The Ideology Trap: Explaining Polarization and Persistence in Politics[*]

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Abstract

This paper develops an explanation of why office holders may act partisan even on non-partisan issues. To this end, we analyze a dynamic model in which politicians that are both policy-motivated and office-motivated are better informed than the voting public about an underlying state of nature that determines the desirability of a given policy measure. We show that partisanship and polarization may emerge in equilibrium even if politicians and voters are in complete agreement as to which is the optimal course of action. In particular, politicians may act partisan simply because voters *expect* them to act partisan in the future and therefore elect only those candidates whose (partisan) policy choices they expect to be appropriate given the uncertain state of the economy. Since choosing the efficient (non-partisan) policy choice conveys information about the state of the world, while choosing the inefficient (partisan) alternative does not, a sufficiently office-minded incumbent has an incentive to conceal the true state by implementing the partisan policy, thereby confirming voters' expectations. The result is a) political failure in the sense that the equilibrium policy sequence is Pareto dominated, and b) persistence in the sense that equilibrium polices are less volatile and less responsive to changes in the underlying state than efficient policies.

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JEL classification: P16, N40, H11

"Let us not seek the Republican answer or the Democratic answer, but the right answer." John F. Kennedy

1 Introduction

Many observers of American politics argue that Congress has become increasingly polarized during the past 50 years. A recent book by McCarthy et al. (2006) carefully documents and quantifies this ever more prominent polarization of political elites in the United States, showing that partisan difference in voting behavior of U.S. House members and Senators have grown dramatically since the 1970's. Notably, this trend is neither exclusive to the U.S., nor is it confined to positional (divisive) issues that voters tend to disagree on depending on their socio-economic status, race, gender, or religion. Partisan politics and polarization are a frequent phenomenon even regarding so-called valence issues for which there should be a common agreement among the electorate (such as foreign policy, corruption and economic growth). In the U.S. Congress, for example, support for the president on matters of foreign policy and defence has largely been along party lines ever since the Vietnam War [Meernik (1993)]. In Britain, while parties appear to have converged overall on a wide array of issues (including positional ones such as education and welfare policy), party differences have become more pronounced on the question of European integration: the Conservatives have adopted a more Euro-sceptic position with greater clarity since 1997 and Labour has adopted a more pro-European position [Green (2007)].

It is tempting to explain the growing divisiveness of political representatives with a simultaneous development that has been taking place among their constituents. If there was a decline in the number of voters who perceive themselves as politically moderate or independent, less is to be gained by appealing to the median voter or swing voters, and so candidates running for election might focus more on their ideological and partisan base. But while this reasoning is suggestive, it is not supported by empirical evidence.[1] In a recent study on using data from the House of Representatives, for instance, McCarthy et al. (2007) find that a large portion of the increased polarization in voting records is the result of *within-district* divergence between Democratic and Republican members of Congress, i.e., the gap in the voting record between any two representatives who belong to different parties has widened for a given set of constituency characteristics.[2] Fiorina and Levendusky (2006) also find that the increased polarized battles on a variety of issues ranging from taxation to abortion and national defence are not a true reflection of what is happening in the electorate. "The result", the authors write, "is a disconnect between the American people and those who purport to represent them...American politics today finds a polarized political class competing for the support of a much less polarized electorate." In either case, voter polarization is presumably a lesser danger for valence issues. Polling data on foreign policy

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[1]On a general note, empirical investigations on roll-call votes of members of the U.S. conclude that they do not respond to the preferences of their constituents. Rather a representative's own ideology is the primary determinant of roll-call voting patterns [see Lee et al. (2004) and Levitt (1996)].

[2]For this reason, among others McCarthy et al. (2007) also reject another possible explanation for why partisanship has been on the rise, namely, redistricting (gerrymandering).

confirm this presumption.[3] Two recent pools conducted by the Program on International Policy Attitudes (PIPA) and the Chicago Council on Foreign Relations (CCFR) found that Americans share common views on a wide array of foreign policy issues, and would prefer that Democrats and Republicans seek common ground.[4] In other words, a bipartisan center still exists within the American public which however is not reflected in the polarized attitudes of its elected representatives. Although foreign policy is largely seen an area where consensus could be built between Congress and the Executive even when domestic issues created partisan division during the Cold War and the first two decades of the postwar era. the bipartisan approach to foreign policy seems to have withered away. Today, party line votes in Congress are increasingly common even within the realm of foreign policy.

Our objective in this paper is to identify conditions under which polarization can take place even for valence issues, and to explain why delegates' expressed ideology can account for a large fraction of their voting behavior on those issues.[5] To this end, we develop a dynamic political economy model that can explain partisan behavior in the context of asymmetric information about the efficacy of different policy measures. To capture the idea that office holders have better information than the public about how policy instruments map into policy outcomes, we assume that the former observe external circumstances (an underlying state) that make a specific policy more desirable than others, which are unknown to the voting public. Importantly, the public attaches ideological labels *both* to the various policy alternatives that are available *and* to the political candidates running for office. To develop our argument in the strongest manner possible, we assume that this association, i.e., the perceived positioning of policies and office holders in the political spectrum, is completely arbitrary; in other words, candidates derive the exact same utility from the policy measure than the electorate at large, and their ideological characterization is truly nothing more than a label.

Now suppose voters expect political candidates to act partisan once in office, i.e., to remain 'true to their colors', implementing policies that are 'close' to their own ideology as perceived by the voting public. Given these expectations, voters clearly have an incentive to elect the a representative whose perceived partisan policy (ideology) corresponds to what they think is in their best interest based on their current information. As we show, this may suffice to induce candidates to actually act partisan, i.e., according to their ideology, in the first place. The specific motivation for acting partisan is one of signal-jamming: choosing the efficient (non-partisan) policy choice conveys information about the state of the world, making it less likely that the incumbent office holder is re-elected if he is expected to act partisan in the future.[6] To improve his chances of re-election, a sufficiently office-motivated incumbent

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[3]Naturally, one can legitimately doubt whether the questions asked in public opinion polls are well suited to elicit individuals' true preferences. But the fact remains that the determinants of public opinion – as expressed in those polls – should be an important element in policy making, irrespective of how voters arrive at their expressed opinion.

[4]For details, see the website of Partnership for a Secure America (http://www.psaonline.org/), an organization dedicated to recreating the bipartisan center in American national security and foreign policy.

[5]It should be emphasized that the theory also applies for non-valence (positional) issues. There already is an extensive literature on these type of policies, however, which provides a range of complementary explanations for why candidates diverge in platforms and voting records. See below for more details.

[6]Alesina and Cukierman (1990) study an environment in which voters are unsure about the ideological

3

thus 'jams' the voters' inference problem by instead using the partisan policy, which is less responsive to current circumstances. The result is political failure in the sense that the equilibrium partisan policy outcomes in are Pareto dominated. Thus, the model can explain policy bias and divergence even on non-partisan issues from the fact that voters *perceive* policies to be ideologically tinted and *expect* candidates to act partisan. Both parties are caught in an *ideology trap*: because voters expect the ideology of office holders to determine their political actions, an officials (re-)election chances will vary with his or her perceived ideology. In their desire to influence the outcome of the election, these expectations induce the officials to act partisan. Shifts from non-partisan politics to partisan politics confirm the electorate's assessed likelihood of the latter, cementing the polarization even further. Conversely, if either policies are perceived to be ideologically neutral or candidates are expected to act-non-partisan, even the most office-minded politician has no incentive to deviate from what is optimal for the electorate.

Because incumbents will tend to enact the partisan policy in equilibrium, independent of the prevailing state, our analysis also has another interesting implication. It shows that incumbent politicians are reluctant to abandon their previously enacted policies, even if those are no longer applicable or have proven to be invalid. In other words, the model can explain why policies are likely to persist. The resilience of economic policies that benefit (target) a specific groups of voters has already been studied by Coate and Morris (1999) who use a dynamic model to formalize the intuition that implementation of a policy increases the political effectiveness of its beneficiaries in lobbying. As in our model, this persistence gives rise to political failure in the sense that equilibrium policy sequences can be Pareto dominated. The main difference between Coate and Morris (1999) and our approach is that we focus on *non-partisan* (valence) issues, which do not target specific groups. As a result, the underlying argument is quite different: in Coate and Morris (1999), it is the support of interest groups who undertook investments to benefit from a policy measure that causes candidates to not abandon it, even if it is outdated. In our model, it is the reluctancy to admit that 'times have changed', that new circumstances warrant a new policy (and, therefore, new leaders in the eyes of the electorate) that drives the inertia. At the risk of oversimplifying, George W. Bush's insistence that his policy regarding Irak was on the right track may well fall into this category.[7]

One of the paradoxes of democratic politics is that in two-party electoral systems parties do not usually converge, although the classic Downsian model of political competition suggests they will, predicting that candidates' platforms to converge on the ideal point of the median voter. The past few decades have seen a number of important contributions explaining

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position of candidates (as opposed to the state of the economy as in our paper). Akin to the signal-jamming effect we find, they show that politicians may want to deliberately choose 'ambiguous' policies in order to conceal their true preferences, thereby keeping their ideological advantage.

[7]Importantly, competency plays no role in our model. In other words, it is not the gain from appearing competent (or the loss from appearing incompetent) which causes the political failure. Using the US relations to Irak as an example, our argument would be that the reluctancy of the US president to admit mistakes in Irak is not due to his fear of being perceived as incompetent. Rather, admitting failure would imply that a more suitable policy to deal with the situation in Irak, which – if the electorate *expects* the president to hold onto his own policy agenda – in turn implies that a Democrat could do better when in office.

the observed divergence of political office holders in their positions on critical issues. In particular, the recent approaches of probabilistic voting and citizen-candidates developed formal models that, among other things, generate equilibrium divergence and can thus successfully reconcile the evidence with the theory [see the textbook of Persson and Tabellini (2000) for an overview]. Neither type of theoretical framework yields equilibrium divergence on valence issues, however. Indeed, we are not aware of a single contribution that is able to explain polarized and partisan politics on mattes where voters commonly agree.[8]

Still, the model we develop draws from – and is related to – several contributions to the literature on political competition. There are a few papers that study frameworks similar to ours, where the electorate as a whole is uncertain about an underlying state of nature, which determines whether one policy measure is more desirable than the other. First, Cukierman and Tommasi (1998) show that if voters are also imperfectly informed about an incumbent ideology, his electoral prospects may increase the more atypical the policy he proposes to implement. The theory can explain historic incidences such as Nixon opening up to China, where important policy shifts where initiated by office holders or parties whose traditional position was to oppose such policies. Although the basic line of reasoning in our analysis is obviously quite different, its implications provide a new perspective on the conclusions of Cukierman and Tommasi (1998): while it may be true that only unlikely parties can credibly persuade voters to support 'extreme' policies, this effect depends crucially on the electorate having sufficiently uncertain expectations as to where parties stand. Otherwise, if Nixon went to China and by doing so could convince the American Public that this policy was in their best interest (and not the Anti-Communist position he'd previously occupied), why would the electorate re-elect him, rather than a Democratic opponent who had been favoring this course of action all along? Second, Harrington (1993) and more recently, Maskin and Tirole (2004) study how incumbents' incentives to influence their re-election prospects can lead to policy failure in representative democracies. Instead of focusing on the role of elections of holding incumbents accountable for unsatisfactory performance and selecting the most talented (or congruent) politicians (Barro, 1973, Ferejohn, 1986, and Persson and Tabellini, 2000, chapters 4 and 9), these authors emphasize a flip side of elections: if the office-holding motive is sufficiently strong, politicians may – rather than selecting policies in the best interest of the electorate – falsely choose the most popular alternative. Catering to public opinion pays off because it allows candidates whose intrinsic objectives are not in tune with those of the public to remain in office. Using a similar mechanism, Stasavage (2007) shows in a recent paper that contrary to common beliefs, public debate between representative may serve to deepen polarization and promote dissent. If debates are held under the public eye, candidates may ignore their private information about the true desirability of various policy measures and instead promote policies popular among their constituents. Our analysis goes beyond these contributions by emphasizing how the inefficiency can depend solely on voters' *expectations* about a candidate's future policy intentions, rather than on a true discrepancy between the ideal policy of a candidate and

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[8]Another line of research in political economy has focused on explaining the prevailing polarization on 'moral' issues, such as abortion or gay marriage. Glaeser et al. (2005) identify a form of strategic extremism, which helps politicians to induce their core constituents to vote (or make donations).

that of the electorate at large.[9]

The remainder of the paper is organized as follows. The basic framework is developed in Section 2. Section 3 provides an in-depth analysis of the model. We show that both partisanship and non-partisanship can arise in equilibrium, and introduce a refinement to select among equilibria. Section 4 is devoted to comparative statics; it shows how out outcomes vary with some key determinants of the voting process (candidate popularity, uncertainty over election outcomes) and the volatility of the underlying state. Section 5 concludes.

2 A dynamic Model of Partisanship

2.1 Preferences and Economic Environment

Consider an infinite-horizon economy in discrete time. The economy is populated by an infinite number of risk-neutral consumer-voters who derive the same per-period benefit $b_t = b(a_t, s_t) \in \{0, b\}$ from a policy decision $a_t \in \{r, l\}$, where $a_t = l$ is a 'left-wing' alternative and $a_t = r$ the right-wing alternative.[10] Consumers know the set of feasible policies (and have common views on which they perceive as being left-wing and right-wing, respectively) but are uncertain about the underlying state of the economy $s_t \in \{l, r\}$. Their per period payoff stochastically depends on the unobserved state s_t as follows:

$$b(a_t = s_t) = \quad b \quad \text{with probability 1}$$

$$b(a_t \neq s_t) = \begin{cases} b & \text{with probability } \pi \\ 0 & \text{with probability } 1 - \pi \end{cases}$$

In other words, if the policy choice matches the state, the policy is 'successful' with probability one and voters receive a certain payoff of b. Otherwise, the policy 'fails' with probability $1 - \pi$ in which case we normalize payoffs to zero.

The state of the economy evolves over time according to a symmetric transition function

$$Prob\{s_{t+1} = s_t\} = \gamma = 1 - Prob\{s_{t+1} \neq s_t\}, \tag{1}$$

independent of the policy chosen. Letting μ_t denote the likelihood voters attach to the

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[9]In Harrington (1993), the difference in objective functions between candidates and voters stems from differences in beliefs about which policy is best. Maskin and Tirole (2004) assume that some politicians are simply incongruent in the sense that their preferred action is always different from that of the electorate.

[10]For simplicity, we assume a binary political decision, which also has some appeal in that voters may find it difficult to make subtle distinctions between policies, e.g., they may only take note of whether government spending goes up or down. In this sense, policies may be quite broadly defined and fit well into the ideological spectrum of 'left' and 'right'. This presumption is also supported by empirical evidence from the US Congress: in a careful and well-known study using data on roll-call votes from the House and the Senate, Poole and Rosenthal (1997) show that more than 80 percent of representatives' voting records over the past 40 years can be explained solely on the basis of the one-dimensional variable (i.e., their 'ideology').

left-state $s_t = l$, we can write individual preferences as in period t

$$E \sum_{j=0}^{\infty} \beta^j b_{t+j} = E \sum_{j=0}^{\infty} \beta^j b \left(a_{t+j} | s_{t+j} \right). \tag{2}$$

where $\beta < 1$ is the discount factor. Note that, by construction, the issue is *non-partisan* (ideologically neutral) in the sense that all voters unanimously agree on the optimally chosen policy alternative: if they knew the state to be s, they unanimously preferred the policy that is appropriate for the state, i.e., $a = s$. Since they do not know s but share a common belief μ, voters prefer policy l over policy r in any given period t if and only if $\mu_t \geq \frac{1}{2}$.

Political decisions are not taken in direct democratic vote. Instead, voters elect an office holder as their representative in each period, who selects and implements the policy alternative a_t. Unlike voters, politicians observe the state s, which may simply reflect their greater expertise better access to resources, or their greater incentive to become informed.[11]

There are two observable types of politicians, left-wing L and right-wing R. We interpret the type $i \in \{L, R\}$ as politicians' 'ideology' 'party affiliation', and assume it is commonly observable. Consistent with our notion that the issue is non-partisan, politicians derive the *same* utility from a given s than the voters, *independent* of their type. However, they also care about holding office. We formalize this second motive in the usual fashion by a rent ϕ that politicians receive from being elected to office in period t. In summary, the per-period utility of an incumbent of type i in period t when the state is s_t is

$$u_t^i = b(a_t, s_t) + \phi. \tag{3}$$

When not in office, politicians receive the same utility from a_t than the citizens. Finally, we assume that not being re-elected is an absorbing state, i.e., a once defeated incumbent never returns to holding office.

The timing of the stage game is as follows. First, nature draws the state s_t, which is immediately revealed to politicians but not to ordinary citizens. Next, elections are held in which voters decide whether to re-elect the incumbent or whether to newly elect the challenger for office (a period defines a term of office). Throughout, we restrict attention to the case where the challenger has a different ideology or party-affiliation than the incumbent. Once elected, the office holder chooses a policy alternative a_t. Finally, voters and politicians observe whether the policy was a success ($b_t = b$) or a failure ($b_t = 0$).

2.2 Equilibrium Definition

As is common in these types of models, we will restrict attention to pure strategy, stationary and symmetric Markov perfect equilibria of this game. In those equilibria, players ignore

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[11]The natural assumption that politicians are generally better informed than the electorate at large is often evoked in the literature. See, e.g., Cukierman and Tommasi (1998) or Maskin and Tirole (2004). Kessler (2005) provides an analysis where officials to endogenously acquire competence on the issues they oversee and specialize in policy formation.

all details of the history (including its length) and condition their strategies only on the pay-off relevant information. Note that because there is no link between periods other than the information revealed by politicians about the underlying state and the evolution of that state, the latter can be summarized for the electorate by its belief μ_t at time t. A strategy for a representative voter is thus a rule that determines for whether he or she plans to vote for the previous period incumbent or the challenger in t, based on μ_t. When voters are indifferent between two candidates, either stands equal chances of winning the election.[12] Similarly, a strategy for a type-i candidate maps voters' beliefs μ_t (and hence, election outcomes) as well as the current state s_t into a policy choice $a_t \in \{l, r\}$. In equilibrium, strategies must be mutual best responses and beliefs evolve in a way consistent with Bayes rule. Strategies are optimal if they maximize the value functions of candidates and voters. The value function for a representative voter from a left-wing candidate can be written as

$$U(L, \mu_t) = E \left\{ b(a_t^L(\mu_t, s_t), s_t) + \beta \left[P(\mu_{t+t}) U(L, \mu_{t+1}) + (1 - P(\mu_{t+1})) U(R, \mu_{t+1}) \right] \right\}$$

where $P(\mu_t) \in \{0, \frac{1}{2}, 1\}$ denote the probability that a candidate of type L is elected in t, and the expectation is taken over b_t and s_t given current beliefs μ_t. The value function from a right-wing candidate is defined in an analogous fashion. Note that in general, beliefs μ_{t+1} at time $t + 1$ will depend on the success or failure of the policy (and hence, on the alternative chosen) in t. The value function of a type i candidate is

$$V^i(\mu_t, s_t) = P^i(\mu_t) E \left[b(a_t^i(\mu_t, s_t), s_t) + \phi + \beta V^i(\mu_{t+1}, s_{t+1}) \right],$$

where the expectation is over b_t and s_{t+1}, given s_t.

3 Equilibrium Analysis

In what follows we will use the term *non-partisan* politics to characterize the Pareto-optimal policy choice, i.e., the office holder implements $a_t = s_t$, independent of her type i. *Partisan politics*, in contrast, involves politicians selecting the alternative that corresponds to their ideology, i.e., $a_t = l$ if $i = L$ and $a_t = r$ if $i = R$, independent of the state s_t. Recall from (3) that an office holders per-period utility is independent of her ideology or party affiliation. Consequently, the sole channel through which ideology can possibly influence the choice of policy is through voters' *expectations*, which for the politicians will translate into the likelihood they are (re-)elected to office. It is this link between actual policy choices and voter's expectations about candidates' post-election behavior – partisan or non-partisan – we are most interested in. To highlight the interdependencies, we have eliminated all other well-studied determinants of partisan politics (partisan voters, partisan politicians etc.), not because we consider them implausible but simply because they would only serve to disguise the true effects at work here.

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[12]Since we assume a continuum of voters, no single voter can possibly influence the outcome of an election and every voting strategy is consistent with equilibrium. To eliminate this artificial multiplicity, we will throughout consider only strategies that maximize (2), i.e, those that would be optimal in case the vote was decisive (weakly undominated strategies if there is a finite number of citizens).

Of course, the fact that politicians' utilities do not depend on ideology or party affiliation renders their characterization as *left-wing* or *right-wing* as well as the labeling of alternatives as *left* and *right* completely arbitrary. What matters, as we will see below, are solely voters perceptions as to a) what constitutes a left-wing and a right-wing policy alternative, and b) who is a left-wing and a right-wing politician.

3.1 The Non-Partisan (Efficient) Equilibrium

As a benchmark, we first construct an equilibrium in which candidates choose policies in a Pareto efficient manner along the equilibrium path, and voters' – because they correctly expect non-partisan behavior from their representatives – have no preferences for either type of politician. Thus, suppose incumbents always choose $a_t^i = s_t$, irrespective of their ideology or party affiliation i. Since both types of politicians implement the same Pareto efficient alternative in every period, voters hold no preference for the incumbent or the challenger and elect either with probability $1/2$. We have

$$U(L, \mu_t) = U(R, \mu_t) \quad \text{and} \quad P(\mu_t) = \frac{1}{2} \qquad \forall \mu_t, t.$$

It is worth noting that the implementation of an efficient policy alternative – precisely because is is necessarily conditional on the current state – provides voters with additional information about s_t. Indeed, since the choice of $a_t = s_t$ perfectly reveals s_t, the only uncertainty about the underlying economy stems from the fact that the conditions may change from one period to the next according to (1). Beliefs in this equilibrium therefore evolve according to

$$\mu_{t+1}(a_t, \mu_t) = \begin{cases} \gamma & \text{if } a_t = l \\ 1 - \gamma & \text{if } a_t = r \end{cases} \qquad \forall \mu_t, t.$$

In what follows, we will for notational simplicity focus on left-wing politicians $i = L$, dropping the index i whenever possible. The argument for right-wing politicians $i = R$ is analogous. Recalling that $b_t \equiv b$ if $a_t = s_t$ the value function of an incumbent politician is if he or she implements the efficient alternative is

$$V(s_t) = \frac{1}{2} \left\{ b + \phi + \beta \ E\left[V(s_{t+1})\right] \right\}.$$

Note that $V(s_t)$ is independent of μ_t, because given the electorate's voting rule any incumbent faces equal chances of being re-elected and defeated, respectively, regardless of beliefs. If the incumbent deviates by choosing $a_t \neq s_t$ in some t, the value function becomes

$$\hat{V}(s_t) = \frac{1}{2} \left\{ \pi b + \phi + \beta E\left[V(s_{t+1})\right] \right\},$$

which by inspection is strictly less than $V(s_t)$ for any $\pi < 1$. Hence, $a_t = s_t$ is indeed the utility-maximizing choice for incumbents in each period. We can thus conclude that non-partisan politics and an electoral rule that assigns equal election chances to incumbents and

9

challengers in all periods form an equilibrium. In fact, it is the Markov perfect equilibrium with the highest payoff to the electorate,

$$U^{\max} = \sum_{t=0}^{\infty} \beta^t b = \frac{1}{1-\beta} b.$$

Proposition 1 (Non-Partisan Equilibrium). *There always exists an equilibrium in which elected office holders act non-partisan and are re-elected with probability $1/2$. In this equilibrium, voters have full information about the prevailing state following the policy choice in each period, and receive the highest possible utility.*

While the non-partisan equilibrium always exists and Pareto-dominates all other equilibria for the voters, it is not the only possible outcome. The following sections will demonstrate not only that sub-optimal partisan politics can be supported in equilibrium, but also that optimal non-partisan politics are fragile in the sense that they cannot survive if citizens' expectations about office holders' behavior are subject to (small) uncertainty.

3.2 The Partisan Equilibrium

We first study the possibility of a partisan equilibrium. Intuitively, suppose voters' expect office holders to play partisan and choose $a_t = i$, independent of the current state s_t. The key to observe is that voters are no longer indifferent across politicians with distinct ideologies in such situation. In particular, if the representative voter knew the state to be $s_t = l$, he or she would *strictly prefer* a type-L candidate to a type-R candidate, because only the former's partisan behavior coincides with the efficient policy choice in period t. A direct consequence of this strict preference ordering is that period-t incumbents now face a dilemma whenever their ideology does not match the state. A type-L office holder who selects the non-partisan choice of $a_t = r$ would revealed the state to be $s_t = r$, and would not be re-elected with probability one. Similarly, a type R-incumbent who implemented the efficient left-wing alternative $a_t = l$ because the state was $s_t = l$ would face certain defeat. A partisan choice of $a_t \neq s_t$, on the other hand, will *conceal* the true state and thus may ensure – possibly depending on the observed success or failure of the alternative – re-election. It is then intuitive that this effect can induce partisan behavior provided politicians care sufficiently strong about their (re-)election prospects. The remainder of this section establishes this result formally.

Consider a type-i candidate whose strategy is to choose the partisan policy whenever in office in period t. Voters' belief along the equilibrium path then evolves as follows

$$\mu_{t+1}^{L}(a_t = l, \mu_t) = \begin{cases} 1 - \gamma + (2\gamma - 1)\frac{\mu_t}{\mu_t + (1-\mu_t)\pi} & \text{if policy } a_t = l \text{ was a success} \\ 1 - \gamma & \text{if policy } a_t = l \text{ was a failure} \end{cases} \tag{4}$$

$$\mu_{t+1}^{R}(a_t = r, \mu_t) = \begin{cases} \gamma - (2\gamma - 1)\frac{1-\mu_t}{1-\mu_t + \mu_t \pi} & \text{if policy } a_t = r \text{ was a success} \\ \gamma & \text{if policy } a_t = r \text{ was a failure.} \end{cases}$$

10

Note that beliefs satisfy the Martingale property, $E[\mu_{t+1}^L|a_t = l, \mu_t] = E[\mu_{t+1}^R|a_t = r, \mu_t]\gamma\mu_t + (1-\gamma)(1-\mu_t)$. Due to the fact that the office holders policy choice reveals no new information about the current state, the electorate only learns by observing whether the policy has been successful or not.

As usual, beliefs are not defined off the equilibrium path, i.e., when the electorate observes the non-partisan policy being implemented. Off equilibrium path, we make the natural assumption that non-partisan politics are considered perfectly revealing

$$\mu_{t+1}^L(a_t = r) = 1 - \gamma \quad \text{and} \quad \mu_{t+1}^R(a_t = l) = \gamma, \tag{5}$$

i.e., if the electorate unexpectedly observes a left-wing office holder to select $a_t = r$, it assumes that the non-partisan state $s_t = r$ must have occurred, and vice versa.[13]

Now suppose voters elect the left-wing (right-wing) candidate for beliefs $\mu_t > 1/2$ ($\mu_t < 1/2$) and give both candidates equal chances of winning for $\mu_t = 1/2$. The value function of the electorate is then

$$U(\mu_t) = \begin{cases} (\mu_t + (1-\mu_t)\pi)\left(b + \beta U(\mu_{t+1}^L)\right) + (1-\mu_t)(1-\pi)\beta U(1-\gamma) & \mu_t \geq 0.5 \\ (1-\mu_t + \mu_t\pi)\left(b + \beta U(\mu_{t+1}^R)\right) + \mu_t(1-\pi)\beta U(\gamma) & \mu_t < 0.5. \end{cases} \tag{6}$$

Closer inspection of (6) reveals that $U(\mu_t)$ is increasing in μ_t for values $\mu_t \geq 1/2$ and decreasing in μ_t otherwise (at $\mu_t = 1/2$, the function assumes a minimum). Intuitively, more extreme beliefs reduce the the probability that the wrong party is elected. A direct consequence of this property is that voters would never want to 'experiment', i.e., elect a candidate who subsequently is *less* likely to implement the efficient policy in order to receive more precise information about the state.[14] Doing so would only increase the chances of a policy failure, in which case voters would be even more convinced that the elected candidate was not appropriate. Put differently, the electorate would dispose of a more accurate belief only if the implemented policy goes awry. In the unlikely case of success on the other hand, the resulting belief is less precise than the one that would have resulted from having the appropriate candidate successfully implement his partisan policy.

Turning now to candidates, we will without loss of generality again consider the behavior of left-wing candidates, omitting the index L whenever possible. Anticipating the voting behavior of the electorate, the equilibrium value of acting partisan for a left-wing candidate is

$$V(\mu_t, s_t) = \begin{cases} P(\mu_t)\left\{b + \phi + \beta E\left[\gamma V(\mu_{t+1}, l) + (1-\gamma)V(\mu_{t+1}, r)\right]\right\} & \text{if } s_t = l \\ P(\mu_t)\left\{\pi b + \phi + \beta E\left[(1-\gamma)EV(\mu_{t+1}, l) + \gamma EV(\mu_{t+1}, r)\right]\right\} & \text{if } s_t = r \end{cases}$$

where the expectation is taken over μ_{t+1} given s_t and b_t. A candidate who deviates by setting $a_t = r$ in period t, in contrast, would reveal the true state to be $s_t = r$. Voters' beliefs at the beginning of the next period are therefore $\mu_{t+1} < 1/2$, resulting in certain

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[13]This out-of equilibrium belief is the unique belief satisfying the Banks & Sobel divinity D1 criterion.

[14]See also Lemma 1 in the Appendix, which formally shows that experimentation does not improve voters' payoffs.

defeat and a utility normalized to zero. Hence,

$$\hat{V}(\mu_t, s_t) = \begin{cases} P(\mu_t)\{\pi b + \phi\} & \text{if } s_t = l \\ P(\mu_t)\{b + \phi\} & \text{if } s_t = r \end{cases}$$

Obviously, no rational incumbent would ever want to select an opponents partisan policy in a state where in fact her own partisan policy is myopically optimal. Thus, the strategy $a_t = l$ is trivially utility maximizing in the 'partisan' state $s_t = l$. It remains to study when politicians are willing to sacrifice the utility from the Pareto-optimal choice of $a_t = r$ by choosing $a_t = l$ in state $s_t = r$. Comparing $V(\mu_t, r)$ with $\hat{V}(\mu_t, r)$, we see that the answer is 'yes' if $V(\mu_t, r) \geq \hat{V}(\mu_t, r)$ or

$$\beta E\left[\gamma V(\mu_{t+1}, l) + (1 - \gamma)V(\mu_{t+1}, r)\right] \geq (1 - \pi)b. \tag{7}$$

On the right-hand side of (7) are the short-term gains from deviating, as expressed in the additional expected benefit from the optimal non-partisan choice as opposed to the suboptimal partisan choice. The left hand side captures the expected loss from facing certain defeat in this case; it is the utility lost by not staying in power, which is increasing in the parameters β and ϕ, among others. Thus, as indicated above, the incumbent must have a high enough value remaining in office. This is intuitive: if politicians do not care about their (re-)election chances, either because they highly discount the future (low β) or because the benefits they derive from office are small (low ϕ), they will select whatever policy maximizes their per-period payoff, which by assumption is the Pareto optimal choice. But another, and perhaps less apparent, factor also plays a crucial role: by acting partisan, the candidates must also be able to *improve* their (re-)election chances by a sufficient margin. That this is not trivial can be seen by considering very low values of μ_t. Clearly, in this case we cannot rule out that even a success with the chosen partisan policy may result in defeat because voters' ex post belief, μ_{t+1}, remains below $1/2$. For the remainder of this section, we will therefore assume for any belief $\mu \in [1 - \gamma, \gamma]$, the success probability π of a sub-optimally chosen partisan policy is low enough, such that an office holder doing so in the current period would have a chance of being re-elected. In other words, even for $\mu_t = 1 - \gamma$, the electorate's updated belief satisfies $\mu_{t+1} = \frac{(1-\gamma)}{(1-\gamma)+\gamma\pi} > 0.5$, which is equivalent to

Assumption 1.

$$\pi < \frac{1 - \gamma}{\gamma}.$$

Under Assumption 1, a success results in sure re-election (and failure in sure defeat) irrespective of the state s_t or of beliefs μ_t. In this case, $V(\mu_t, s_t)$ assumes a particularly simple form. It is constant (and equal to zero) for beliefs $\mu_t \in [1 - \gamma, \frac{1}{2})$ where the candidate is not elected in equilibrium, takes on a single intermediate value for $\mu_t = \frac{1}{2}$, and is constant again for all higher beliefs $\mu_t \in (\frac{1}{2}, \gamma]$, where the candidate is elected with probability one.

Formally, $\forall \mu_t, \mu_t' \in (0.5, \gamma]$ we have $P(\mu_t) = 1$ and $\mu_{t+1} > \frac{1}{2}$ if the policy was successful and $\mu_{t+1} = 1 - \gamma < \frac{1}{2}$ otherwise. $V(\mu_t, s_t) = V(\mu_t', s_t) \equiv \bar{V}(s_t)$ for all values in this interval. Similarly, $\forall \mu_t, \mu_t' \in [1 - \gamma, \frac{1}{2})$, $F(\mu_t) = F(\mu_t') = 0$, implying $V(\mu_t, s_t) = V(\mu_t', s_t) \equiv 0$.

Selecting the non-partisan policy in state r then will not be optimal if

$$b + \phi \leq \pi b + \phi + \pi\beta[(1 - \gamma)\bar{V}(l) + \gamma\bar{V}(r)]$$
$$\Leftrightarrow \quad (1 - \pi)b \leq \pi\beta[(1 - \gamma)\bar{V}(l) + \gamma\bar{V}(r)] \tag{8}$$

We can conclude:

Proposition 2 (Partisan Equilibrium). *There always exists an equilibrium in which elected office holders act partisan regardless of the state if condition* (8) *holds. In this equilibrium, politicians are re-elected with probability* 1 *if their implemented policy was a success and face certain defeat if it was a failure. Voters receive no information about the prevailing state from the choice of policy (other than from its success or failure) and receive a utility that is strictly smaller than their utility in the non-partisan equilibrium.*

Proposition 2 illustrates the well-known danger of office-motivated representatives 'pandering to public opinion', which turns the accountability role of elections on its head. Because the electorate is unable to evaluate the official's actions directly, the desire to be (re-)elected may lead representatives to pursue the most popular course of action, rather than to act upon their superior information in the public's best interest [Harrington (1993) and Maskin and Tirole (2004)]. These incentives and the resulting policy bias are well-known and are not the primary message conveyed in Proposition 2. Instead, our main results here concern a) what is at the heart of the inefficiency, namely, perceived (as opposed to real) ideological bias, and b) the nature of the inefficiency, namely, policies characterized by partisanship and persistency.

In particular, comparing Proposition 1 and 2, the blame for the policy bias can be squarely laid on ideology or, more precisely, on the fact that voters *perceive* policies to be ideologically tinted and *expect* candidates to act partisan. If any one of these conditions is missing, i.e., policies are perceived to be ideologically neutral or candidates are expected to act-non-partisan, even the most office-minded politician has no incentive to deviate from what is optimal for the electorate [Proposition 1]. Only if voters expect partisan behavior in the future will they have an incentive to elect the candidates whose perceived partisan policy (ideology) corresponds to what they think is in their best interest given their current information. And it is the voters' expectations, in turn, which induce candidates to actually act partisan, i.e., according to their ideology, in the first place. Put differently, voters and representatives are caught in an *ideology trap*: because voters expect the ideology of office holders to determine their political actions, an officials (re-)election chances will vary with his or her perceived ideology. In their desire to influence the outcome of the election, these expectations induce the officials to act partisan. Shifts from non-partisan politics to partisan politics confirm the electorate's assessed likelihood of the latter, cementing the polarization even further. As indicated in the Introduction, this type of development may well be one of the primary causes of increased polarization in America, a trend that has been continuing over the past-three decades and has well-documented by scholars in political science.[15]

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[15]See, e.g., McCarthy et al. (2006). Howard Rosenthal and Keith Poole also entertain an informative web-site devoted to polarization, http://polarizedamerica.com/.

Note that the specific motivation for acting partisan given voters' expectations is one 'signal-jamming' (rather than signaling itself). An efficient policy choice conveys information about the state of the world, making it less likely that the incumbent office holder is re-elected if he is expected to act partisan in the future. To improve his chances of re-election, the incumbent thus 'jams' the voters' inference problem by using the partisan policy, which is less responsive to current circumstances, instead. The latter fact is noteworthy because it can also provide a possible explanation for policy persistence. Formally, note that in the partisan equilibrium, the probability that the policy (ideology of the office holder) varies with the state and changes from one period to the next is smaller than in the non-partisan equilibrium.

Corollary. *In any partisan equilibrium, policies are persistent in the sense that a) they do not vary with the current state and b), once enacted, are more likely to be re-enacted in the next period than in the efficient, non-partisan equilibrium.*

3.3   Voter Uncertainty

One possible objection to the conclusions drawn in the previous section is that even if the partisan equilibrium exists, it is Pareto dominated for the voters by the non-partisan equilibrium. One could thus argue that sub-optimal partisan behavior is less likely to be observed: if the electorate collectively benefits from expecting representatives to act in its best interest, then why should it every expect otherwise? Although this reasoning appears sensible enough, we will show in this section that there are compelling arguments in favor of the partisan equilibrium. Specifically, we demonstrate that the non-partisan equilibrium is fragile (unstable) in the sense that it does not survive small perturbations in voters' expectations. Thus, introducing a small amount of voter uncertainty as a refinement will select the partisan equilibrium whenever it exists. Formally, suppose that voters are inherently uncertain about the behavior of the candidate: there is some probability $\epsilon > 0$ that a candidate deviates from his or her equilibrium behavior, i.e., selects the partisan (respectively, non-partisan) policy in the non-partisan (respectively, partisan) equilibrium.[16]

We have

Proposition 3. *If there is an arbitrarily small and i.i.d. probability $\epsilon > 0$ that office holders deviate from their equilibrium behavior, then generically there exists either the partisan equilibrium or the non-partisan equilibrium.*

Proof. Note first that, for $\epsilon > 0$, re-election probabilities in the partisan equilibrium are unchanged. Moreover, as $\epsilon \to 0$, neither voters' nor office holders' payoffs are affected.

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[16]One explanation for why voters could expect partisan behavior to arise with positive probability is party pressure [see Cukierman and Tommasi (1998)]. The possibility of a "partisan shock" could then formalized by a probability ϵ with which the office holder realizes an additional benefit $B^i(a) \equiv B$ whenever he chooses the policy a corresponding to her ideology or party affiliation i, and assuming that the per-period payoff from a partisan choice is sufficient to compensate for the expected loss from not choosing the efficient alternative, i.e., $B > (1 - \pi)b$. Another conceivable rational for this type of voter uncertainty would be that voters are unsure about whether or not the issue is in fact non-partisan.

Thus, partisan behavior continues to be an equilibrium under condition (8).

Turning to the non-partisan equilibrium, note that for any $\epsilon > 0$ the reelection probabilities are now

$$P(\mu) = \begin{cases} 1 & \text{if } \mu > 0.5 \\ 0.5 & \text{if } \mu = 0.5 \\ 0 & \text{else} \end{cases}$$

and are equal to those in the partisan equilibrium. Furthermore, as $\epsilon \to 0$, a left-wing office holder chooses the efficient policy $a_t = s_t$ almost always, and his value function in the efficient equilibrium is

$$V(\mu_t, s_t) = \begin{cases} P(\mu_t)\left\{b + \phi + \beta\left[\gamma V(\gamma, l) + (1 - \gamma)V(\gamma, r)\right]\right\} & \text{if } s = l \\ P(\mu_t)\left\{b + \phi\right\} & \text{if } s = r, \end{cases}$$

where we have used the fact that l-type incumbents are not re-elected following the efficient choice of $a_t = r$ in state $s_t = r$. Now suppose that a partisan equilibrium exists. Then, generically, (8) is satisfied with strict inequality,

$$(1 - \pi)b < \pi\beta[(1 - \gamma)\bar{V}(l) + \gamma\bar{V}(r)], \tag{9}$$

where $\bar{V}(l) > 0$ and $\bar{V}(r) > 0$ [see the proof of Proposition 2]. Because the reelection probabilities are the same as in the partisan equilibrium, this directly implies that a deviation by playing a_t in states $s_t = r$ guarantees a future expected payoff of $(1 - \gamma)\bar{V}_1^p(s) > V^e(1 - \gamma, s)$ for $\mu < 0.5$ and hence is a profitable deviation according to (9). This contradicts the existence of the efficient equilibrium with voting behavior $P(\mu_t)$.

Conversely, suppose that the efficient equilibrium exists. Then, generically we must have:

$$(1 - \pi)b > \pi\beta[(1 - \gamma)\bar{V}(l) + \gamma\bar{V}(r)],$$

Using the same reasoning as above implies that implementing $a_t = r$ in states $s_t = r$ would be a profitable deviation from in the partisan equilibrium. Hence existence of the perturbed efficient equilibrium precludes existence of the partisan one. □

While we use the result in Proposition 3 primarily to select among equilibria, the fragility of non-partisan equilibria has obvious implications concerning how shifts in voters' expectations translate into policy changes. In particular, the above finding shows that even small changes in the perception of voters concerning the likelihood of partisan behavior of their representatives are sufficient to trigger major shifts in the type of policies that are proposed and how these policies are voted upon. For instance, we believe that Proposition 3 can fruitfully be applied to explain the observed sudden trend in polarization and partisanship in votes on matters of foreign policy by members of the U.S. congress following the Vietnam war.[17] Using data on foreign policy and defense roll-call votes in the U.S. House and Senate, Meernik (1993) the Vietnam War had a significant impact on bipartisan presidential

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[17]For the same reason, the result is also consistent with, and can possibly account for, occurrences of within-party polarization, such as the split within the Democratic party between the South and the North during the Civil War area and beyond.

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support: whereas substantial consensus existed prior to the Vietnam War, is has become much more infrequent.

4 Comparative Statics: Partisanship, Competition, and Uncertainty

— To be added —

5 Concluding Remarks

The objective of this paper was to investigate under which circumstances elected officials may implement partisan policies even in areas that are generally perceived to be non-partisan. We developed a dynamic model in which politicians that are both policy-motivated and office-motivated are better informed than the voting public bout an underlying state of nature that determines the desirability of a given policy measure. In the model, partisanship and polarization emerge in equilibrium despite the fact that voters and their representatives are in complete agreement as to which is the optimal course of action. The problem the parties face can be viewed as an 'ideology trap'. If voters expect political candidates to act partisan once in office, i.e., to remain 'true to their colors', they have an incentive to elect the a representative whose perceived partisan policy (ideology) corresponds to what they think is in their best interest based on their current information. As we show, this may suffice to induce candidates to actually act partisan in the first place, thereby confirming the expectations of the electorate. This is because choosing the efficient (non-partisan) policy choice conveys information about the state of the world, making it less likely that the incumbent office holder is re-elected if he is expected to act partisan in the future. To improve his chances of re-election, a sufficiently office-motivated incumbent thus 'jams' the voters' inference problem by instead using the partisan policy, which is less responsive to current circumstances. The result is political failure in the sense that the equilibrium partisan policy outcomes in are Pareto dominated. Thus, the model can explain policy bias and divergence even on non-partisan issues from the fact that voters *perceive* policies to be ideologically tinted and *expect* candidates to act partisan. Moreover, such partisan politics are also persistent in the sense that equilibrium polices are less volatile and less responsive to changes in the underlying state than efficient policies.

Appendix

The following lemma establishes that there is no 'experimenting' in equilibrium

Lemma 1. *Suppose the partisan equilibrium exists. Then the electorate's value function is unique and has the following properties*

i) The value function $U(\cdot)$ is axially symmetric around 0.5, i.e $U(\mu_t) = U(1 - \mu_t)$ for $\mu_t \in [1 - \gamma, \gamma]$.

ii) The value function $U(\cdot)$is strictly decreasing in the belief for $\mu_t < 0.5$ and strictly increasing for $\mu_t > 0.5$.

iii) The electorate's optimal voting strategy is identical to that of a myopic electorate.

Proof. Recall that the value function for a representative voter along the equilibrium path is

$$U(\mu_t) = \begin{cases} (\mu_t + (1 - \mu_t)\pi)\left(b + \beta U(\mu_{t+1}^L)\right) + (1 - \mu_t)(1 - \pi)\beta U(1 - \gamma) & \mu_t \geq 0.5 \\ (1 - \mu_t + \mu_t\pi)\left(b + \beta U(\mu_{t+1}^R)\right) + \mu_t(1 - \pi)\beta U(\gamma) & \mu_t < 0.5 \end{cases}$$

which is equivalent to (where $z_t = 1$denotes success of policy a_t)

$$U(\mu_t) = \begin{cases} (\mu_t + (1 - \mu_t)\pi)\,b + E\beta U(\mu_{t+1}^L) & \mu_t \geq 0.5 \\ (1 - \mu_t + \mu\pi)\,b + E\beta U(\mu_{t+1}^R) & \mu_t < 0.5 \end{cases}$$

with

$$\mu_{t+1}^R(a_t = r, \mu_t) = \begin{cases} \gamma - (2\gamma - 1)\frac{1 - \mu_t}{1 - \mu_t + \mu_t\pi} \equiv \varphi^R(\mu_t) & \text{if policy } a_t = r \text{ was a success} \\ \gamma & \text{if policy } a_t = r \text{ was a failure.} \end{cases}$$

and

$$\mu_{t+1}^L(a_t = r, \mu_t) = \begin{cases} 1 - \gamma + (2\gamma - 1)\frac{\mu_t}{\mu_t + (1 - \mu_t)\pi} \equiv \varphi^L(\mu_t) & \text{if policy } a_t = l \text{ was a success} \\ 1 - \gamma & \text{if policy } a_t = l \text{ was a failure.} \end{cases}$$

We prove Lemma 1 by use of the contraction mapping theorem: Define the functional operator $T : \mathcal{U} \mapsto \mathcal{U}$ that maps the space of bounded continuous functions $\mathcal{U}$ defined on $[1 - \gamma, \gamma]$ with range $\mathbb{R}^+$into itself as follows:

$$(TU)(\mu_t) = \begin{cases} (\mu_t + (1 - \mu_t)\pi)\left(b + \beta U(\varphi^L(\mu_t))\right) + (1 - \mu_t)(1 - \pi)\beta U(1 - \gamma) & \mu_t \geq 0.5 \\ (1 - \mu_t + \mu_t\pi)\left(b + \beta U(\varphi^R(\mu_t))\right) + \mu_t(1 - \pi)\beta U(\gamma) & \mu_t < 0.5 \end{cases}$$

This operator satisfies Blackwells sufficient conditions[18] and is therefore a *contraction*: It satisfies *monotonicity* because U enters only linearly with positive coefficient. It satisfies

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[18]see e.g. Stokey Lucas, Theorem 3.3)

discounting because $T(U + a) = TU + \beta a$ as we have $\mu_t + (1 - \mu_t)\pi + (1 - \mu_t)(1 - \pi) = 1$ and $1 - \mu_t + \mu_t\pi + \mu_t(1 - \pi) = 1$. As $\mathcal{U}$ together with the *sup*-Norm is a complete metric space the contraction mapping Theorem applies.[19] Hence there exists a unique electorate's value function $U(\cdot)$. We show the properties of the proposition by corollary 1 of the contraction mapping theorem[20]:

i) Suppose that U satisfies $U(0.5 - x) = U(0.5 + x)$ for $x \in [0, \gamma - 0.5]$. Then because $\varphi^L(0.5 + x) = 1 - \varphi^R(0.5 - x)$ also TU satisfies this property. As the set of bounded continuous functions with propery i) is closed, the corollary applies.

ii) Suppose that U satisfies $U'(\mu_t) \leq 0$ for $\mu_t < 0.5$ and $U'(\mu_t) \geq 0$ for $\mu_t > 0.5$. Then because μ_{t+1}^L is monotonic increasing in μ_t if $z_t = 1$ and satisfies $\mu_{t+1}^L(0.5) = 0.5$, $(TU)'(\cdot) > 0$ for $\mu_t > 0.5$. An analogous argument holds for $\mu_t < 0.5$. As the set of bounded continuous functions with property ii) holding weakly is closed, and the set of strictly monotonic functions in the mentioned intervals is a subset of the set of weakly monotonic functions on the same intervals, the corollary applies.

iii) We first show that the value function $U(\cdot)$ has the following property: $b + \beta U(\mu_t) - \beta U(1 - \gamma) \geq 0 \quad \forall \mu_t \in [1 - \gamma, \gamma]$, by corollary 1 of the contraction mapping theorem. Therefore, suppose that the function $U(\cdot)$ satifies that property. Then for $\mu_t > 0.5$ we have:

$$
\begin{aligned}
TU(\mu_t) &= (\mu_t + (1 - \mu_t)\pi)\left(b + \beta U(\mu_{t+1}^L | z_t = 1)\right) + (1 - \mu_t)(1 - \pi)\beta U(1 - \gamma) \\
&= (\mu_t + (1 - \mu_t)\pi)\left(b + \beta U(\mu_{t+1}^L | z_t = 1) - \beta U(1 - \gamma)\right) + \beta U(1 - \gamma)
\end{aligned}
$$

Hence we have (using property i and ii):

$$
\begin{aligned}
b + \beta TU(\mu_t) - \beta TU(1 - \gamma) &= b + (\mu_t + (1 - \mu_t)\pi)\left(\beta U(\varphi^L(\mu_t)) - \beta U(\varphi^L(1 - \gamma))\right) \\
&\geq b + (\mu_t + (1 - \mu_t)\pi)\left(\beta U(\varphi^L(\mu_t)) - \beta U(1 - \gamma)\right) \\
&= (1 - \mu_t)(1 - \pi)b + (\mu_t + (1 - \mu_t)\pi)\left(b + \beta U(\varphi^L(\mu_t)) - \beta U(1 - \gamma)\right) > 0
\end{aligned}
$$

The same holds for $\mu_t < 0.5$ by symmetry. As the set of bounded continuous functions with that property is closed, the corollary applies.

Now we show that it is indeed optimal to vote for the left party if $\mu_t > 0.5$. (an analogous argument holds for $\mu_t < 0.5$).

Deviating once and electing the right party yields for $\mu_t > 0.5$:

$$
\hat{U}(\mu_t) = (1 - \mu_t + \mu_t\pi)\left(b + \beta U(\varphi^R(\mu_t))\right) + \mu_t(1 - \pi)\beta U(\gamma)
$$

Hence:

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[19]see e.g. Stokey Lucas, Theorem 3.2.
[20]see Stokey Lucas, p. 52.

$$U(\mu_t) - \hat{U}(\mu_t) = (2\mu - 1)(1 - \pi)\left(b + \beta U(\varphi^L(\mu_t)) - \beta U(\gamma)\right) + (1 - \mu_t + \mu_t\pi)\left(\beta U(\varphi^L(\mu_t)) - \beta U(\varphi^R(\mu_t))\right)$$
$$\geq (1 - \mu_t + \mu_t\pi)\left(\beta U(\varphi^L(\mu_t)) - \beta U(\varphi^R(\mu_t))\right) \geq 0$$

The last inequality is because $\varphi^L(\mu_t) - 0.5 > |0.5 - \varphi^R(\mu_t)|$ and property ii). To see this, note that for $\varphi^R(\mu_t) > 0.5$ this condition is true as we always have $\varphi^L(\mu_t) > \varphi^R(\mu_t)$. Hence we only have to check if $\varphi^L(\mu_t) - 0.5 > 0.5 - \varphi^R(\mu_t)$ when $\varphi^R(\mu_t) < 0.5$. Inserting the formulas above we have:

$$1 - \gamma + (2\gamma - 1)\frac{\mu_t}{\mu_t + (1 - \mu_t)\pi} - 0.5 \quad > \quad 0.5 - \left[\gamma - (2\gamma - 1)\frac{1 - \mu_t}{1 - \mu_t + \mu_t\pi}\right]$$

$$\Leftrightarrow 1 - \gamma + (2\gamma - 1)\frac{\mu_t}{\mu_t + (1 - \mu_t)\pi} \quad > \quad 1 - \gamma + (2\gamma - 1)\frac{1 - \mu_t}{1 - \mu_t + \mu_t\pi}$$

$$\Leftrightarrow \frac{\mu_t}{\mu_t + (1 - \mu_t)\pi} \quad > \quad \frac{1 - \mu_t}{1 - \mu_t + \mu_t\pi}$$

$$\Leftrightarrow \frac{1}{1 + (1 - \mu_t)\pi\mu_t^{-1}} \quad > \quad \frac{1}{1 + (1 - \mu_t)^{-1}\pi\mu_t}$$

which is true for for $\mu_t > 0.5$.

$\square$

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