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Valence Characteristics and Split-Ticket Voting of Partisan Voters*

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We analyze the voting behavior of partisan voters in a two-party presidential system when voters care about candidates' valence characteristics as well as policy issues. We show that since the president has a larger influence over policy than a single representative, partisan voters are more likely to vote for their own party's candidate in the presidential election than in the legislative election. We also show that partisan voters are more likely to vote for their own party's candidate in legislative elections when the incumbent president is from the opponent party than when he is from their own party. We provide some evidence that supports these findings.

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I. Introduction

This paper investigates the effect of the candidates' valence characteristics on the voting behavior of partisan voters. Valence characteristics refer to non-spatial candidate characteristics. In the traditional Downsian type of electoral competition model, voters are assumed to only care about policy issues. In reality, however, there are intrinsic attractiveness or averseness of candidates that affect the voters' decision. Stokes (1963) makes a distinction between valence issues and position issues. Valence issues include trustworthiness, honesty, charisma, eloquent speech delivery, incumbency and so on. Unlike position issues, all voters have the same ideal point over valence issues, and candidates cannot directly compete on those issues because they are beyond the candidates' control. For example, voters would unanimously prefer an honest candidate to a dishonest one if the two candidates are otherwise

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similar, but honesty cannot be established in a short period of time to enhance the chance of electoral victory. Enelow and Hinich (1982) add one more class of non-policy issue: ascriptive issues. They include race, religion, ethnic identity, and the like. These are also beyond the candidates' control but distinct from valence issues in that voters have differing ideal points over them. One would prefer a candidate who shares the same religion with him and hence voters with different religious backgrounds would support different candidates.[1] If candidates' personal characteristics such as valence issues or ascriptive issues indeed affect the voters' voting decision, it is important to investigate how introducing valence characteristics into the model changes the theoretical results about electoral competition. Groseclose (2001) and Aragones and Palfrey (2002) pursue this path and incorporate valence characteristics into the traditional two-candidate electoral competition model. Groseclose (2001) studies candidate location when one candidate has valence advantage. Aragones and Palfrey (2002) address the same issue but focus on mixed strategy equilibria.

This paper is another attempt to incorporate valence characteristics into the traditional electoral competition model. In this paper, we assume that voters are affected by non-policy issues and focus on the differential effects of valence characteristics on elections at different levels. By different levels of elections, we mean elections with different impact on policy. For example, the outcome of the presidential election has a significant impact on the national policy but that of the legislative election in a district has a relatively limited impact. The main point of this paper is simple. For a partisan voter to switch to the opposite party, the candidate from the opposite party should have valence advantage. But how large the advantage should be depends on the level of elections. We show that since the president has a much larger influence over national policy than a single representative, it takes larger valence advantage in the presidential election to induce a partisan voter to switch to the other party than in the congressional election. We also show that in the congressional election it is harder for a partisan voter to switch to the opposite party when the president is from the opponent party than when the president is from his own party. We show this using a simple model and present some evidence consistent with the theoretical results.

This paper is closely related with the issue of split-ticket voting. Split-ticket voting refers to a voter's voting for candidates from different political parties when multiple offices are decided by a single election. Since this is an interesting phenomenon, there is a large body of literature that tries to explain the source and pattern of split-ticket voting.[2] Fiorina (1992) even claims that "ticket-splitting and

[1] In this paper, valence characteristics include both valence issues and ascriptive issues. As will be made clear in later discussion, whether the characteristics are valence issues or ascriptive ones does not affect the main results of this paper.

[2] See Burden and Kimball (1998) and Beck *et al*. (1992) for surveys.

other aspects of the relationship between voting for different offices should become a central focus of research." In our paper, split-ticket voting itself is not surprising since policy issues are just one of the determinants of vote choice after all. Therefore, we mainly focus on exploring the pattern of split-ticket voting implied by the political system in which national policy is jointly determined by the executive and the legislature. To highlight the contribution of this paper, a detailed discussion of the literature on split-ticket voting is necessary.

There are two prominent and competing models that attempt to explain split-ticket voting. The first hypothesis, proposed by Fiorina (1992) and called "balancing theory," claims that voters intentionally split their tickets in an effort to moderate national policy.[3] Although this theory provides a simple and intuitive explanation of why split-ticket voting occurs, it is at odds with some stylized facts. According to this theory, it is the voters whose ideal policy lies in between the two party platforms who split their tickets. Hence, one would expect that strong partisans will cast straight-tickets and that split-ticket voting will decrease as the party platforms become similar. However, a significant number of people who identify themselves as strong Democrats or strong Republicans still split their tickets in the US. Moreover, Burden *et al*. (1998) show that contrary to what the balancing theory predicts, split-ticket voting increases as the party platforms become closer.

The second hypothesis, proposed by Jacobson (1990) and called "separation theory," sees ticket splitting as a result of the choice by voters with conflicting expectation. This hypothesis argues that voters' decisions in presidential and congressional elections are two separate ones. This theory explains the pattern of divided government in the 1970s and 1980s in the US (Republican president and Democratic Congress) in a simple way: people perceive that Republicans are good at handling national issues and Democrats at district-specific ones, such as the pork-barrel policy. However, the 1990s observed a divided-government of the opposite combination (Democratic president and Republican Congress), and separation theory cannot provide a clear explanation for this. Moreover, since this theory does not directly relate split-ticket voting to voters' partisan attachment, it cannot deal with questions that seek the relation between the two.

Our paper is distinct from these theories in several important respects. First, it is different from balancing theory in that we focus on partisan voters whose ideal policy is more extreme than the party platforms and hence would have no reason to intentionally balance according to balancing theory. One implication of our framework is that split-ticket voting will increase as the party platforms become similar since then the relative importance of position issues in voters' decision will

[3] Chari *et al*. (1997) formalize this idea and assume that policy is determined through bargaining between the president and local representatives. They show that voters intentionally elect fiscally liberal representatives to exploit the budgetary externality and a fiscally conservative president to restrain representatives from other districts.

decrease and valence issues will prevail. This is consistent with the finding of Burden *et al*. (1998). Second, unlike separation theory, we model the executive and the legislature as actors who jointly determine the national policy. Although voters may perceive the different roles of the executive and the legislature, they also recognize the link of the composition of the legislature to its bargaining power vis-a-vis the executive in determining national issues such as redistribution or foreign policy. Our model focuses on the aspect of the executive and the legislative jointly determining national policy and investigates how the existence of valence characteristics may affect voters' voting decision in such an environment.

Since split-ticket voting often results in divided government, this paper is also related with the literature on divided government such as Ingberman and Villani (1993) and Alesina and Rosenthal (1996). Ingberman and Villani (1993) develops a model of institutionally driven party competition to explain the persistence of divided government. In their model, parties first choose their positions, and then simultaneous elections for the executive and the legislature are held. National policy is determined through bargaining between the winners of each office, who are separately determined by majority rule. They provide an equilibrium in which parties adopt widely separated positions, and split-ticket voting occurs with high probability. The assumption that the winner in the legislative election gets full control of the legislature is an oversimplification, however; although obtaining majority in the legislature may provide disproportionate control, it never provides full control of the legislature. Alesina and Rosenthal (1996), who study a similar issue, instead assume that the relative power of parties in the legislature is determined by each party's vote share in a nationwide legislative election, which is an improvement upon the winner-take-all assumption in Ingberman and Villani (1993).

The common feature of these two studies is that there are no candidates in the legislative election; it is held in a unified district with no candidates and hence there is no room for valence issues. Provided voters are affected by candidates' personal characteristics, the assumption of a unified electoral district with no candidates fails to capture the important fact that electorates in different districts face different candidates. It is hard to imagine in reality that voters who are faced with different candidates cooperate across districts as in Alesina and Rosenthal (1996). Our paper is critically different from these studies in that we assume the legislative election is held on a district-by-district basis with different pairs of candidates competing in different districts. Another feature that distinguishes our paper from the above studies is that we assume the number of the representatives from each party, not the vote share of each party as in Alesina and Rosenthal (1996), determines the relative power in the legislature. Consider a country composed of three electoral districts of the same size. Suppose there are two parties L and R, and L won in two of the three districts by bare majority but gained zero votes in the third district. Then, although R is supported by almost 2/3 of the whole population, it fares worse in

the legislature than L does.[4] Thus, we find the number of winners a better proxy for the relative power in the legislature than the vote share.

The rest of the paper is organized as follows. In Section 2, we present a simple example to highlight our main idea. In Sections 3 and 4, we describe the model and provide results. In Section 5, we present some evidence that supports our results. Section 6 concludes.

II. Example

In this section, we conduct a simple thought experiment that vividly shows the driving force of our model. We consider a situation in which two candidates L and R run in two different elections, competing over a one-dimensional policy. We analyze and compare the outcome of these two elections to derive an important implication.

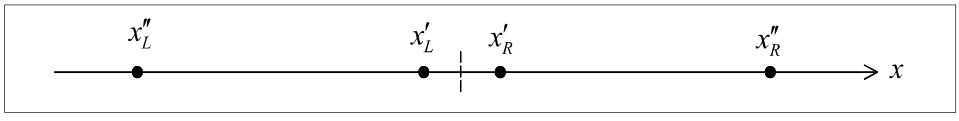
Voters are distributed along the real line and characterized by their ideal policies. They care about both policy issues and valence issues. Specifically, voter x's utility when candidate $k = L, R$ is elected is defined as

$$u(x,k) = -(x - x_k)^2 + \varepsilon_k,$$

where x_k is the policy that will be implemented if k is elected and ε_k is k's valence characteristics.[5]

Suppose the same two candidates L ad R run in two different elections. In one election, L and R will implement x'_L and x'_R respectively if elected, where $x'_L < x'_R$. In the other election, L and R will implement x''_L and x''_R respectively if elected, where $x''_L + x''_R = x'_L + x'_R$ and $x''_L < x'_L$. That is, policies are symmetric about the midpoint $\frac{x'_L + x'_R}{R}$ and differ more in the latter election. See Figure 1. Since the same candidates run in the two elections, their valence characteristics remain unchanged across elections. Without loss of generality, assume $\varepsilon_R > \varepsilon_L$.

[Figure 1] Policies in Each Election



[4] In this case, divided government may arise without any split-ticket voting since R will most likely win in the presidential election.

[5] Whether these characteristics are ascriptive or not does not affect the result throughout this paper since we focus on a single voter given the valence values he perceives.

Then, voter x will vote for L if and only if

$$-(x-x_L)^2+\varepsilon_L > -(x-x_R)^2+\varepsilon_R,$$

or

$$x < \frac{x_L+x_R}{2} - \frac{\varepsilon_R-\varepsilon_L}{2(x_R-x_L)}.$$

Now, consider the cutoff voter in each election who is indifferent between L and R. In the first election, the cutoff voter is

$$x_c' \equiv \frac{x_L'+x_R'}{2} - \frac{\varepsilon_R-\varepsilon_L}{2(x_R'-x_L')},$$

and in the second election, the cutoff voter is

$$x_c'' \equiv \frac{x_L''+x_R''}{2} - \frac{\varepsilon_R-\varepsilon_L}{2(x_R''-x_L'')}.$$

Since $x_L''+x_R''=x_L'+x_R'$ and $x_L''<x_L'$ (and hence $x_R''>x_R'$), it follows that $x_c'<x_c''$. This illustrates an important aspect of the effect of valence issues on voters' voting decision. Since R is superior in valence values, some voters who would vote for L with respect to the policy dimension will support R. The above analysis shows that less L voters will switch to R in the second election in which policies are more divergent, than in the first election where policies are comparatively similar. This implies that valence issues will have a smaller impact on voters' decision, the larger the effect of the election outcomes on the policy issue.

Before we move on to the next section, we provide a couple of results that will prove useful later. Let $x_L<x_R$ and define $\varepsilon(x)$ as

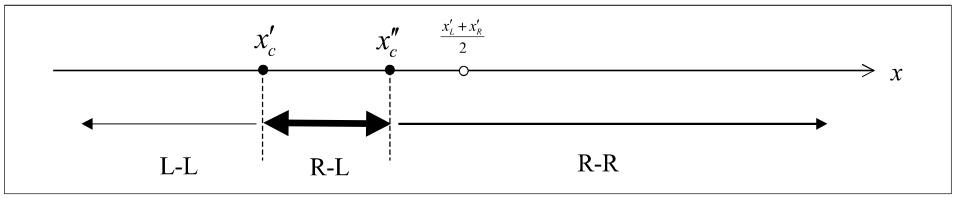
$$-(x-x_L)^2 = -(x-x_R)^2+\varepsilon(x),$$

or

$$\varepsilon(x) = (x_L+x_R-2x)(x_R-x_L). \tag{1}$$

That is, $\varepsilon(x)$ is R's advantage (or disadvantage) in valence characteristics that leaves voter x indifferent between the two candidates. We have the following

[Figure 2] Vote Choice



straightforward results, whose proofs are trivial by the definition of $\varepsilon(x)$ and hence omitted.

Lemma 1 *Fix* $x_L + x_R$ *and* $x < \frac{x_L+x_R}{2}$. *Then,* $\varepsilon(x)$ *is increasing in* $x_R - x_L$.

Lemma 2 *Fix* $x_R - x_L$ *and* $x < \frac{x_L+x_R}{2}$. *Then,* $\varepsilon(x)$ *is increasing in* $x_L - x_R$.

The above example was intended as an illustration. Policies in two elections were assumed to be symmetric and therefore share the same midpoint. We also assumed that the same candidates feature in both elections in order to highlight an aspect of split-ticket voting. In the next section, we present and analyze a more general and realistic model.

III. The Model

3.1. Elections

We consider a country whose government is composed of the executive and the legislature. The executive is governed by the president who is elected from a nationwide election. The legislature consists of N representatives. Each representative is elected from each electoral district and represents his own district. There are two parties L and R in this country, and both the president and the representatives come from the two parties. The executive and the legislature are elected in a single election. We assume that the outcome of the presidential election is revealed before voters cast vote for the legislative election. This is to highlight the effect of the identity of the president on the voting behavior of partisan voters in the legislative election.[6] The elected government implements the national policy.

3.2. Determination of Policy

The government determines a national policy which is one-dimensional. The

[6] More on this assumption will be discussed in 3.4.

implemented policy reflects the power of the two parties within government. More specifically, it depends on the party affiliation of the president and the composition of the legislature. Each party has an established platform. Let l and r be L's and R's platforms respectively, where $l < r$.[7] Then, the national policy x is determined as

$$x = \alpha p + (1-\alpha)\left(\frac{n_L}{N} l + \frac{n_R}{N} r\right).$$

The parameter α, $0 < \alpha < 1$, captures the relative power of the executive over the legislature, and p depends on the identity of the president; $p = l$ when L gains the presidency and $p = r$ when R gains the presidency. In the second bracket, n_k is the number of k-party representatives, where $k = L, R$ and $n_L + n_R = N$. The above equation simply reflects the fact that a party can pull the implemented policy toward its platform as its power in the government becomes larger. If, for example, L sweeps both elections and hence $p = l$ and $n_L = N$, then the implemented policy will be l. We impose the following assumption on α.

Assumption 1 $\alpha > \frac{1}{N+1}$.

This assumption simply guarantees that the president has a larger impact on policy than a single representative. With the legislature fixed, changing the identity of the president changes the policy by $\alpha(r-l)$ in absolute value. Alternatively, fixing the president, changing a single representative alters the policy by $\frac{1}{N}(1-\alpha)(r-l)$ in absolute value. Requiring the former to be bigger than the latter yields the above inequality. Since N is very large and the executive is quite powerful in reality, this assumption is a very mild one. Fiorina (1992) assumes $\alpha > \frac{1}{2}$ to explain the pattern of split tickets, but such a restrictive assumption is not needed in our model.[8]

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[7] Assuming established platforms can be justified by the fact that at the time of any election, party platforms are fixed and publicly observable. The different platforms of parties may be due to, for example, uncertainty about the distribution of voters and parties' policy preference. Ingberman and Villani (1993) and Alesina and Rosenthal (2000) develop models that endogenize the platform choice of parties.

[8] In general, let $x = f(k, n_L)$, where $k \in \{L, R\}$ denotes the president's party affiliation. Then any function f that satisfies the following will work:

- $f(L, n_L) < f(R, n_L), n_L = 0, 1, \ldots, N$
- $f(k, n_L) < f(k, n_L - 1)$ with $f(k, n_L - 1) - f(k, n_L) < f(R, n_L) - f(L, n_L)$ and $f(k, n_L) - f(k, n_L + 1) < f(R, n_L) - f(L, n_L)$, $n_L = 1, \ldots, N$, $k = L, R$
- $f(L, N) = l$, $f(R, 0) = r$

3.3. Voting

Consider voter x who never abstains.[9] His voting decision is based on his utility, which is composed of two parts. Let k_p and k_c be the candidates x votes for in the presidential and the legislative election, respectively. Likewise, let ε_{k_p} and ε_{k_c} be the valence characteristics of k_p and k_c, respectively.[10] Let voter x's utility on which his decision is based be

$$u(x, k_p k_c) = -(x - x_{k_p k_c})^2 + \varepsilon_{k_p} + \varepsilon_{k_c},$$

where $x_{k_p k_c}$ is the policy that will be implemented if k_p is elected president and k_c wins in x's district. To fix the value of $x_{k_p k_c}$, we need the composition of the whole legislature. If L obtains $n_L - 1$ seats outside x's district in the legislative election, the value of $x_{k_p k_c}$ when he votes for k_p and k_c will be

$$x_{k_p k_c} = \alpha p + (1-\alpha)(\beta l + (1-\beta) l),$$

where $p = l$ if k_p is from L and $p = r$ if k_p is from R, and $\beta = n_L / N$ if k_c is from L and $\beta = (n_L - 1)/N$ if k_c is from R. Although $x_{k_p k_c}$ reflects the policy that would be implemented if the candidates x voted for won the elections, this does not mean that those candidates will actually win. In this sense, his voting behavior is basically sincere. However, his voting behavior has a characteristic of strategic voting as well because $x_{k_p k_c}$ is also affected by the electoral outcomes in the other districts in the legislative election.[11]

In the presidential election, the voter decides which presidential candidate to vote for, taking into account the prospect of the legislative election including his own district. In the legislative election, the identity of the president is publicly known. Hence, the voter takes the identity of the president as given and decides which legislative candidate in his district to vote for, taking into account the prospect of the

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[9] We can think of x as a voter who has a high non-instrumental or consumption value of voting so that he always votes.

[10] These values are the evaluation by voter x and do not have to be the same as those perceived by other voters. Because we are focusing on a single voer x, it does not matter whether his evaluation coincides with those of other voters.

[11] Putting aside the issue of abstention, sincere voting and strategic voting are observationally equivalent in a two-candidate election (Merlo, 2019). In our model, a voter is faced with two candidates in each of the two elections and hence he basically votes sincerely in each election. Because the implemented policy is affected by the electoral outcomes in the other districts in the legislative election, however, his voting *a la* sincere voting should be a best response to the electoral outcomes in the other districts. This is different from 'sophisticated sincere voting' in Austem-Smith (1987), in which a voter may vote for a less favorate candidate for the primary if he stands a better chance in the election than his favorite candidates does against the opponent.

elections in the other districts.

3.4. Discussion of the Model

- In our model, we assumed that the outcome of the presidential election is revealed at the time of the legislative election. Suppose the elections are held simultaneously and voter x votes sincerely. Then, his voting decision for the legislative election would not be affected by the prospect of the presidential election. This is because $x_{k_p k_c}$ is the policy that would be implemented if the candidates he voted for won the elections, not the policy that will be implemented by the actual winners. Therefore, whether the winner in the presidential election is most likely to be L or R does not affect the voter's choice for the legislative election. This is at odds with the reality as will be shown in Section 5. Because one of the main points of this study is the effect of the president's party affiliation on the legislative election, we assume that the winner of the presidential election is known at the time of the legislative election. We can imagine a situation in which voters can predict the outcome of the presidential election almost certainly due to opinion polls. One advantage of this setup is that the legislative election in our model can be thought of as a midterm election with the executive already in place.

- We incorporated valence characteristics as an additive form. The additive form has some properties that seem plausible. To see this, suppose voters share the same evaluation of candidates' valence characteristics.[12] Then, if two candidates are identical in their policy dimension, all voters unanimously prefer the one with the higher valence value. Moreover, when candidates differ in policy dimension, there exists a unique cutoff point such that voters to the left of it vote for L and vice versa. Suppose instead that the valence issues enter the utility function in a multiplicative form such as

  $$u(x,k) = -\delta_k (x - x_k)^2,$$

  where $\delta_k > 0$ captures valence characteristics and thus a smaller δ_k means a higher valence value. Then, if $x_L = x_R$, then voter $x = x_L = x_R$ is indifferent between L and R even though one is superior to the other. Moreover, if $x_L \neq x_R$, then the inferior candidate is liked only by those voters whose ideal policy is near his, and the remaining voters prefer the superior candidate, which seems unrealistic.

[12] Note that in our model, voters' evaluations do not have to be the same across voters.

- One may argue that people care about valence characteristics more in presidential elections, since the presidential candidates receive more spotlights than the congressional candidates. If it is true, we could work with utility functions such as

$$u(x,k) = -(x - x_k)^2 + \gamma\varepsilon_k ,$$

where $\gamma = \gamma_p$ in presidential elections, and $\gamma = \gamma_c$ in legislative elections with $\gamma_p > \gamma_c > 0$. This would not change our result as long as γ_p is not excessively larger than γ_c.

IV. Analysis

Given the setup and voting behavior, the electoral outcome itself is quite straightforward; it is simply determined by the voters' voting decision based on their utility. Our interest in this section lies not so much in the electoral outcome as in the behavior of a certain class of voters. Specifically, we are interested in how partisan voters would cast their votes in different elections. We fix a voter x, where $x < l$. Since his ideal policy is strictly to the left of party L's platform, he always prefers an L candidate with respect to policy and will vote for an R candidate only when that candidate has an advantage in valence issues, i.e., when $\varepsilon_R > \varepsilon_L$. Subsequently, we will compute in various situations the minimum value of R's valence advantage that would induce voter x to vote for him. In other words, we compute $\varepsilon(x)$ defined in Section 2. We then provide some results that have empirical implications.

4.1. Presidential Election

Suppose that at the time of election, x believes that L will win $\tilde{n}_L$ seats in the legislative election.[13] Let $\beta_p \equiv \tilde{n}_L / N$. Define

$$x_1 \equiv \alpha l + (1-\alpha)\{\beta_p l + (1-\beta_p) r\}$$

and

[13] This is a simplifying assumption. In principle, $\tilde{n}_L$ should be a random variable with a density function that reflects the voter's forecasting of the legislative election. This will only complicate the analysis with little value added. We instead assume a specific number $\tilde{n}_L$ for simplification. We can imagine that the voter can obtain a sharp estimate of n_L based on several opinion polls.

$$x_2 \equiv \alpha r + (1-\alpha)\{\beta_p l + (1-\beta_p) r\}.$$

Note that x_1 and x_2 are the policies that will enter x's utility function if he votes for L and R, respectively. By (1), $\varepsilon(x) = (x_1 + x_2 - 2x)(x_2 - x_1) \equiv \varepsilon_p(x)$. If $\varepsilon_{R_p} - \varepsilon_{L_p} \geq \varepsilon_p(x)$, x votes for R. Otherwise, he votes for L.[14] All other voters do similar calculations for voting. Depending on the values of l, r, β_p, α and the voter distribution, the winner is determined.

4.2. Legislative Election

At the time of the legislative election, the winner in the presidential election is already determined. We examine L-president and R-president cases.

4.2.1. L-president case

Suppose L has won the presidential election. Also suppose for simplicity that voter x believes that in the other $N-1$ districts, $\hat{n}_L - 1$ of L candidates will win.[15] Hence, L will have $\hat{n}_L$ seats in the legislature if L wins in his district and $\hat{n} - 1$ seats otherwise. Let $\beta_c \equiv \hat{n}_L / N$ and define

$$x_3 \equiv \alpha l + (1-\alpha)\{\beta_c l + (1-\beta_c) r\},$$

and

$$x_4 \equiv \alpha l + (1-\alpha)\left\{\left(\beta_c - \frac{1}{N}\right) l + \left(1 - \beta_c + \frac{1}{N}\right) r\right\}.$$

Note that x_3 and x_4 are the policies that will enter x's utility function if he votes for L and R, respectively. Then, $\varepsilon(x) = (x_3 + x_4 - 2x)(x_4 - x_3) \equiv \varepsilon_c(x)$. If $\varepsilon_{R_c} - \varepsilon_{L_c} \geq \varepsilon_c(x)$, x votes for R. Otherwise, he votes for L. We first obtain the following result.

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[14] Note that the valence characteristics of the legislative candidates in x's district does not directly affect his decision in the presidential election. They can affect it only indirectly through β_p.

[15] It is highly likely that $\tilde{n}_L$ and $\hat{n}_L$ are closely related. If, for example, $\tilde{n}_L$ and $\hat{n}_L$ are both correct forecasts, then $\tilde{n}_L = \hat{n}_L$ if L wins in x's district in the legislative election and $\tilde{n}_L = \hat{n}_L - 1$ if L loses. Whether the expectations are correct or not is not our main concern since we focus on the voting behavior of a single voter given his expectation. Nor does the issue affect our main results. Here, we do not assume any specific relation between $\tilde{n}_L$ and $\hat{n}_L$ and instead obtain some general results concerning the two.

Proposition 1 *For any* β_p, *there exists* $\tilde{\beta} \le \beta_p$ *such that* $\varepsilon_p(x) \ge \varepsilon_c(x)$ *if and only if* $\beta_c \ge \tilde{\beta}$.

Proof. Solving

$$\varepsilon_p(x) = (x_1 + x_2 - 2x)(x_2 - x_1) \ge \varepsilon_c(x) = (x_3 + x_4 - 2x)(x_4 - x_3)$$

using the expressions for x_1, x_2, x_3, and x_4 yields

$$\beta_c \ge \frac{1}{2(1-\alpha)(r-l)}\left(2\alpha l - 2x - \frac{N}{1-\alpha}\{\alpha(l+r) + 2(1-\alpha)(\beta_p l + (1-\beta_p)r)\}\right)$$
$$+ \frac{1}{2(r-l)}\left(2r + \frac{1}{N}(r-l)\right) \equiv \tilde{\beta}'.$$

Defining $\tilde{\beta} = \max\{\tilde{\beta}', 0\}$ does the job.

To show $\tilde{\beta} \le \beta_p$, let $\beta_c = \beta_p$. Then, $x_1 + x_2 > x_3 + x_4$ and by Assumption 1, $x_2 - x_1 > x_4 - x_3$. Then, by Lemmas 1 and 2, $\varepsilon_p(x) > \varepsilon_c(x)$. Since $\varepsilon_p(x) > \varepsilon_c(x)$ for $\beta_c = \beta_p$, it follows by the above argument that $\tilde{\beta} \le \beta_p$. ■

Proposition 1 states that the necessary valence advantage that an R candidate needs in order to attract voter x is higher in the presidential election than in the legislative election, as long as β_c is bigger than some cutoff value and that the cutoff is no bigger than β_p. If $\tilde{\beta} = 0$, then $\varepsilon_p(x) \ge \varepsilon_c(x)$ for any β_c. It is easy to understand this result. Note that β_p determines x_1 and x_2 and hence $\varepsilon_p(x)$. Likewise, β_c determines x_3 and x_4. As β_c increases, both x_3 and x_4 shift to the left, and this makes it easier for x to switch. In other words, as β_c increases, $\varepsilon_c(x)$ becomes smaller, and eventually it will become smaller than $\varepsilon_p(x)$. Therefore, $\varepsilon_p(x) \ge \varepsilon_c(x)$ will be satisfied for β_c's that are above some threshold value.

Corollary 1 $\tilde{\beta}$ *is nondecreasing in* β_p.

Proof. Since $\tilde{\beta} = \max\{\tilde{\beta}', 0\}$, it is enough to show that $\tilde{\beta}'$ is nondecreasing in β_p, which is true since

$$\frac{d}{d\beta}\tilde{\beta}' = \frac{1}{1-\alpha} > 0. \blacksquare$$

Corollary 1 says that for a higher β_p, there exists a narrower range of β_c for which $\varepsilon_p(x) \ge \varepsilon_c(x)$. To understand this, first note that x_1 and x_2 both decrease

as β_p increases. Therefore, $\varepsilon_p(x)$ decreases. Hence, some low β_c's that satisfied $\varepsilon_p(x) \geq \varepsilon_c(x)$ for a low β_p no longer satisfy it, which means that the threshold value of β_c is now higher.

Corollary 2 $\tilde{\beta}$ *is nonincreasing in* N.

Proof. Again, it is enough to show that $\tilde{\beta}'$ is nonincreasing in N.

$$\frac{\partial}{\partial N}\tilde{\beta}' = -\frac{1}{2(1-\alpha)^2(r-l)}(x_1 + x_2 - x) - \frac{1}{2N^2} < 0 \text{ . } \blacksquare$$

Corollary 2 shows that the larger the number of electoral districts, the wider the range of β_c for which $\varepsilon_p(x) \geq \varepsilon_c(x)$. As N increases, $x_4 - x_3$ decreases and hence $\varepsilon_c(x)$ decreases. Hence, some high β_c's that did not satisfy $\varepsilon_p(x) \geq \varepsilon_c(x)$ for a small N now satisfy it. This means that the threshold value of β_p is lower.

We also have the following result.

Proposition 2 *For* N *large enough,* $\varepsilon_p(x) > \varepsilon_c(x)$.

Proof. Note that $\varepsilon_p(x) = (x_1 + x_2 - 2x)(x_1 - x_2)$ is independent of N. Moreover,

$$\begin{aligned}\varepsilon_c(x) &= (x_3 + x_4 - 2x)(x_3 - x_4) \\ &= \left(2\{\alpha l + (1-\alpha)(\beta_c l + (1-\beta_c)r) - x\} + \frac{1}{N}(r-l)\right)\frac{1}{N}(r-l)\end{aligned}$$

is decreasing in N and tends to 0 as $N \to \infty$. Thus, for N large enough, $\varepsilon_p(x) > \varepsilon_c(x)$. $\blacksquare$

Proposition 2 shows that when the number of districts is sufficiently large, it is always the case that $\varepsilon_p(x) \geq \varepsilon_c(x)$ regardless of β_p and β_c.

4.3. R-president Case

Now suppose R has won the presidential election. Define $\hat{n}_L$ and β_c as before. Let

$$x_5 \equiv \alpha r + (1-\alpha)\{\beta_c l + (1-\beta_c)r\},$$

and

$$x_6 \equiv \alpha r + (1-\alpha)\left\{\left(\beta_c - \frac{1}{N}\right)l + \left(1-\beta_c + \frac{1}{N}\right)r\right\}.$$

As before, x_5 and x_6 are the policies that will enter x's utility function when he votes for L and R, respectively. Then, $\varepsilon(x) = (x_5 + x_6 - 2x)(x_6 - x_5) \equiv \varepsilon_c'(x)$. If $\varepsilon_R - \varepsilon_L \geq \varepsilon_c'(x)$, x votes for R. Otherwise, he votes for L. We obtain a result analogous to Proposition 1.

Proposition 3 *For any* β_p, *there exists* $\hat{\beta}$ *such that* $\varepsilon_p(x) \geq \varepsilon_c'(x)$ *if and only if* $\beta_c \geq \hat{\beta}$.

Proof. Solving

$$\varepsilon_p(x) = (x_1 + x_2 - 2x)(x_2 - x_1) \geq \varepsilon_c'(x) = (x_5 + x_6 - 2x)(x_6 - x_5)$$

using the expressions for x_1, x_2, x_3, and x_6 yields

$$\varepsilon_p \geq \frac{1}{2(1-\alpha)(r-l)}\left(2\alpha r - 2x - \frac{N}{1-\alpha}\{\alpha(l+r) + 2(1-\alpha)(\beta_p l + (1-\beta_p)r)\}\right)$$
$$+ \frac{1}{2(r-l)}\left(2r + \frac{1}{N}(r-l)\right) \equiv \hat{\beta}'.$$

Defining $\hat{\beta} = \max\{\hat{\beta}', 0\}$ completes the proof. ■

Note that unlike in Proposition 1, there is no guarantee that $\hat{\beta} \leq \beta_p$ any more. It is still the case that $x_2 - x_1 > x_6 - x_5$, but $x_1 + x_2 < x_5 + x_6$ when $\beta_c = \beta_p$. However, a weaker version still holds: for N large enough, $\hat{\beta} \leq \beta_p$. To see this, let $\beta_c = \beta_p$. By increasing N, we can make ε_c' arbitrarily small since $x_6 - x_5$ tends to 0 as N increases. Therefore, $\varepsilon_p(x) \geq \varepsilon_c'(x)$ will be always satisfied for a large enough N. Hence, $\hat{\beta} \leq \beta_p$ holds for a large enough N.

Results analogous to Corollaries 1 and 2 straightforwardly hold in this case, and we omit them. Before we present the counterpart of Proposition 2, we show the following important result.

Proposition 4 *For any* β_c, $\varepsilon_c'(x) > \varepsilon_c(x)$.

Proof. Recall $\varepsilon_c'(x) = (x_5 + x_6 - 2x)(x_6 - x_5)$ and $\varepsilon_c(x) = (x_3 + x_4 - 2x)(x_4 - x_3)$. Since $x_6 - x_5 = x_4 - x_3 = \frac{1-\alpha}{N}(r-l)$ and $x_5 + x_6 > x_3 + x_4$, it follows that $\varepsilon_c'(x) > \varepsilon_c(x)$. ■

This states that for the same prediction about the legislative election, it is harder for voter x to switch to R when the president is R than when the president is L.

Finally, we show that notwithstanding this, the counterpart of Proposition 2 still holds.

Proposition 5 *For N large enough, $\varepsilon_p(x) \geq \varepsilon_c'(x)$.*

Proof. Similar to the proof of Proposition 2. Since

$$\begin{aligned}\varepsilon_c'(x) &= (x_5 + x_6 - 2x)(x_6 - x_5) \\ &= \left(2\{\alpha r + (1-\alpha)(\beta_c l + (1-\beta_c)r) - x\} + \frac{1}{N}(r-l) \right) \frac{1}{N}(r-l)\end{aligned}$$

is decreasing in N and tends to 0 as $N \to \infty$, $\varepsilon_p(x) \geq \varepsilon_c'(x)$ for large N. ■

Propositions 2 and 5 together imply that when the country consists of many electoral districts for legislative elections, it is harder for an L voter to vote for an R candidate in the presidential election than in the legislative election.

V. Evidence

We saw in the previous section that under moderate conditions, it is harder for an L voter to support R in the presidential election than in the legislative election. National Election Studies (NES) provides survey data that enable us to test the validity of our result.[16] There is a seven-point scale party identification question in NES data that asks people to identify themselves as a scale, ranging from "Strong Democrats" to "Strong Republicans." NES data also contain people's average feelings toward Presidential/Congressional Candidates in each election, which we interpret as valence characteristics. Since the data also include respondents' vote choice in each election, we can ask the following question: Among the Democrats (resp. Republicans) who found Republican (resp. Democratic) candidates superior, how many actually voted for the Republican (resp. Democratic) candidates?

Tables 1 and 2 show the answers to these questions. They list the ratio of voters who actually voted for the opposite party among those who liked the opposite party candidate better, for each type of partisans, i.e., strong partisans, weak partisans, and independent partisans. We can see that the ratio is lower in Presidential elections than in Congressional elections.

[16] See Appendix for the question texts.

[Table 1] Democrats Who Voted for Superior Republican Candidates, 1980-2000

	Strong Dem	Weak Dem	Ind Dem	Overall Dem
Presidential	18/34 = 0.53	70/100 = 0.70	31/49 = 0.63	119/183 = 0.65
Congressional	34/61 = 0.56	75/93 = 0.81	60/74 = 0.81	169/228 = 0.74

[Table 2] Republicans Who Voted for Superior Democratic Candidates, 1980-2000

	Strong Rep	Weak Rep	Ind Rep	Overall Rep
Presidential	7/19 = 0.37	39/64 = 0.61	30/51 = 0.59	76/134 = 0.57
Congressional	33/67 = 0.49	69/92 = 0.75	70/91 = 0.77	172/250 = 0.69

[Table 3] Vote Choice: Democrats, 1980-2000

	Strong Dem	Weak Dem	Ind Dem	Overall Dem
DD	506	304	233	1043
DR	55	63	58	176
RD	21	46	27	94
RR	13	64	33	110

[Table 4] Vote Choice: Republicans, 1980-2000

	Strong Rep	Weak Rep	Ind Rep	Overall Rep
DD	7	27	24	58
DR	5	31	24	60
RD	51	88	93	232
RR	469	319	252	1040

[Table 5] Ticket-Splitting Patterns: Percentage with the number of samples in parentheses. (Reformulated from Mattei and Howes (2000), p 385.)

Ideological Proximity	1980-1988	1992-1996
Closer to Democrats	(58)	(37)
DR	43.1	79.0
RD	56.9	21.0
Equidistant	(56)	(48)
DR	21.4	47.2
RD	78.6	52.8
Closer to Republicans	(70)	(37)
DR	7.1	49.5
RD	92.9	50.5

A casual observation is also favorable to our result. Tables 3 and 4 show the vote choice of Democrats and Republicans unconditional on their feelings toward candidates. We can notice that in Table 3, which shows the choice by Democrats, DR splits occur more frequently than RD splits. Likewise, in Table 4, there are more RD splits than DR splits by Republicans.

Mattei and Howes (2000) notice that there is a significant difference in the pattern of ticket splitting between the 1980s and the 1990s. As shown in Table 5, Democrats cast more RD splits than DR splits in the 1980s and Republicans cast as many DR splits as RD splits in the 1990s. We attribute this to high valence characteristics of Republican presidential candidates in the 1980s and high valence characteristics of Democratic presidential candidates in the 1990s. Analyzing NES data shows that Reagan and Bush enjoyed huge valence advantage in the 1980s and Clinton in the 1990s, whereas there is no clear evidence that candidate valences of the two parties differed significantly in the House election.

Another implication of our model, which we obtain from Proposition 4, is that for the same prediction of legislative election outcomes, it is harder for an L voter to switch to R candidates when they have R president instead of L president. Table 6 shows the ratio of partisan voters who actually voted for the opposite party to those who felt the candidate of the opposite party superior. We can see that the switching ratio of Democrats is lower in the 1982-1990 elections, when the Republican party had presidency, than in the 1994-1998 elections, when the president was a Democrat. Likewise, the switching ratio of Republicans is lower in the 1994-1998 elections than in the 1982-1990 elections.[17]

[Table 6] Switching Ratios in House Elections 1982-1998

	Democrats	Republican
1982	22/34 = 0.65	15/19 = 0.79
1986	18/27 = 0.67	21/30 = 0.70
1990	11/17 = 0.65	14/20 = 0.70
1994	24/30 = 0.80	25/37 = 0.67
1998	17/23 = 0.74	7/17 = 0.41

VI. Concluding Remarks

If voters are affected by the candidates' valence characteristics, it is important to analyze how introducing such factors into the standard model would change the theoretical results about electoral competition. In this paper, we assume a political system in which the party affiliation of the executive and the composition of the legislature jointly determine national policy, and focus on the differential effects of valence characteristics on different levels of elections. We show that partisan voters are more likely to vote for their own party's candidate in the presidential election

[17] Caution should be exercised in interpreting this table since the number of observations in the table is not large enough and the differences between Democrats and Republicans in several elections are not big enough. I'd like to thank a referee for pointing this out.

than in the legislative election as the president has a larger influence over policy than a single representative. We also show that in legislative elections, partisan voters are more likely to vote for their own party's candidate when the incumbent president is from the opponent party than when he is from their own party. We then provide some supporting evidence.

This paper belongs to the literature that explicitly factors in valence characteristics as a determinant of vote choice. Technically, this paper is a modification of Fiorina (1992) and Alesina and Rosenthal (1996); we introduce valence characteristics and district-by-district legislative elections. Although the model is a straightforward extension of these studies, we believe this paper constitutes a meaningful addition to the literature; it more closely matches the institutional structure of the real world, and its implication, which is in contrast with the existing studies, is consistent with both the empirical finding by Burden *et al.* (1998) and NES data. We do not claim that the hypothesis made in this paper is the only one that can accommodate both the institutional structure of the real world and the stylized facts; there may well be other hypotheses that yield similar results. In this sense, this paper can be best thought of as a first attempt to introduce valence characteristics into an institution that resembles the presidential system that has testable empirical implications about the pattern of split-ticket voting. Examining the available data shows that the data are supportive of the theoretical predictions made in the paper.

This work can be improved upon in several respects. We could polish the model and require the voters' expectations to be consistent with the election outcome in equilibrium for the internal consistency and completeness of the model. Also, although we believe that the evidence presented in the previous section is quite suggestive, we need more sophisticated empirical methods and updated data to test the theoretical prediction. A follow-up study addressing these issues should be in store.

Appendix

The following are the questions in NES 1948-2000 Cumulative Data File that we used.

- Party Identification 7-Point Scale 1952-2000
  "Generally speaking, do you usually think of yourself as a Republican, a Democrat, an Independent, or what?"
  (If Republican or Democrat) "Would you call yourself a strong (Republican/Democrat) or a not very strong (Republican/Democrat)?"
  (If independent, other [1966 and later: or no preference]:) "Do you think of yourself as closer to the Republican or Democratic party?"

- Average Feelings Toward Presidential Candidates 1952-2000
  "Is there anything in particular about {Democratic presidential candidate} that might make you want to vote for him? What is that? Anything else?"
  "Is there anything in particular about {Democratic presidential candidate} that might make you want to vote against him? What is that? Anything else?"
  "Is there anything in particular about {Republican presidential candidate} that might make you want to vote for him? What is that? Anything else?"
  "Is there anything in particular about {Republican presidential candidate} that might make you want to vote against him? What is that? Anything else?"

- Average Feelings Toward Congressional Candidates 1978-2000
  "Is there anything in particular that you liked about {U.S. House Democratic candidate}? What is that? Anything else?"
  "Is there anything in particular that you didn't like about {U.S. House Democratic candidate} What is that? Anything else?"
  "Is there anything in particular that you liked about {U.S. House Republican candidate}? What is that? Anything else?"
  "Is there anything in particular that you didn't like about {U.S. House Republican candidate}? What is that? Anything else?"

NOTE:

Affect (feelings) toward the Democratic congressional candidate is measured by the number of Democratic congressional candidate 'likes' minus the number of Democratic congressional candidate 'dislikes.' Affect (feelings) toward the Republican congressional candidate is measured by

the number of Republican congressional candidate 'likes' minus the number of Republican congressional candidate 'dislikes.' The net affect (Pro Dem.– Pro Rep.) toward the Democratic and Republican congressional candidates is the difference between two sums: the sum of Democratic congressional candidate 'likes' and Republican congressional candidate 'dislikes' minus the sum of Democratic congressional candidate 'dislikes' and Republican congressional candidate 'likes.'

- Presidential Vote 2 Major Parties 1948-2000
  1952-1964: (If respondent voted:) "Who did you vote for President?
  1968-1976: (If respondent voted:) "Who did you vote for in the election for President?"
  1980-later: (If respondent voted:) "How about the election for President? Did you vote for a candidate for President?" (If yes:) "Who did you vote for?"

- Congressional Vote 2 Major Parties 1952-2000
  1952-1964: (If respondent voted:) "Who did you vote for Representative?
  1968-1976: (If respondent voted:) "Who did you vote for in the election for Representative?"
  1980-later: (If respondent voted:) "How about the election for Representative? Did you vote for a candidate for Representative?" (If yes:) "Who did you vote for?"

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후보자의 개인적 특성과 당파적 투표자의 분할투표*

김 광 호**

초 록

이 논문은 투표자들이 정책 이슈뿐 아니라 후보자의 개인적 특성도 중시할 때 양당제 대통령제하에서 당파적 투표자의 투표 행태를 분석한다. 대통령이 개별 국회의원보다 정책에 더 큰 영향력을 미치기 때문에 당파적 투표자들은 의회 선거보다 대통령 선거에서 자신의 정당 후보에게 투표할 가능성이 더 높은 것으로 나타난다. 또한 의회 선거에서 현직 대통령이 자기 정당 출신일 때보다 상대 정당 출신일 때 당파적 투표자들이 자기 정당 후보에게 투표할 가능성이 더 높다. 아울러 이러한 발견을 뒷받침하는 실증적 증거를 제시한다.

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