenario A to scenario B, at $\bar{v} - \underline{\mathrm{v}} = \delta - \gamma$, there is a point of discontinuity at $\underline{\mathrm{v}} = .5$ or $\bar{v} - \underline{\mathrm{v}} = .3$. Thus the equilibrium Figure 2 is presenting is given by:

$$x^* \equiv \begin{cases} s + w * (\frac{\alpha\bar{v} - \delta\underline{\mathrm{V}}}{\alpha\delta}) & \text{if } \bar{v} - \underline{\mathrm{v}} < \delta - \gamma; \\ s + w * \underline{\mathrm{v}}(\frac{\alpha - \gamma}{\alpha\gamma}) & \text{if } \bar{v} - \underline{\mathrm{v}} \geq \delta - \gamma. \end{cases}$$

for the $r < s$ case and

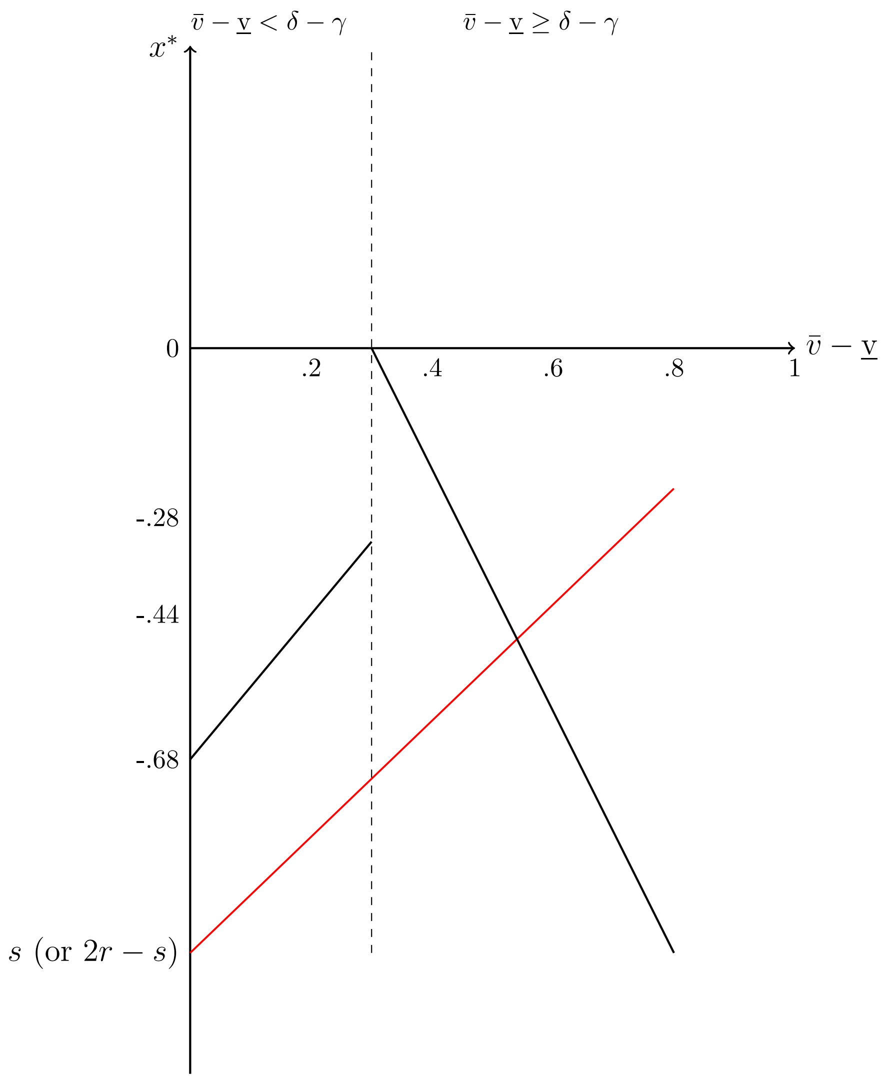
$$x^* \equiv \begin{cases} 2r - s + w * (\frac{\alpha\bar{v} - \delta\underline{\mathrm{V}}}{\alpha\delta} & \text{if } \bar{v} - \underline{\mathrm{v}} < \delta - \gamma; \\ 2r - s + w * \underline{\mathrm{v}}(\frac{\alpha - \gamma}{\alpha\gamma}) & \text{if } \bar{v} - \underline{\mathrm{v}} \geq \delta - \gamma. \end{cases}$$

for the $s < r$ case.

Since these predictions are the same but for the constant preceding the coefficient on w, we can use the same figure to represent the equilibrium predictions with $2r - s$ substituted for s

What we see is that in scenario A, corresponding to the extreme party base situation, an increase in rank decreases party cohesion. For this case (to the left of the dashed line) the Leader's proposal is closest to the Representative's ideal point for extremely low control over

Figure 2: How control over rank ($\bar{v} - \underline{v}$) affects party cohesion (equilibrium proposal of the Leader, x^*)



rank (corresponding to OLPR). However in scenario B, corresponding to the moderate party base situation, an increase in control over rank will increase cohesion. Most importantly, there is a sever point of discontinuity, at $\bar{v} - \underline{v} \geq \delta - \gamma$, where the effect of electoral rules switches to the opposite and where there is a sudden jump in cohesion (lowering cohesion).

However, even in scenario A, the level of cohesion is lower than in the baseline model, the equilibrium of which is represented in figure 2 in red.

Based on the above comparative statics and figure 2, we can formulate the following implications from extending our model to endogenize vote share.

Implication 2 If vote share is endogenous to legislative behavior and decisions about rank, control over rank affects cohesion in a non-monotonic way. Specifically, there is a point of discontinuity determined by how vote share is distributed when the representative disagrees with the leader. When control over rank is below this point of discontinuity, an increase in control over rank decreases party cohesion, as it induces the Leader to make proposals that are further away from the representative's ideal point. However, past that point of discontinuity, increasing control over rank increases party cohesion, inducing the leadership to make the proposal closer to the representative's ideal point.

Implication 3 The point of discontinuity at which the effect of control over rank switches to having the opposite effect does not depend on how much the Leader values votes relative to party unity, which is represented by q. It depends, however, on the extent to which votes reward the representative for siding with their preferences against the leadership when the leadership punishes the representative for doing so. The more extreme the party base relative to the Representative, the later this point of discontinuity is located.

2.4 Extension II: Electoral Systems and Candidate Quality

In the first extension, we did not distinguish between representatives' ability to secure vote share other than through legislative behavior or ranking decisions. However, one could argue that electoral systems may reveal information about an MP's electoral importance for the party. For instance, under open-list proportional representation (OLPR), where individual electoral performance determines a candidate's rank on the party list, exactly how many votes each member brings to the party list is transparent. This information can give members leverage against the leadership to avoid sanctions for violating voting discipline. In closed party lists (CLPR), although the party benefits from having popular members, no direct measure exists of a party's dependence on a specific member's electoral strength. We can refer to exogenous sources of vote share, that is sources that are not accounted for by legislative behavior or ranking decisions of leaders as "candidate quality." When it is common knowledge how much a Representative contributes to the party list, this common knowledge may become currency for extracting permission to violate party discipline. As an illustration of the meaning of such leverage in parliamentary voting under OLPR, a prominent member of Poland's Socialist Left Alliance (SLD), Jerzy Wenderlich, explains a situation in which the President asked 15 MPs to vote against their party:

> *"Normally, disobedience would result in having one's name removed from the list. However, among the 15, there were about 7 who were so-called 'steam engines' and removing them would result in losing considerable votes"* (Wenderlich, interview 2011)

In other words, under OLPR, elections offer candidates the opportunity to demonstrate their popularity and how dependent the party is on their contribution. In closed-list PR systems, although the gains to the party leadership from putting popular members on the list are proportional to their popularity, the electoral results do not provide a measure of how much of a list's vote share can be attributed to any specific member's popularity. Since her contribution to the list is obscured, a member cannot use it as leverage against party discipline. In other words, what sets CLPR apart from OLPR is not that candidates cannot drive the party vote, but rather that they lack an individual vote share that *directly* generates clout within the party. To be clear, in some instances a candidate under CLPR may be obviously driving the votes of the rest of the list and could therefore exploit such popularity in a manner similar to what we discuss in OLPR situations. However, this is not facilitated directly by the electoral system itself, as it is under OLPR. It is worth asking whether such transparency offers representatives another source of leverage vis-a-vis leaders and hence, whether it indeed induces leaders to promote cohesion by making proposals closer to their members' ideal points. We can answer this question by modifying our model to account transparency regarding what we will call "candidate quality."

In this extension, everything remains the same as in the baseline model, except that instead of vote share being drawn in the final stage of the game from the uniform distribution over $[0, 1]$, it is drawn from $[0, \frac{1}{2}]$ for a "low-quality" member and from $[\frac{1}{2}, 1]$ for a "high-quality" member. Whether a member is low or high-quality is common knowledge, that is both the member and the leader know from which distribution the vote share will be drawn. Because as in the baseline model, the Leader derives no additional benefit from the representative's vote share, it can easily be shown that in the final stage, playing the strategy "High"—yes and "Low—no" is a best response. Thus we can move in our solution to the second stage. We divide our solution into three cases:

1. $0 < \underline{v} < \bar{v} < \frac{1}{2} < 1$
2. $0 < \underline{v} < \frac{1}{2} < \bar{v} < 1$
3. $0 < \frac{1}{2} < \underline{v} < \bar{v} < 1$

Consider first case 1, where $0 < \underline{v} < \bar{v} < \frac{1}{2} < 1$. What this assumption says is that the high-quality representative is completely insensitive to ranking decisions, because given the electoral rules, regardless of whether he is ranked high or low, he is assured reelection. What follows from this assumption can be written as:

$$Pr(v > \underline{v}|hc) = Pr(v > \bar{v}|hc) = 1 \tag{7}$$

We will solve this case for $r < s$, noting that the solution for the $r > s$ case is identical save for substituting the constant $2r - s$ for x.

First, note that the high-quality representative will vote for x iff

$-|x-r| + Pr(v > \underline{v}|hc) * w \geq -|s-r| + Pr(v > \bar{v}|hc) * w$, which after substituting on equation 7 reduces to

$x \leq s$.

This is the highest compromise that could be extracted by the Representative as the Leader's proposal.

Consider now the low-quality member, who will accept the proposal x iff:

$-|x-r| + Pr(v > \underline{v}|lc) * w \geq -|r-s| + Pr(v > \bar{v}|lc) * w$. Substituting $\frac{.5-\underline{v}}{.5}$ and $\frac{.5-\bar{v}}{.5}$ for $Pr(v > \underline{v}|lc)$ and $Pr(v > \bar{v}|lc)$, respectively, leads us to predict that the low-quality representative accepts any proposal x such that $x \leq s + 2w(\bar{v} - \underline{v})$. Because the proposal $x^* = s + 2w(\bar{v} - \underline{v})$ is closer to the Leader's ideal point than s, he will accept it. Note, that this proposal is considerably closer to the Leader's ideal point than the proposal made to the high-quality representative and even closer to the Leader's ideal point that the baseline model proposal.

This is an intuitive result. Transparency allows the leader to discriminate between high and low-quality representatives and exploit this knowledge to his advantage. This outcome is summarized as follows:

$$x^* \equiv \begin{cases} s & \text{if high-quality;} \\ s + 2w(\bar{v} - \underline{v}) & \text{if low-quality.} \end{cases}$$

Next we consider case 2, where $0 < \underline{v} < \frac{1}{2} < \bar{v} < 1$. In this case, both high and low-quality representatives are sensitive to ranking decisions, although

$$Pr(v > \underline{v}|hc) = 1 \tag{8}$$

$$Pr(v > \bar{v}|lc) = 0$$

Note that in this case, the high clout leader will accept proposal x iff

$-|x-r| + Pr(v > \underline{v}|hc) * w \geq -|r-s| + Pr(v > \bar{v}|hc) * w$, which after using equation 8 and substituting $\frac{1-\bar{v}}{.5}$ for $Pr(v > \bar{v}|hc$ reduces to: $x \leq s + 2w(\bar{v} - \frac{1}{2})$. The low clout representative meanwhile will accept x provided that:

$-|x-r| + Pr(v > \underline{v}|lc) * w \geq -|r-s| + Pr(v > \bar{v}|lc) * w$,

which after using equation 8 and substituting $\frac{.5-\underline{v}}{.5}$ for $Pr(v > \underline{v}|hc$ reduces to: $x \leq s + 2w(\frac{1}{2} - \underline{v})$.

This proposal in both the low and the high clout case is closer to the Leader's ideal point than s, making the equilibrium proposal:

$$x^* \equiv \begin{cases} s + 2w(\bar{v} - \frac{1}{2}) & \text{if high-quality;} \\ s + 2w(\frac{1}{2} - \underline{v}) & \text{if low-quality.} \end{cases}$$

Finally, in the third case, we have $0 < \frac{1}{2}\underline{v} < \bar{v} < 1$, which now means that the low-quality representative is not affected by the ranking decision, because he has no chance of winning a seat anyway. We can write this as:

$$Pr(v > \underline{v}|lc) = 0 = Pr(v > \bar{v}|lc) \tag{9}$$

Now, the high-quality representative will accept proposal x when

$-|x-r| + \frac{1-\underline{v}}{.5} * w \geq -|r-s| + \frac{1-\bar{v}}{.5} * w$, which reduces to:

$x \leq s + 2w(\bar{v} - \underline{v})$.

This means that when dealing with the high-quality representative, the Leader under these circumstances is able to make the proposal considerably closer to his ideal point, closer than in the baseline model.

The low clout representative, on the other hand, will accept proposal x iff:

$-|x-r| + Pr(v > \underline{v}|lc) * w \geq -|r-s| + Pr(v > \bar{v}|lc) * w$, which after substituting in expressions from equation 9 reduces to:

$x \leq s$. This is the worst possible policy from the Leader's point of view, as it is just as good as the status quo. Yet, since it is no worse than the status quo, the equilibrium outcome in this case scenario can be written as:

$$x^* \equiv \begin{cases} s + 2w(\bar{v} - \underline{v}) & \text{if high-quality;} \\ s & \text{if low-quality.} \end{cases}$$

The figure below compares the optimal proposal made in the baseline model with the proposals made to the "high-clout" as well as the "low-clout representative. In order to show this comparison in a two dimensional figure we need to separate presentations, because we have to fix either $\underline{v}$ or $\bar{v}$ below or above $\frac{1}{2}$. We begin with fixing $\underline{v}$ at .2. This allows $\bar{v} - \underline{v}$ to vary from 0 to $\frac{4}{5}$ and allows us to cover cases 1 $(0 < \underline{v} < \bar{v} < \frac{1}{2} < 1)$ and 2 $(0 < \underline{v} < \frac{1}{2} < \bar{v} < 1)$ discussed above.

We see in figure 3 that, when control over rank is high, transparency about the quality of the candidate hurts the low-quality candidate but helps the high-quality candidate. It is only when the control over rank reaches the threshold of .6, that this relationship reverses and transparency hurts the high-quality candidate while helping the low-quality candidate.

One thing to keep in mind is that this pattern holds when the overall quality of the candidates is pretty high. That is, the high-quality candidate has absolutely no trouble clearing either the low or the high threshold. In the next figure, we will focus on the overall low-quality candidates. Thus, in this case, the effect of transparency is highly ambiguous relative to the baseline model.

Next, we fix $\bar{v} = \frac{4}{5}$. This allows $\bar{v} - \underline{v}$ to vary from 0 to $\frac{4}{5}$ and allows us to cover cases 2 $(0 < \frac{1}{2} < \underline{v} < \bar{v} < 1)$ and 3 $(0 < \frac{1}{2} < \underline{v} < \bar{v} < 1)$ discussed above. These cases could be interpreted as a situation where the overall quality of candidates is low. In the case of the low-quality Representative, he has no chance of clearing either the high or low threshold.

Figure 4 suggests now that when the overall quality of candidates is low, high control over rank hurts high-quality representatives (the green line is above the blue line). As control over rank decreases, however, the pattern reverses, with high-quality representatives ending

Figure 3: How transparency changes equilibrium proposal of the Leader, x^* (cases 1 and 2)

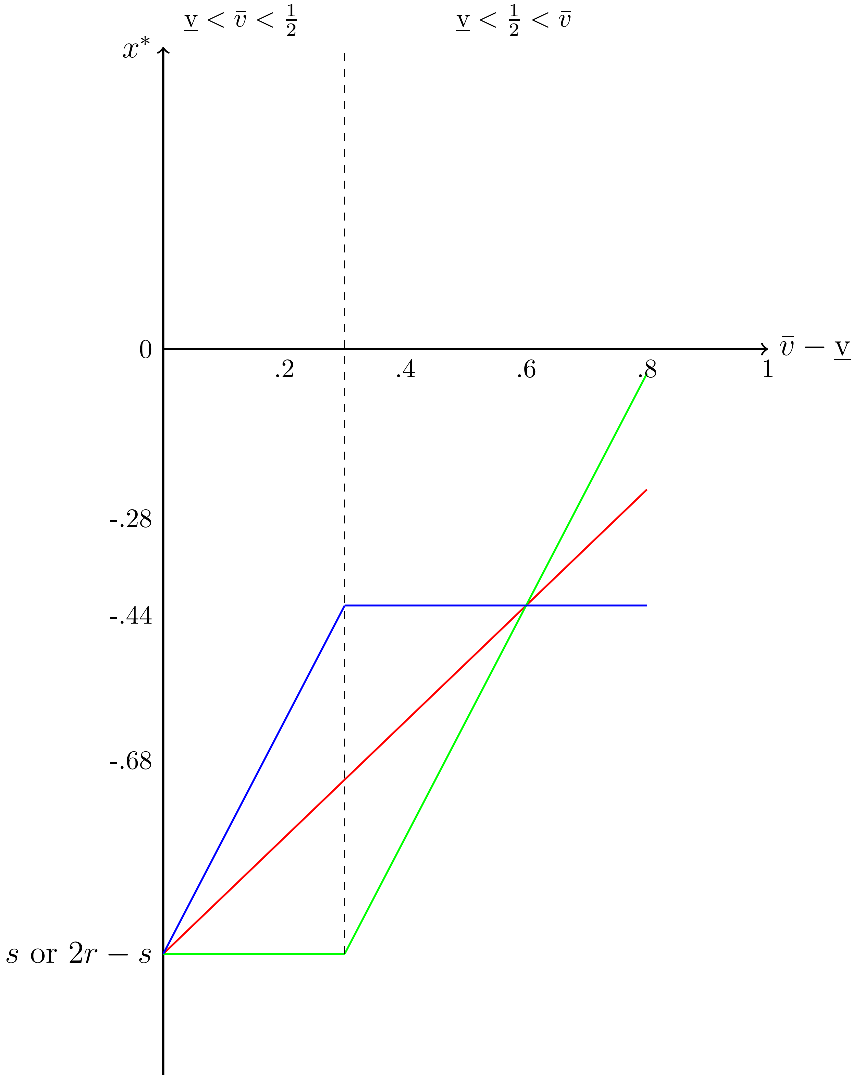
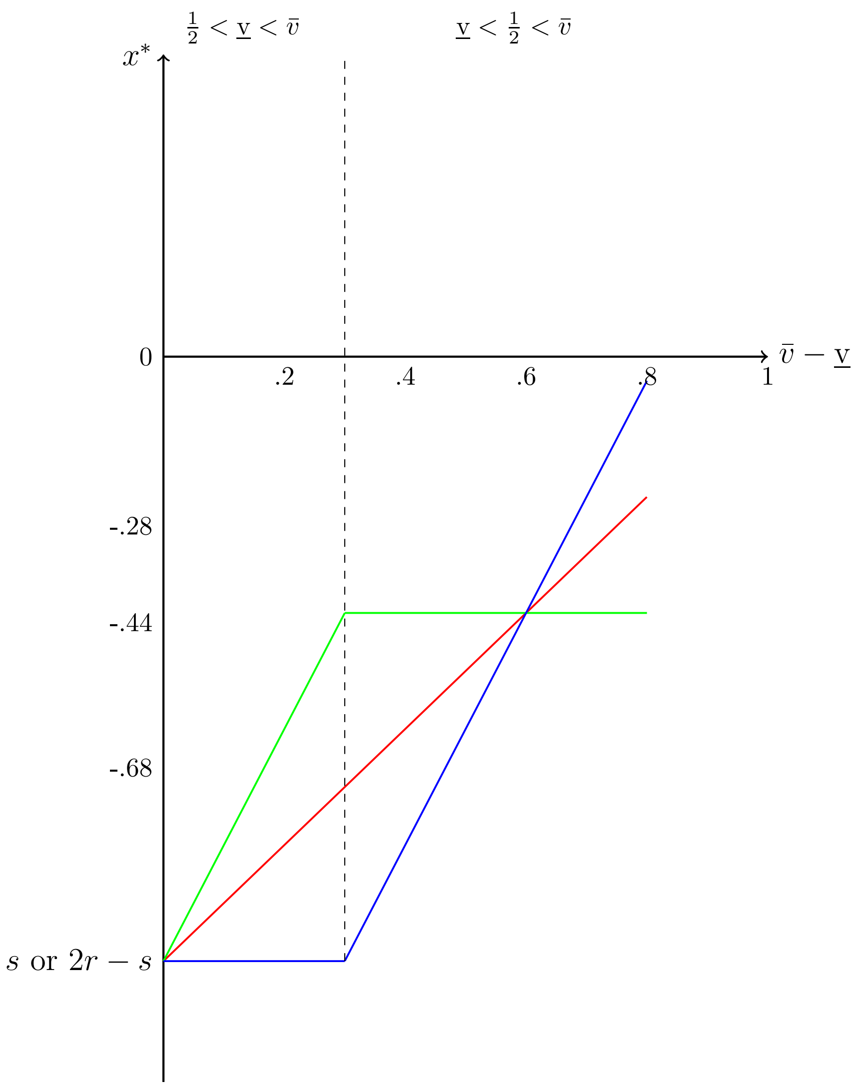


Figure 4: How transparency changes equilibrium proposal of the Leader, x^* (cases 2 and 3)



up with proposals further from their ideal points than low-quality representatives, and even further away from the baseline model (.

Based on this second and final extension of our baseline model we can formulate the following empirical implication.

Implication 4 The combined effects of transparency and control over rank control on party cohesion are highly dependent on the overall quality of candidates. When the overall quality of candidates is high, high-quality of representatives contribute to more party cohesion, but when the overall quality of candidates is low, low-quality representatives contribute to higher party cohesion relative to the baseline model.

In summary, the mechanism responsible for moving proposals closer to the member's ideal point would be similar: in CLPR, leaders can achieve the same level of voting unity by relying only on discipline alone. Under OLPR they must make remaining in the party for the high-vote share individual attractive enough by making policy concessions that would, overall, promote cohesion.

2.5 Extension III: Accounting for Replacement and Recruitment

So far, we have focused on the interaction between a given representative and leader, putting aside to potential to replace party members. In this extension, we address the issue of what happens when the Representative, R, fails to be reelected. To model this, we will label a first-period representative as R_1 (with the corresponding ideal point r_1) and assume that he is replaced by some R_2 with the ideal point r_2 if R_1 fails to clear the threshold set by L in the first period. Formally, the sequence of this game is as follows:

Period I:

1. L proposes $x_1 \epsilon [s, 0]$;
2. R_1 accepts x_1 or rejects x_1, in which case s remains the status quo;
3. L sets the threshold at $\underline{v}$ or $\bar{v}$;

4. R_1 is reelected if v_1 is greater than the threshold selected by L;

, where v_1 is R_1's vote share. If R_1 is reelected or if R_1 says yes, the game ends. If he is not, the game continues on to Period II.

Period II:

1. L proposes $x_2 \epsilon [s, 0]$;
2. R_2 accepts x_2 or rejects x_2, in which case s is implemented;
3. L sets the threshold at $\underline{v}$ or $\bar{v}$;
4. R_2 is reelected if v_2 is greater than the threshold selected by L;

, where v_2 is the vote share of R_2.

The payoff functions are exactly as before with the Leader's payoff being the Euclidean distance between his ideal point and the policy outcome at the end of the game, thus:

$$U_L(w, z) = \begin{cases} -|0 - w| & \text{if } R^1 \text{ says yes or is reelected in Period I;} \\ -|0 - z| & \text{if game ends in Period II.} \end{cases}$$

, where w and z are the policy outcomes in periods I and II, respectively. Starting with the second period, we can easily find the equilibrium proposal of R_2 as

$$x_2^* \equiv \begin{cases} 2r - s + w(\bar{v} - \underline{v}) & \text{if } r_2 \geq s; \\ s + w(\bar{v} - \underline{v}) & \text{if } s > r_2. \end{cases}$$

This means that if r_2 is to the left of the status quo, the proposal in the second period is no different from the proposal in the first period when r_1 is to the left of the status quo. Hence there is no benefit in going to the second period if R_2 is such that his ideal point is to the left of s. Likewise, whenever $r_1 \geq s$ but $r_2 < s$, L will never modify his proposal in a way that would allow him to advance to period II. Given this we only need to focus on the following three cases:

1. $r_1 > r_2 \geq s$

2. $r_2 > r_1 \geq s$

3. $r_2 \geq s < r_1$

Cases 1 and 2 can be solved jointly. Note, that L's optimal action in the second period, as well as the first period, is still to set the threshold at $\underline{v}$ if the representative says yes and to $\bar{v}$ if the representative says no. This is because if L wanted to increase the chances of the representative not being reelected, she could always set the proposal at an unattractive level, prompting him to reject it.

Given L's optimal proposal in Period II, x_2^*, if in the first stage R_1 says "no" (and the threshold is set at $\underline{v}$), L's utility would be:

$$U_L(no, x_2^*) = \bar{v}(2r_2 - s + w(\bar{v} - \underline{v}) + (1 - \bar{v})s \quad (10)$$

On the other hand if R_1 says "yes" to the proposal in the first period (recall, this happens only if he receives x_1^*, which is equal to the x^* from the baseline model), the utility of L is given by:

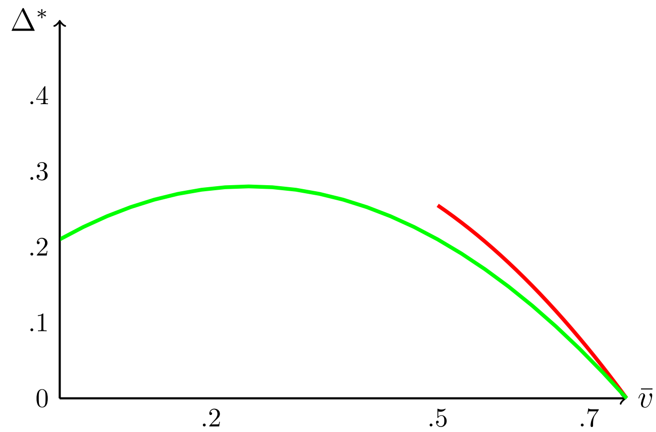
$$U_L(yes, x_1^*) = 2r_1 - s + w(\bar{v} - \underline{v}) \quad (11)$$

Comparing equations (10) and (11), we can express the condition for L to prefer obtaining a "yes" to a "no" as:

$$w(\bar{v} - \underline{v}) \geq 2(s - r_2) + \frac{2\Delta}{1 - \bar{v}} \quad (12)$$

, where $\Delta = r_2 - r_1$. Note that $\Delta > 0$ corresponds to case (2) and $\Delta < 0$ corresponds to case (1). In case (1), the term on the left side of equation (12) is positive, while both terms on the right side are negative by virtue of $\Delta < 0$, hence the condition is always satisfied. Unsurprisingly, when $r_1 > r_2$, L will please R_1 in the first period and there will be no replacement, regardless of control over rank. In case 2, we can find for what location of r_2 L

Figure 5: Δ^*, defined as the minimal difference between r_2 and r_1 for L to want to go into second period



will prefer to go to period 2. This is expressed by

$$r_2 \geq r_1 + \frac{(1-\bar{v})(w(\bar{v}-\underline{\mathrm{v}})-2s}{2\bar{v}} \tag{13}$$

It is immediately visible that increasing control over rank makes replacement less likely. This is because the wedge between r_2 and r_1 is higher the greater $(\bar{v}-\underline{\mathrm{v}})$ is. To avoid speaking about "wedges", we can define $\Delta^* = \frac{(1-\bar{v})(w(\bar{v}-\underline{\mathrm{V}})-2s}{2\bar{v}}$. Δ^* should be understood as the minimal difference between r_2 and r_1 ensuring that the Leader will attempt to replace R_1 with R_2, when R_2's ideal point is closer to the leader and both are closer to the leader than the status quo.

We can immediately see see that Δ^* is increasing in control over rank, $(\bar{v}-\underline{\mathrm{v}}$. In order to understand how Δ^* responds to the effectiveness of L's punishment strategy, we can graph it as a function of $\bar{v}$.

Figure 5 below shows how much further r_2 must be from r_1 for the Leader to prefer to replace him for two cases of control over rank: high control (in red) and low control (in green).[6] In the figure, We fix low rank control at $\bar{v}-\underline{\mathrm{v}}) = \frac{1}{4}$ and fix high rank control at $\bar{v}-\underline{\mathrm{v}}) = \frac{1}{4}$. For obvious reasons, in the high rank control case, $\bar{v}$ has a more limited domain

[6]Note, that in order for this replacement to take place, L would make an unacceptable proposal.

than in the low rank control case. However, save for the lower values of $\bar{v}$, the "wedge" is decreasing in the ability to punish a representative who says "no." To the extent that one would expect control over rank and the effectiveness of the Leader's punishment strategy to be moving in the same direction, this is intuitive. Overall, in this case, we predict that the less control over rank, that is the more candidate-centered the electoral system, the more the Leader will aim at using recruitment to achieve unity when there are candidates outside of the party with ideal points closer to the leadership's who can replace existing members.

Finally, in case 3, the analysis approximates the analysis above, except that now we must use the fact that in order to get a "yes" from R^1, the Leader must propose $x_1^* = s + w(\bar{v} - \underline{v})$. Thus, if R_1 were to say "no" and L set the threshold to $\bar{v}$, his expected payoff would be:

$$U_L(no, x_2^*) = \bar{v}(2r_2 - s + w(\bar{v} - \underline{v})) + (1 - \bar{v})s \tag{14}$$

On the other hand if R_1 says "yes" to the proposal in the first period, the utility of L would be:

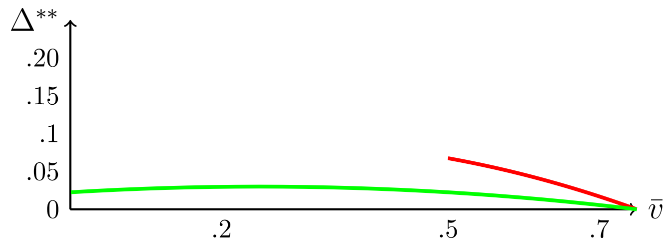
$$U_L(yes, x_1^*) = s + w(\bar{v} - \underline{v}) \tag{15}$$

Comparing equations (14) and (15), we can express the condition for L to prefer obtaining a "no" to a "yes" as:

$$r_2 \geq s + \frac{w(\bar{v} - \underline{v})(1 - \bar{v})}{2\bar{v}} \tag{16}$$

Again, as in case 2, we see immediately that control over rank increases the distance between r_2 and s required for L to want to replace R_1. And similarly, we can plot the effect of $\bar{v}$ on the minimum distance that must separate r_2 from s in order for the Leader to prefer to replace R_1 with R_2. First, let us define $\Delta^{**} = \frac{w(\bar{v} - \underline{V})(1 - \bar{v})}{2\bar{v}}$. Δ^{**} is the minimal distance that must separate r_2 from s in order for the Leader to prefer replacing a party member with an ideal point further away with one whose ideal point is closer. We again fix low control over rank at $(\bar{v} - \underline{v}) = \frac{1}{4}$ and high control over rank at $(\bar{v} - \underline{v}) = \frac{3}{4}$.

Figure 6: $\Delta^{*}*$, defined as the minimal difference between r_2 and s for L to want to go into second period



Since both the red (high control over rank) and green (low control over rank) line are flatter in Figure 6 than in Figure 5, we can infer that the distance separating r_2 from s can be much smaller to warrant L's wanting to replace an existing member. Yet, in high rank control systems, the distance between the potential new candidate and the current member warranting replacement is always greater than in low rank control systems. Furthermore, both lines are sloping downwards, which is an indication that the more the leader can rely on the effectiveness of his punishment strategy, the more eager he is to rely on replacement. We can summarize this analysis in our final implication:

Implication 5 The greater control over rank, the less likely is the leader to replace distant members with candidates closer to his ideal point. All things equal, replacement of members whose ideal points are further away will be more common in systems such as OLPR than in CLPR. The result of this replacement will be greater ideological cohesion under OLPR than under CLPR.

At the same time, it is worth pointing out that this greater ideological cohesion may not manifest itself until after the second period. That is because the only way to replace a member is to make him an offer that he will want to refuse, which will require a proposal that is closer to the leader's ideal point than in the baseline model. Yet, following replacement, in the second-period ideological cohesion will increase relative to the baseline model and increase more in low rank control systems that in high rank control systems.

3 Discussion

The literature on political institutions and political parties has long suggested that party-centered electoral rules could encourage parties to be not just more unified in behavior, but more cohesive and programmatic in membership and character. Candidate-centered rules, meanwhile, are routinely expected to be associated with more heterogeneous and less ideologically consistent parties. Despite the appeal of this intuition, empirical work on the topic provides little support for this.

To address this puzzle, we have proposed a model of the consequences of electoral systems for cohesion that focuses on a unity-seeking party's organizational incentives in facilitating party cohesion. The results of the model presented above make clear that we should not expect less cohesive parties in candidate-centered electoral systems.

Party discipline—applying coercion to party members after they are elected—is a costly means for achieving such unity. We argue here that whether party leaders propose policies that accommodate members preferences and reward members aligned with their own preferences does depend in part on the electoral system.

However, we argue the effects of the electoral system promote greater cohesion in OLPR systems than in CLPR systems. In the case of CLPR, leaders are less inclined to pursue a policy that takes members' preferences into account. Discipline is "cheaper" to them than to leaders in OLPR systems. If leaders can promote their legislative agenda based on discipline alone, they need not rely on internal cohesion. As a result, OLPR systems induce leaders to put a premium on achieving ideological cohesion not found under CLPR systems.

Increasing control over a member's list rank—moving from the electoral system from more open to more closed lists, allows party leaders to gain acceptance for proposals further removed from the preference of legislators. This means that electoral systems where control over rank is high, such as CLPR, give leaders the power to make proposals that party members systematically disagree with and expect those proposals made by the leadership to be accepted. When control over rank is low, leaders make proposals that are closer to their representatives' ideal points, increasing party cohesion.

Because discipline is costlier in OLPR, if leaders value voting unity, they are forced to either compromise their policy agenda or recruit more like-minded members. In CLPR, leaders can achieve voting unity relying on discipline. We demonstrate that policy compromise is just as important as list placement in securing discipline, but as a result, it also results in more ideological cohesion.

The most important broader implication of our model is that candidate-centered systems such as OLPR, despite being associated in the literature with incohesive and "weak" parties, actually provide incentives to create more cohesive parties, albeit with party policy positions more reflective of MP preferences. Conversely, CLPR systems can discourage the formation of cohesive parties, despite their advantages for discipline.

Our analysis shows that electoral institutions in candidate-centered systems indeed distribute implicit bargaining power away from party leaders and towards rank-and-file. Thus, there is no question, that party *leaders* in OLPR and FLPR are weaker, ceteris paribus, than leaders in CLPR systems. But the literature has been mistaken in linking this weakness to the ideological heterogeneity of the party. We show it has the opposite effect.

In addition, our findings are relevant to broader cross-national patterns of party system linkages. To the extent that programmatic parties require ideological cohesion, OLPR may offer better prospects for programmatic party development than CLPR. We believe that this effect may explain the lack of empirical evidence consistent with party-centered electoral systems promoting programmatic party behavior.

For future research, our findings underscore the need for measures of legislative preferences that separate behavior stemming from ideological cohesion from behavior induced by discipline. The unavailability of measures of intraparty differences in policy preferences has hampered, scholars' investigation of the institutional underpinnings of ideological cohesion, because in measures such as roll call voting, party unity achieved through discipline is observationally equivalent to that achieved through ideological cohesion.

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