The personal vote and party cohesion: Modeling the effects of electoral rules on intraparty politics *

Royce Carroll
University of Essex

Monika Nalepa
University of Chicago

October 6, 2019

Abstract

Conventional wisdom suggests that parties in candidate-centered electoral systems should be associated with less cohesive policy preferences among legislators. We model the incentives of party leaders to achieve voting unity without relying on discipline, showing that candidate-centered systems have the counterintuitive effect of promoting party agreement on policies and preference cohesion. These implications derive from the degree 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' lack of control over list rank, leaders seeking voting unity propose policies that promote agreement between members and leadership. Under CLPR, however, leaders can more easily achieve voting unity by relying on discipline and therefore lack incentives to promote internal agreement. We then extend the model to allow the party leader to replace members, showing that preference cohesion itself is greater under OLPR. Further, our baseline results hold when allowing legislative behavior to affect vote share and when accounting for candidates' valence qualities. We interpret our results to suggest that candidate-centered systems result in stronger incentives for developing programmatic parties, compared to party-centered systems.

*The authors would like to thank Herb Kitschelt, Pablo Beremendi, Peter Buisseret, Scott Gehlbach, Justin Grimmer, Anne Meng, Carol Mershon, Carlo Prato, Georg Vanberg for comments on previous versions and Ipek Cinar, Genevieve Bates, Viivi Javri, and David Ratnoff for research assistance.

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 create incentives to cultivate a "personal vote" (Carey and Shugart, 1995; Katz, 1985). Under proportional representation, the personal vote is most associated with preferential voting in "open lists," where individual candidate vote shares determine which 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 electoral and legislative behavior (Andre, Depauw and Shugart, 2014). 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, compared to party-centered electoral systems. Consequently, the former would enjoy lower party unity than the latter. An array of work on the topic has explored the association between candidate-centered party systems and less unified parties (Carey, 2008; Hix, 2004; Raunio, 2007; Mejía-Acosta et al., 2006; Depauw and Martin, 2005; Carroll and Nalepa, 2019), although many studies do not find consistent evidence for this relationship (Santos, 2007; Desposato, 2006; Sieberer, 2006; Coman, 2015).

Underlying expectations about less unified parties is that candidate-centered electoral systems not only make enforcing discipline more costly but also can increase intraparty preference heterogeneity and policy disagreement, leading to less programmatic parties. 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

[1]Of course, these authors do not advocate a deterministic relationship. Still, where literature expects

party 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).

Overall, the extant literature implies both that candidate-centered electoral systems should lead to less party voting unity and that such contexts should lead to parties with less coherent policy preferences. Conversely, these arguments would suggest that party-oriented electoral systems should facilitate ideological agreement 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. The difficulty in achieving behavioral unity in a candidate-centered environment is distinct, however, from the impact of such rules on preference cohesion—the extent to which parties are aligned in their policy goals. There is little systematic evidence that party-centered rules have directly encouraged more cohesive, more ideological, or more programmatic parties (Jones, 2005; Mejía-Acosta et al., 2006). In a recent comparative study, Carroll and Kubo (2017) find no average difference in party-level heterogeneity between parties elected under party-centered rules and those with intraparty competition. In a case study of Sweden, Rickne and Folke (2018) find that the introduction of candidate-centered rules did not decrease preference cohesion among members.

Most literature tends to focus on cohesion in terms of overall preference heterogeneity of members, and distinguishing this from party discipline (Hazan, 2003). However, party unity is most directly influenced by the cohesion between the preferences of members with party *leaders* and, in particular, members' agreement with the policy proposals made by the leadership. Here, we focus on policy agreement and propose that the very same mechanism expected to hinder legislative voting unity—the cost of disciplining members—increases

any systematic differences, it is the party-oriented electoral systems that are expected to be more likely to encourage more programmatic parties.

leaders' incentives to ensure members' agree with party proposals.

We argue that parties seeking unity have an incentive to promote cohesion to offset these discipline costs. Counterintuitively, then, electoral systems in which parties have *less* control over member's electoral rank actually encourage greater policy agreement. 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 inducing policy agreement. We depart from existing literature by focusing on the power of party leaders to shape the party's policy position. We show that the discipline costs of open lists mean that leaders rely more on policy agreement than under closed lists. As their electoral leverage over members declines, party leaders will seek policies for which achieving unity requires the least discipline. This further implies that leaders also have a greater incentive to avoid recruiting members that would reduce policy agreement and therefore require discipline. Thus, we extend the model to incorporate the replacement of members. We further show that the core findings are present in extended models. The same result holds when incorporating the possibility of members being rewarded for their voting behavior and if non-policy aspects of candidate quality.

To the extent that programmatic parties rely on cohesive policy preferences, our model suggests that preferential voting systems produce incentives in equilibrium that would offer a *greater* likelihood for the development of parties with ideological consistency than party-centered systems, 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 and predicting the intraparty effects of electoral systems.

2 A Model of List PR's Effects on Policy Agreement

Our model isolates the role played by electoral institutions in channeling incentives for a party's policy agreement. We exploit the fact that there are two ways that parties may

achieve party 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 decrease the distance between the preferences of members and the policies introduced by the party leadership, which is what we refer to as a party's policy agreement. We focus here on the question of when party leaders have incentives to produce party unity through policy agreement instead of relying on sheer discipline. We define preference cohesion as the extent to preferences of the pivotal party member differ from those of the party leader. These three concepts—discipline, policy agreement, and shared preferences—all related to ideological homogeneity and frequently used interchangeably—map onto parameters of our model.

The model examines 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 party unity and policy agreement. 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 policy agreement 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, the member 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. Ranking a member highly who was supportive of the policy benefits the leader, while members voting against the leader are a liability that negatively impacts party unity.

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

2.1 Existing work on the intraparty effects of electoral systems

Several authors address the effect of the electoral rules on party behavior or organization. This work is partly related to the topic at hand but differs from our focus in significant ways. Crutzen and Sahuguet (2017), for instance, model party unity as the alignment between the party leader's preferences and the party's electoral manifesto, which is determined by a contest among factions. Adams and Merril III (1999) investigate the effect of voter preferences on intra-party processes that ultimately move parties' policies away from convergence with the median voter and adopt more extreme positions than their voting base. We generally differ from the above work in that we are interested in the distances between party leaders and the representative member. However, an extension we explore below incorporates voters to make predictions more closely related to the findings of these authors.

Intra-party consequences of electoral rules are examined in Snyder Jr and Ting (2002), who model party discipline as a bound on legislators' individual positions. In our model, discipline can be seen as the acceptance set of a veto player (the representative) that can be punished ex-post.

Some very recent work has produced important breakthroughs in the models of electoral systems focused on electoral systems' intra-party effects. Buisseret and Prato (2018) model list flexibility as a continuum and include it in a model of position-taking (see also (Snyder Jr and Ting, 2005)). Importantly, Buisseret and Prato's notion of cohesion refers to the floor voting behavior itself—the probability that a representative supports the party. Here, we focus on explaining the electoral system's effects on the configuration of preferences itself, distinct from unity in behavior. That is, we focus on the cohesion of preferences—the distance between the ideal point of the party leadership and that of a pivotal party member—as well as policy agreement—the alignment of the party member with party policies. Closer to our notion of cohesion is Matakos et al. (2019), who investigate the effect of the disproportionality of electoral rules on candidate homogeneity, arguing that electoral incentives should cause more heterogeneous parties under disproportional rules.

Focusing on a comparison between CLPR and OLPR systems in the spirit of Persson, Tabellini and Trebbi (2003), Kselman (2019) reports a conclusion complementary to ours that preferential systems can induce party members to contribute more effort towards the production of "public goods" in the policy-making process, as opposed to personal rent-seeking behavior. Kselman also focuses on the electoral uncertainty facing members, whereas our model derives its results from the bargaining power between party leaders and representatives under the different electoral rules.

Our model builds most directly on the work of Krehbiel (2010) and Romer and Rosenthal (1979) in that it exploits the asymmetry between an agenda-setting party leader and an agenda-taking member whose actions are limited to a simple up-or-down vote. We build on 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 the latter's response. Moreover, we allow the leadership's ability to sanction members to vary from one electoral rule to another. We develop our argument in a series of four models—a baseline, an extension of the baseline, and two models to establish the robustness of the baseline results.

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 policy agreement. This occurs as a by-product of how cheaply leaders can get their party members to support legislation that those members oppose. We then propose three extensions of the model to incorporate a leaders' ability to influence preference cohesion itself—the alignment of leaders' and members' ideal points. In this extension, we speculate what would happen if the leader could recruit members with different ideal points than the representatives currently in his party. The final two robustness checks accounting for two aspects of the electoral environment. The goal of these extensions is to scrutinize which conditions are critical for our result about the effects of electoral rules on party cohesion. First, we endogenize

the members' vote share, making it a function of legislative behavior (the Representative's action) and ranking decisions (the Leader's actions). In the second robustness check, we allow for vote share to be determined by factors beyond legislative behavior and ranking decisions, such as exogenous notions of valence or candidate quality.

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 $r \epsilon \Re$. Consequently, using the definition introduced above, r represents preference cohesion. 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 the problem is interesting to model and to ease exposition, we assume $r < s$. The case of $r < \frac{s}{2}$ has been relegated to the appendix. The case in which $r \geq \frac{s}{2}$ is not considered here at all because it assumes away the conflict between the leader and the Representative.[3]

2.2.2 Timing and Strategies

The model is divided into three stages: (1) policy-making; (2) ranking; and (3) election. In the policy-making stage, L chooses a policy $x \epsilon \Re$ that serves as an alternative to the exogenously given status quo, s. Following L's decision, 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. This effectively means that the representative has veto power over policy: voting "no" results in the implementation of the status quo. In the ranking stage, 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 order for the Representative to be reelected. The leader's choice of "High" rank means that R's

[3]Note we are not making assumptions here about who is more ideologically extreme (L or R), but simply assuming that the leader and representative have a meaningful conflict of interest. For simplicity, the models anchor the policy space to the leader's policy preferences, but absolute distance from the party should not be necessarily interpreted as extremism.

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 Buisseret and Prato (2018). In the final, election 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, in which a candidate's list rank can be influenced by their individual votes to varying degrees. The equilibrium distance between the Leader's proposal and r corresponds to our concept of interest, *policy agreement*.

The Representative has two actions in the second stage of the game: $a_R \epsilon \{yes, no\}$. 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 $S_R = \{Y \subset \Re : x \epsilon Y \implies R \text{ accepts } x\}$.

The Leader's strategy is a pair (x, p), where $x \epsilon \Re$ and $p(x, a_R)$ is the action of the Leader taken in the ranking stage and is a function of the Leader's action in the first stage and the Representative's action. Thus $p(x, a_R) : \Re \times \{yes, no\} \to \{High, Low\}$. The Leader's strategy space is defined as: $S_L = \Re \times \wp$, where $\wp$ is the set of all possible mappings from $\Re \times \{yes, no\}$ into $\{High, Low\}$.

2.2.3 Payoffs

We present the payoffs as a function of terminal histories of the game. The utilities of L and R depend on the proximity of their ideal points to the policy alternative that is implemented as a result of the game (for both players) and on the probability of reelection (for the Representative). Denote y to be the final policy outcome and let $E(v;p)\epsilon\{0,1\}$ denote the event "R is reelected," that is,

$$E(v;High) = \begin{cases} 1 & \text{if } v \geq \underline{v}; \\ 0 & \text{otherwise.} \end{cases} \tag{1}$$

$$E(v;Low) = \begin{cases} 1 & \text{if } v \geq \bar{v}; \\ 0 & \text{otherwise.} \end{cases} \tag{2}$$

Now we can write

$$U_R(y,E) = -|y-r| + wE$$

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

, where w is the value of reelection.

2.2.4 Analysis

This model is one of complete information and can be solved for subgame perfect equilibria. For presentational clarity, we assume $r < s$ and relegate the case of $r\epsilon s, \frac{s}{2}$ to the appendix. We proceed with the following sequence of lemmas. First, we show that in every subgame following R's vote, any ranking decision is optimal for L. Next, we characterize R's acceptance region as a function of L's ranking strategy. Finally, we show that the optimal strategy of the Leader involves proposing the upper bound of that acceptance region.

Lemma 2.1 *Define the subgame following R's vote $L(y,a_R)$ and L's strategy restricted to $L(y,a_R)$, $p(y,a_R)$. In every subgame, $L(y,a_R)$, any ranking decision of L is optimal, i.e.,*

for all $y, a_R, p^*(y, a_R) = high$ *&* *for all* $y, a_R, p^*(y, a_R) = low$.

To see why lemma 2.1 is true it suffices to note that $U_L(y, high) = U_L(y, low) = -|y - 0|$. This is the case for all policy proposals, y and all voting decisions, a_R, because the Leader's payoff depends only on policy (which in any subgame $L(y, a_R)$ has already been determined and not on the ranking decision.

Having solved for the optimal ranking decision, the next lemma deals with the optimal decision of R.

Lemma 2.2 *Let* $\pi(p(x, a_R))$ *represent* R*'s reelection probability. For any ranking strategy* $p(x, a_R)$ *of* L*,* R*'s optimal acceptance region is* $Y^* = [2r - w(\pi(p(x, yes)) - \pi(p(x, no))) - s, w(\pi(p(x, yes)) - \pi(p(x, no))) + s]$.

To see why lemma 2.2 is true note that the representative will choose x over s if and only if

$$-|x - r| + \pi(p(x, yes)) * w \geq -|s - r| + \pi(p(x, no)) * w \tag{3}$$

Given our assumption $r < s$, the expression 3 reduces to

$r - x + \pi(p(x, yes))w \geq -s + r + \pi(p(x, no)w$ if $x > r$ and $-(r - x) + \pi(p(x, yes))w \geq -s + r + \pi(p(x, no)w$ if $x < r$ and further to $x \leq s + w * (\pi(p(x, yes)) - \pi(p(x, no)))$ if $x > r$ and $x \geq 2r - w * (\pi(p(x, yes)) - \pi(p(x, no))) - s$ if $x > r$;

or simply to $x\epsilon[2r - w(\pi(p(x, yes)) - \pi(p(x, no))) - s, w(\pi(p(x, yes)) - \pi(p(x, no))) + s]$, which concludes our proof of Lemma 2.2.

Finally, we are in a position to solve for the optimal policy decision of L

Lemma 2.3 *If* $s < w(\pi(p(x, no) - \pi(p(x, yes)))$*, the Leader's optimal proposal is given by* $w(\pi(p(x, yes)) - \pi(p(x, no))) + s$*. Otherwise, he will propose his ideal point in equilibrium.*

Given L's ideal point at 0 and our assumption $r < s$, it is immediate that L chooses the upper bound of the acceptance region defined in Lemma 2.2.

Lemma 2.3 also implies the ranking decision of the Leader that will maximize his utility. This is expressed formally in Proposition 2.4 below.

Proposition 2.4 *Let $p^*(x, yes) = high$ and $p^*(x, no) = low$. In Subgame Perfect Equilibrium, the Leader proposes $x^* = s + w(\bar{v} - \underline{v})$, which is accepted by the Representative in light of the ranking rule defined by $p^*(x^*, a_R)$ This proposal approaches the ideal point of the representative as the Leader's control over rank, $(\bar{v} - \underline{v})$, declines.*

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 $x^* \equiv min\{0, s + w(\bar{v} - \underline{v})\}$

This proposition follows immediately from lemmas 2.1-2.3 and from the observation that, in order for the x^* to be as large as possible, L has to maximize $\pi(p(x, yes)) - \pi(p(x, no))$. Notice that $\pi(p(x, yes)) - \pi(p(x, no))$ is greatest when $p(x, high) = Pr(v > \underline{v}) = 1 - \underline{v}$ and $p(x, low) = Pr(v > \underline{v}) = 1 - \bar{v}$. Hence Lemma 2.1 implies directly that it is optimal for L to play:

$$p(x, a_r) = \begin{cases} High & \text{if Representative chooses yes;} \\ Low & \text{if Representative chooses no.} \end{cases} \tag{4}$$

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

The proposition above describes the equilibrium of the baseline model and a critical comparative static. Namely, that increasing control over rank, that is, changing the electoral system from Open-List towards 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 and proposals that party members systematically disagree with and have these proposals made by the leadership 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 policy agreement.

Recall that we interpret policy agreement 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 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 policy agreement, CLPR systems produce less policy agreement than OLPR systems.

3 Extending the Baseline Model: Replacement and Recruitment

So far, we have focused on the interaction between a given representative and Leader, assuming that the Leader's response to the costs of discipline is limited to choosing the policy content of the party's legislative positions. In many cases, however, a more realistic and generalized party organizational strategy may be to maximize the party's preference cohesion itself—the alignment between members and the Leader. If this broader array of organizational activity is incorporated, leaders would not only want to minimize the use of discipline but also the need to adjust policies to maximize agreement. In other words, a party leader with the aim of maximizing policy agreement may also have the power to increase preference cohesion itself. Accordingly, the reasoning of this model can be extended into the organization of the party outside the parliament as well. That is, the party leader may be able to replace party members and thus influence the preferences of the pivotal party member. 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 $x_1 \epsilon \Re$;
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 $x_2 \epsilon \Re$;
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 towards 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. In order to make solving this extension worthwhile, we allow $r_i > s$ in contrast to the baseline model solved in the text, but maintain the assumption of conflict by imposing that $r < \frac{s}{2}$. In light of the above reasoning, we only need to consider 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. First, lemma 2.1 can be used to establish the optimal ranking strategy as identical to the one described in equation 4, that is, to set $\underline{v}$ if the representative says "yes" and to set $\bar{v}$ if the representative says "no."

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

$$U_L(no, x_2^*) = \bar{v}(2r_2 - s + w(\bar{v} - \underline{v})) + (1 - \bar{v})s \tag{5}$$

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:

$$U_L(yes, x_1^*) = 2r_1 - s + w(\bar{v} - \underline{v}) \tag{6}$$

Comparing equations (5) and (6), we can express the condition for L to prefer obtaining a "yes" to a "no" as:

$$w(\bar{v} - \underline{v}) \geq 2(s - r_2) + \frac{2\Delta}{1 - \bar{v}} \tag{7}$$

, 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 (7) 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 appease 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 will prefer to go to period 2. This is expressed by

$$r_2 \geq r_1 + \frac{(1 - \bar{v})(w(\bar{v} - \underline{v}) - 2s}{2\bar{v}} \tag{8}$$

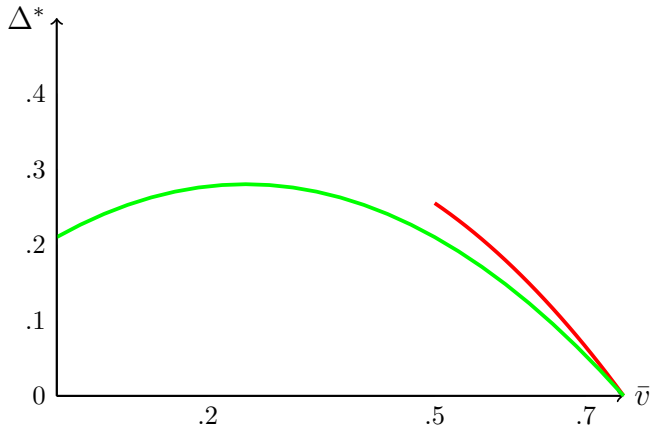
It is immediately visible that increasing control over rank makes replacement less likely. This is because the wedge between r_2 and r_1 is higher the greater $(\bar{v} - \underline{v})$ is. To avoid speaking about "wedges", we can define $\Delta^* = \frac{(1-\bar{v})(w(\bar{v}-\underline{v})-2s}{2\bar{v}}$. 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 that Δ^* is increasing in control over rank, $(\bar{v} - \underline{v})$. 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 1 above 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).[4] In the figure, We fix low rank control at $(\bar{v} - \underline{v}) = \frac{3}{4}$ and fix high rank control at

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

Figure 1: Δ^*, defined as the minimal difference between r_2 and r_1 for L to go into second period



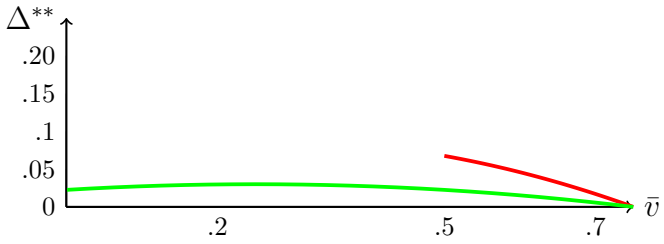
$(\bar{v} - \underline{v}) = \frac{1}{4}$. For obvious reasons, in the high rank control case, $\bar{v}$ has a more limited domain than in the low rank control case. However, save for the lower values of $\bar{v}$, the "wedge" is decreasing in the ability to punish a representative who says "no." To 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 voting unity. This will result in greater preference cohesion within the party so long as when are viable candidates outside of the party with ideal points closer to that of the leadership who can replace existing members.

The analysis of Case 3 approximates the analysis of cases 1 and 2, 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 $\bar{v}$ (as ia hia optimal ranking strategy) his expected payoff would be:

$$U_L(no, x_2^*) = \bar{v}(2r_2 - s + w(\bar{v} - \underline{v})) + (1 - \bar{v})s \tag{9}$$

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

Figure 2: Δ^{**}, defined as the minimal difference between r_2 and s for L to go into second period



be:

$$U_L(yes, x_1^*) = s + w(\bar{v} - \underline{v}) \tag{10}$$

Comparing equations (9) and (10), we can express the condition for L to prefer obtaining a "no" to a "yes" from R_1 as:

$$r_2 \geq s + \frac{w(\bar{v} - \underline{v})(1 - \bar{v})}{2\bar{v}} \tag{11}$$

Again, as in the analysis of case (1) and (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 $(\bar{v} - \underline{v}) = \frac{3}{4}$.

Since both the red (high control over rank) and green (low control over rank) lines are flatter in Figure 2 than in Figure 1, 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 the analysis above in following empirical implication:

Implication 2 The greater control over rank, the less likely is the Leader to replace distant party members with candidates closer to his ideal point. All things equal, replacement of members whose ideal points are further away from the Leader's ideal point will be more common in systems such as OLPR than in CLPR. The result of this replacement will be greater preference cohesion under OLPR than under CLPR.

At the same time, it is worth pointing out that this greater preference cohesion may not manifest itself until after the second period. This is the case because the only way to replace a member is to make him an offer that he will want to refuse (that is an offer characterized by low *policy agreement* relative to the baseline model). Yet, following replacement, in the second-period, preference cohesion will increase relative to the baseline model and increase more in low rank control systems that in high rank control systems.

4 Robustness checks: incorporating the electoral environment

In this section, we consider extensions of the baseline model that incorporate additional features of the electoral environment. One limitation of the baseline model, for instance, is that vote share is taken as exogenous, ignoring an important aspect of the dynamic of OLPR. What if members could be rewarded for their voting behavior? One possibility is that the constituency pressures arising from the personal vote (Carey, 2007) would result in OLPR promoting reduced policy agreement. To address this, we present an Endogenous Vote Share extension, in which we show that the general result that the leader will counteract the party's policy disagreement applies even if the member's reelection prospects—that is, her vote share—are tied to legislative voting.

A second limitation of the baseline model is that it presumes only policy disagreements, and thus does not incorporate the *exogenous* sources of the personal vote, such as the can-

didate's personal qualities (Shugart, Valdini and Suominen, 2005). If the effect of OLPR is primarily about rewarding non-policy reputations, this might lead to parties with a reduced capacity for policy agreement. In the second extension below, we incorporate this valence concept into the model and retain the result that OLPR encourages greater policy agreement than CLPR.

4.1 Endogenous Vote Share

Recall that is the 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 (Buisseret, 2018) 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:

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

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

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

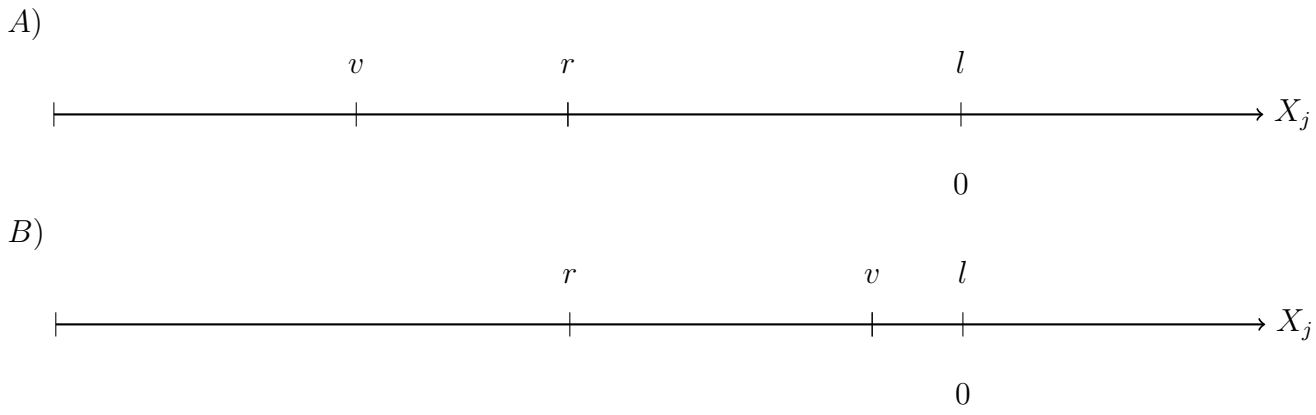
$F(v|n, Low) = U[0, \delta]$,

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:

$$U_L(y, E) = -|y - 0| + qvE$$

Figure 3: Two scenarios for sources of vote share



, where E is defined as in equation (2) in section 2.2.3. 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.

This model is solved in the Appendix, where we break down the analysis into two scenarios corresponding to two alternative placements of the party's electorate vis a vis the Leader and the Representative:

1. An electorate that is more extreme than the Representative, who is in turn more extreme than the Leader;

2. Party leadership is moderate, but Representative is more extreme than the electorate.

These scenarios are represented in figure 3 below.

Consider first panel A of Figure 3. 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 $\delta \geq \gamma$.

Under this scenario, supporting the leader and being ranked high provides the Represen-

tative with the highest vote share. At the same time, withholding 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, 2008), in which party leaders and voters simultaneously hold legislators accountable for their votes. In our model, when the Representative caters to the voters, he is rewarded for it with higher vote shares, especially when the Leader ranks him low.

A model of this scenario is solved in the Appendix. It shows that, when control over rank is lower than the vote share differential between dissenting member ranked low and the dissenting member ranked high (i.e., $\frac{\bar{v}^2\gamma - \underline{v}^2\delta}{\delta\gamma} < \delta - \gamma$), the outcome of the interaction between the representative and the leader is:

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

Now consider Panel B of Figure 3, which corresponds to the scenario in which the assumption we used to establish the Leader's strategy as $High|yes$ and $Low|no$ above is not satisfied and instead $\frac{\bar{v}^2\gamma - \underline{v}^2\delta}{\delta\gamma} \geq \delta - \gamma$. This could be interpreted as corresponding to the situation in Panel B of Figure 3, 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 dissenting members 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 $High|yes$, $High|no$.

The model corresponding to this scenario is also solved in the appendix. It shows that when the vote share differential between dissenting members ranked low and the dissenting members ranked high is small relative to control over rank (i.e., $\frac{\bar{v}^2\gamma - \underline{v}^2\delta}{\delta\gamma} < \delta - \gamma$), the outcome of this scenario is

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

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 $\bar{v} - \underline{v}$, which approximates control over rank.

We do this in Figure 4. 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 are constrained to two dimensions, we will set $\bar{v} = .8$, and allow $\underline{v}$ to vary from .8 (where $\bar{v} - \underline{v}$ approaches 0, representing OLPR) to 0 (where $\bar{v} - \underline{v}$ approaches .8, representing CLPR). To reflect the transition from scenario A to scenario B, at $\frac{\bar{v}^2\gamma - \underline{v}^2\delta}{\delta\gamma} = \delta - \gamma$, there is a point of discontinuity at $\frac{\bar{v}^2\gamma - \underline{v}^2\delta}{\delta\gamma} = .3$. Thus the equilibrium Figure presented in 4 is given by:

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

for the $r < s$ case and

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

for the $s < r$ case.

Since these predictions are the same except 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.

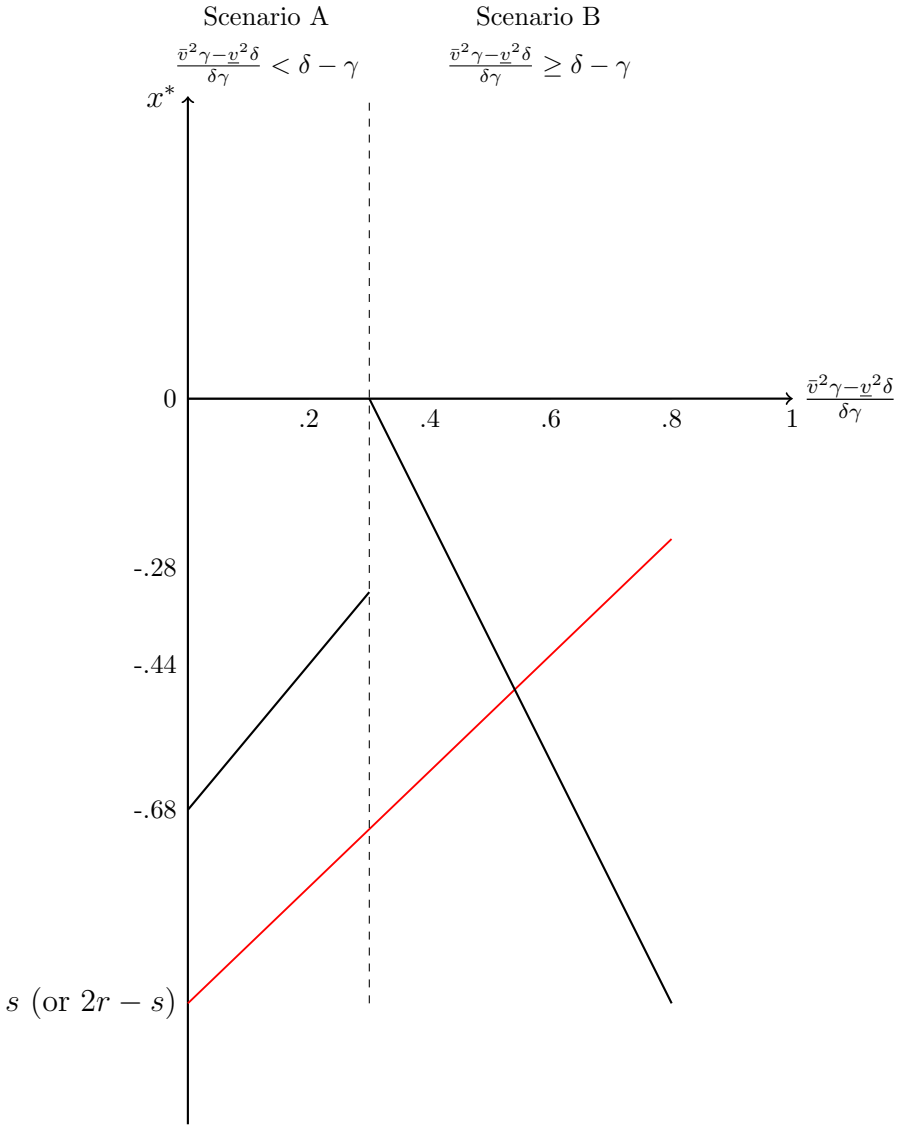
In scenario A, corresponding to the extreme party base situation, an increase in control over rank leads to a decrease in policy agreement. For this case (to the left of the dashed line) the Leader's proposal is closest to the Representative's ideal point for extremely low control over rank (corresponding to OLPR). However, in scenario B, corresponding to the moderate party base situation, an increase in control over rank will increase policy agreement. Most importantly, there is a severe point of discontinuity, at $\frac{\bar{v}^2\gamma - \underline{v}^2\delta}{\delta\gamma} = \delta - \gamma$, where the effect of electoral rules switches to the opposite and where there is a sudden jump in policy agreement (decreasing policy agreement).

However, even in scenario A, the level of policy agreement is lower than in the baseline model, the equilibrium of which is represented in figure 4 in red.

Based on the above comparative statics and figure 4, we can formulate the following implications from extending our model to endogenize vote share.

Implication 3 If vote share is endogenous to legislative behavior and decisions about rank, control over rank affects policy agreement 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 policy agreement, 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 policy agreement, inducing the

Figure 4: How control over rank $(\bar{v} - \underline{v})$ affects policy agreement (equilibrium proposal of the Leader, x^*). Baseline model equilibrium outcome is in red.



leadership to make the proposal closer to the Representative's ideal point.

Implication 4 The point of discontinuity at which the effect of control over rank switches signs from negative to positive 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 constituents against the leadership, even when the leadership punishes the Representative for doing so. The more extreme the party base relative to the Representative, the greater this point of discontinuity relative to control over rank.

4.2 Incorporating Candidate Quality Effects

In the robustness check above, 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.[5]

[5]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 party list and could, therefore, exploit such popularity in a manner similar to what we discuss under OLPR. However, under OLPR, this facilitated directly by the electoral system *itself*. 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 policy agreement 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. Another difference with the baseline model is that there, the Representative is uninformed about his or her valence. Were the Representative informed, he or she would obviously react differently to the incentive scheme. Because the benefits from a high-quality representative's additional vote share accrue only to the Representative, the optimal ranking strategy described in equation 4 and derived through lemmas 2.1 - 2.3 is still applicable for the leader. Recall that according to this ranking strategy, the Leader ranks a Representative

who votes "yes" "High" and a representative who votes "no" "Low." The solution of this model is relegated to the appendix, where the solution is divided into three cases, as follows:

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. This model is solved in the appendix, but This outcome is summarized as follows:

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

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

Case 2 corresponds to the situation where both high and low-quality representatives are sensitive to ranking decisions, although the probability that

$$Pr(E = 1|highquality) = 1 \tag{12}$$

$$Pr(E = 1|lowquality) = 0$$

Solving for the equilibrium outcome (see appendix) in the second case yields:

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

Finally, Case 3 describes a situation where the low-quality representative is not affected by the ranking decision, because he has no chance of winning a seat anyway. In this third

case, the equilibrium outcome (also solved in the appendix) can be written as:

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

Taking these results together, Figure 5 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.

Figure 5 illustrates 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 should note that this pattern holds when the overall quality of the candidates is high. That is, a high-quality candidate has no trouble clearing either the low or the high threshold. In the next figure, we will focus on overall low-quality candidates, for whom the effect of transparency is highly ambiguous relative to the baseline model.

In figure 6, 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 6 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 up with proposals further from their ideal points than low-quality representatives, and even further away from the baseline model.

Figure 5: How transparency changes equilibrium proposal of the Leader, x^* (cases 1 and 2)

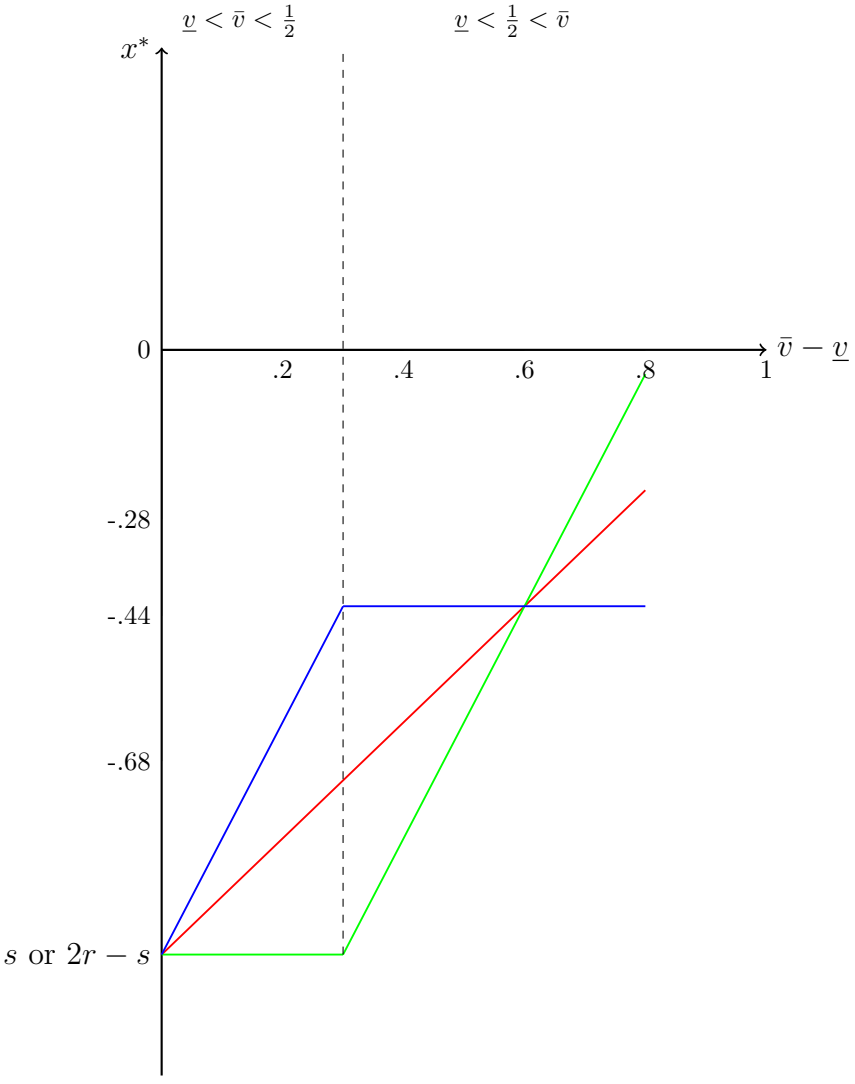
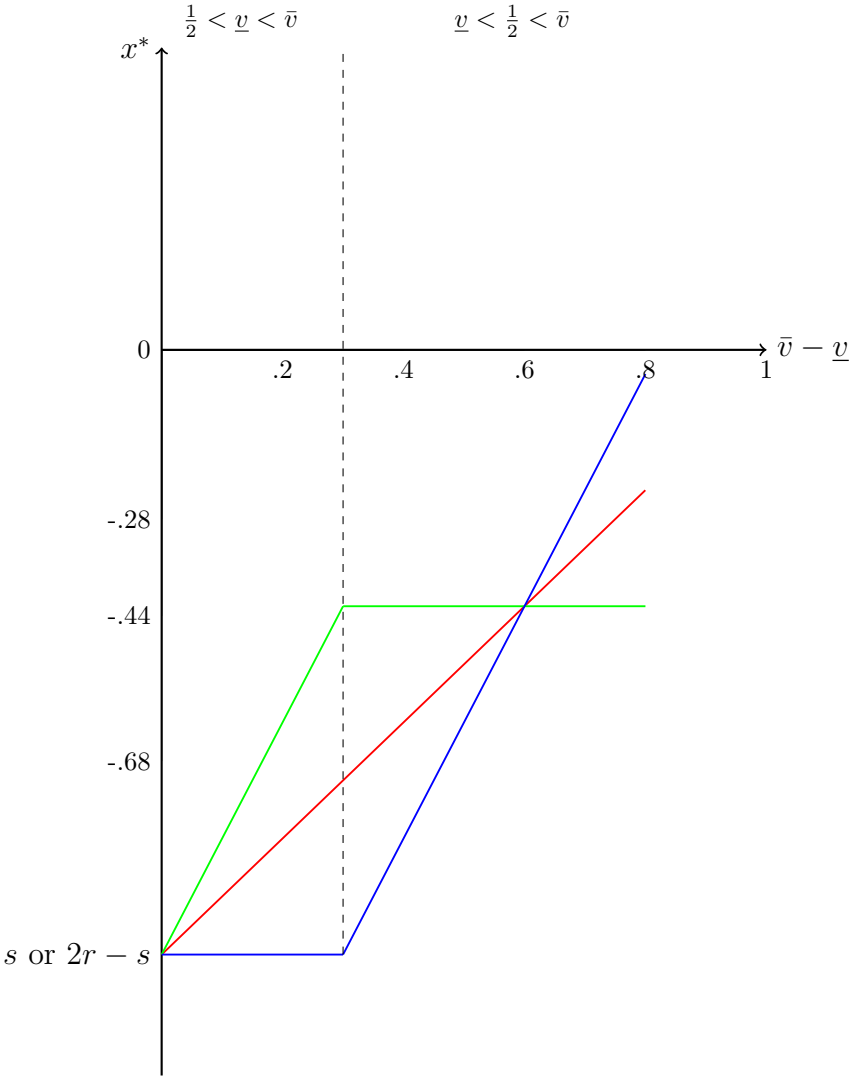


Figure 6: How transparency changes equilibrium proposal of the Leader, x^* (cases 2 and 3)



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

Implication 5 The combined effects of transparency and control over rank control on policy agreement are highly dependent on the overall quality of candidates. When the overall quality of candidates is high, high-quality of representatives are better for policy agreement than in the baseline model, but when the overall quality of candidates is low, low-quality representatives serve policy agreement better than the average Representative in 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 overall promote policy agreement.

5 Discussion

The literature on political institutions and political parties has long suggested that party-centered electoral rules could encourage not only parties with more unified in behavior but more cohesive in membership and more programmatic overall. Candidate-centered rules, meanwhile, are most often expected to be associated with more heterogeneous and less ideologically consistent parties. Despite the appeal of this intuition, empirical work on the topic has not found consistent evidence.

Here, we re-evaluate the effects of the personal vote elements of party-list electoral systems with a model that focuses on a unity-seeking party's organizational incentives in facilitating policy agreement. The results make clear that we should not expect parties in candidate-centered electoral systems to have less agreement with a party's leadership and policies than in party-centered systems. Instead, we should expect the opposite to be the case.

We begin from the premise that party discipline—applying coercion to party members in parliament—is a costly means for achieving unity, and these costs vary with the personal vote features of the electoral system, from OLPR to CLPR. In the case of CLPR, party leaders' control over members' list ranks means that discipline is less costly than in OLPR systems. If leaders can promote their legislative agenda based on discipline alone, they need not rely on internal policy agreement. Leaders under CLPR are therefore less inclined to pursue a policy that accounts for members' preferences and minimizes disagreement. By contrast, because discipline is costlier in OLPR, if leaders seeking voting unity are forced to either compromise their policy agenda or recruit more like-minded members.

The key insight of the model is that increasing control over a member's list rank—moving from more open to more closed lists in the electoral system—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 greater power to achieve party voting unity while making proposals with which party members disagree. When control over rank is low, leaders make proposals that are closer to their representatives' ideal points, increasing party policy agreement.

We then show that this basic intuition can be extended to party preference cohesion itself. When we extend the model such that party leaders also have the power to determine which members to recruit, the model further predicts that preference cohesion will be higher under OLPR.

Thus, strategic use of both policy compromise and recruitment to induce cohesion becomes more important under OLPR conditions, when party leaders cannot use list placement to secure discipline. We find further that these results are robust to accounting for both candidate quality and candidate vote share being endogenous to legislative voting behavior.

The main implication of our model, then, is that candidate-centered systems such as OLPR, despite being associated in the literature with incohesive and "weak" parties, actually provide incentives that lead to more policy agreement and more preference cohesion

within parties compared to CLPR systems. Thus 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.

Another implication is that OLPR, while not promoting any less agreement or preference cohesion, does mean that the party policy positions will be more reflective of member preferences. Electoral institutions in these candidate-centered systems indeed distribute implicit bargaining power away from party leaders and towards rank-and-file. Thus, our findings suggest that the effect of the personal vote is that party *leaders* in OLPR are weaker, ceteris paribus, than leaders in CLPR systems. However, this weakness does not result in greater ideological heterogeneity for the party overall. Instead, we show it has the opposite effect.

References

Adams, James and Samuel Merril III. 1999. "Modeling party strategies and policy representation in multiparty elections: Why are strategies so extreme?" *American Journal of Political Science* pp. 765–791.

Andre, Audrey, Sam Depauw and Matthew Shugart. 2014. The Effect of Electoral Institutions on Legislative Behaviour. In *The Oxford Handbook of Legislative Studies*, ed. Thomas Saalfeld, Kaare Strøm and Shane Martin. Oxford University Press.

Bowler, S., D.M. Farrell, R.S. Katz and European Consortium for Political Research. 1999. *Party discipline and parliamentary government*. Ohio State University Press Columbus.

Buisseret, Peter. 2018. "Instrumental Voting in Proportional Rule Electoral Systems.".

Buisseret, Peter and Carlos Prato. 2018. "Competing Principals? Legislative Representation in List PR Systems.".
URL: *http://www.wallis.rochester.edu/assets/pdf/wallisseminarseries/sem_2018-03-08.pdf https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3007275*

Carey, John M. 2007. "Competing Principals, Political Institutions, and Party Unity in Legislative Voting." 51(1):92–107.

Carey, John M. 2008. *Legislative voting and accountability*. Cambridge University Press.

Carey, John and Matthew Soberg Shugart. 1995. "Incentives to Cultivate a Personal Vote: a Rank Ordering of Electoral Formulas." *Electoral Studies* 14(4):417–439.

Carroll, Royce and Hiroki Kubo. 2017. "Measuring and comparing party ideology and heterogeneity." *Party Politics* .

Carroll, Royce and Monika Nalepa. 2019. "When Does the Personal Vote Matter for Party Loyalty? The Conditional Effects of Candidate-Centred Electoral Systems." *Parliamentary Affairs* . gsz027.
URL: *https://doi.org/10.1093/pa/gsz027*

Colomer, Josep Maria. 2011. *Personal Representation: The Neglected Dimension of Electoral Systems*. ECPR Press.

Coman, Emanuel Emil. 2015. "Institutions and vote unity in parliaments: Evidence from 33 national chambers." *The Journal of Legislative Studies* 21(3):360–389.

Cox, Gary and Matthew D McCubbins. 2001. The Institutional Determinants of Economic Policy Outcomes. In *Presidents, parliaments, and policy*, ed. Stephan Haggard and Matthew D McCubbins. Cambridge University Press chapter 10, pp. 266–290.

Crisp, Brian F., Maria C. Escobar-Lemmon, Bradford S. Jones, Mark P. Jones and Michelle M. Taylor-Robinson. 2004. "Vote-Seeking Incentives and Legislative Representation in Six Presidential Democracies." *Journal of Politics* 66(3):823–846.

Crutzen, Benoit SY and Nicolas Sahuguet. 2017. "Electoral incentives: the interaction between candidate selection and electoral rules." *Erasmus School of Economics, Erasmus Universiteit Rotterdam* .

Depauw, Sam and Shane Martin. 2005. "Legislative party discipline and cohesion in comparative perspective." *status: published* .

Desposato, Scott W. 2006. "The impact of electoral rules on legislative parties: Lessons from the Brazilian Senate and Chamber of Deputies." *Journal of Politics* 68(4):1018–1030.

Golden, Miriam A. and Eric CC Chang. 2001. "Competitive corruption: Factional conflict and political malfeasance in postwar Italian Christian Democracy." 53(4):588–622.

Hallerberg, Mark and Patrik Marier. 2004. "Executive Authority, the Personal Vote, and Budget Discipline in Latin American and Caribbean Countries." *American Journal of Political Science* 48(3):571–587.

Hazan, Reuven Y. 2003. "Introduction: Does cohesion equal discipline? towards a conceptual delineation." 9(4):1–11.

Hix, Simon. 2004. "Electoral Institutions and Legislative Behavior: Explaining Voting Defection in the European Parliament." 56(2):194–223.

Jones, Mark P. 2005. The role of parties and party systems in the policymaking process. In *Inter-American Development Bank Workshop on State Reform, Public Policies and Policymaking Processes, Washington, DC*.

Katz, Richard S. 1985. Intraparty preference voting. In *Electoral laws and their political consequences*. Agathon Press New York pp. 85–103.

Kitschelt, Herbert and Regina Smyth. 2002. "Programmatic Party Cohesion in Emerging Postcommunist Democracies Russia in Comparative Context." 35(10):1228–1256.

Krehbiel, Keith. 2010. *Pivotal politics: A theory of US lawmaking*. University of Chicago Press.

Kselman, Daniel M. 2019. "Public Goods Equilibria under Closed- and Open-List Proportional Representation.".

Lyne, Mona M. 2008. "Proffering pork: How party leaders build party reputations in Brazil." *American Journal of Political Science* 52(2):290–303.

Matakos, Konstantinos, Riikka Savolainen, Orestis Troumpounis, Janne Tukiainen and Dimitrios Xefteris. 2019. Electoral institutions and intraparty cohesion. In *Annual meeting of the Midwest Political Science Association*.

Mejía-Acosta, Andrés, Pérez Liñán, Aníbal and Sebastian M. Saiegh. 2006. The Partisan Foundations of Legislative Particularism in Latin America. SSRN Scholarly Paper ID 1018099 Social Science Research Network Rochester, NY: .

Persson, Torsten, Guido Tabellini and Francesco Trebbi. 2003. "Electoral rules and corruption." *journal of the European Economic Association* 1(4):958–989.

Picci, Lucio, Miriam Golden and others. 2007. Pork Barrel Politics in Postwar Italy, 1953–1994. Technical report University Library of Munich, Germany.

Raunio, T. 2007. "Open list, open mandate? Links between MEPs and parties in Finland." *Perspectives on European Politics and Society* 8(2):131–146.

Rickne, Johanna and Olle Folke. 2018. "Checking the box for better representation? Preference voting, party cohesion, and the voter-politician bond.".

Romer, Thomas and Howard Rosenthal. 1979. "Bureaucrats Versus Voters: On the Political Economy of Resource Allocation by Direct Democracy." *The Quarterly Journal of Economics* 93(4):563 –587.

Santos, André Marenco dos. 2007. "Do electoral rules matter? Electoral list models and their effects on party competition and institutional performance." *Dados* 3(SE):0–0.

Scheiner, Ethan. 2006. *Democracy without competition in Japan: Opposition failure in a one-party dominant state*. Cambridge University Press.

Shugart, Matthew Søberg, Melody Ellis Valdini and Kati Suominen. 2005. "Looking for Locals: Voter Information Demands and Personal Vote-Earning Attributes of Legislators under Proportional Representation." *American Journal of Political Science* 49(2):437–449.

Sieberer, Urlrich. 2006. "Party Unity in Parliamentary Democracies: A Comparative Analysis." *The Journal of Legislative Studies* 12(02):150–178.

Snyder Jr, James M. and Michael M. Ting. 2002. "An informational rationale for political parties." *American Journal of Political Science* pp. 90–110.

Snyder Jr, James M and Michael M Ting. 2005. "Why roll calls? A model of position-taking in legislative voting and elections." *Journal of Law, Economics, and Organization* 21(1):153–178.