Endogenous Party Identities

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Preliminary, Comments are Welcome

Abstract

A party develops its identity by adopting biased policy positions consistently over time. Existing rational voting models explain distinct party identities by assuming intrinsic policy-motivated parties or candidates. We show that distinct party identities may arise when parties are purely office-motivated in a dynamic setting with impressionable voters. In particular, a voter is more likely to vote for a party if she has had a positive experience with the party in the past. As voters’ experiences depend on chosen policies, impressionable voting creates a dynamic linkage between policy choices across time. We show that the heterogeneity of the electorate is sufficient to induce distinct party identities.

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1 Introduction

Parties with distinct ideologies are a characteristic of electoral politics in modern democracies. A party develops its ideological identity by consistently pursuing distinct platforms over a series of elections. Yet modeling persistent party identities has been proven quite difficult. These difficulties go back to Anthony Downs’ *An Economic Theory of Democracy* (1957). As in Hotelling (1929), Downs conceptualized voters in analogy to consumers choosing among competing "products", i.e. platforms offered by candidates and parties. Voters compare party platforms, calculate the difference in expected utility between the parties (the "expected party differential"), and vote for the party that provides them with a higher expected utility. If the expected party differential is too small to compensate for the cost of participation, they abstain. Parties and candidates, on the other hand, "are motivated by their personal desire for the income, prestige, and power which comes from holding office" (Down p. 34), and choose policy platforms to maximize vote share. In equilibrium both candidates adopt the same position at the policy bliss point of the median voter.

A large body of subsequent works has shown that policy convergence, typically to the median or mean voter’s bliss point, is a robust prediction of Downsian competition.\(^1\) To obtain policy divergence in the Downsian framework, one must assume heterogeneity across candidates as well as some forms of uncertainty (e.g. probabilistic voting). It is known that policy platforms diverge in a probabilistic voting model when the candidates have intrinsic preferences for certain policy positions.\(^2\) Simply assuming policy motivated candidates in a complete information context, however, is not sufficient (Calvert 1985).

Assuming policy motivated candidates that compete by selecting party platforms raises commitment issues since the elected candidate has an incentive to deviate from his campaign platform and implement his preferred policy. If candidates can commit to streams of policy platforms over time, convergence to the median again ensues. (Basso et al. 2006, Duggan and Martinelli 2014). Divergent equilibria can be sustained under less commitment (Alesina 1988, Duggan 2014, Duggan and Fey 2006), but these models exhibit multiple equilibria analogous to the folk-theorems in the repeated game literature.\(^3\)

\(^1\) See Duggan (2005) and Duggan and Martinelli (2014) for comprehensive reviews.


\(^3\) Citizen candidate models assume complete lack of commitment. Hence candidates must implement their ideal point (Besley and Coate 1997; Osbourne and Slivinski 1996). Alternatively, policy divergence arises when the voters care about non-policy related characteristics of the candidates (often called valence) such
In sum, Downsian competition exhibits a robust tendency for policy convergence. While this feature is attractive from a normative point of view (Duggan and Martinelli 2014) it raises concerns from a positive point of view as long as parties and candidates consistently and predictably propose divergent policy platforms. Policy divergence, if it can be obtained at all, relies on unalterable candidate characteristics such as policy preferences, valence difference and the like. In other words, candidate heterogeneity is a necessary assumption to generate policy divergence in Downsian competition.\footnote{This immediately raises the question of candidate entry. Feddersen, Sened and Wright (1992) show that in a model with entry all candidates enter at the median.}

In this paper, we argue that at the heart of this difficulty lies perhaps the most fundamental premise of the Downsian paradigm: the assumption that voters make their voting decision by comparing policy alternatives and then choosing the alternative with the highest expected utility. This assumption has not only guided subsequent models of electoral competition but lies at the core of spatial models of politics (e.g. Davis and Hinch 1966, Plott 1967). But from the very beginning, this "economic model of voting" has been criticized by behaviorally oriented scholars of elections. (e.g. Berelson, Lazarsfeld and McPhee 1954, Campbell, Converse, Miller, and Stokes 1960). Their findings suggest that actual voting decisions are often influenced by habit, social influence, party identification and the like. In his summary of the classics of post-war public opinion research, Stimson states (Stimson 2004; p. 13)

What those studies found was that ordinary Americans knew almost nothing about public affairs and appeared to care about issues as much as they knew: almost not at all. Their beliefs were a scattering of unrelated ideas, often mutually contradictory. Structure was nowhere to be found.

Recent works on voting behavior suggest that these limitations do not simply rest on the lack of information or attention, short-comings that could be alleviated by the use of heuristics such as cue-taking (e.g. Popkin 1991) or retrospective voting (e.g. Cummings 1966, Fiorina 2002). Rather, according to the new strand of research, voters are deeply affected by irrelevant factors or suffer from myopia or forgetfulness (Achen and Bartels 2004, Cole, Healy and Werker 2012, Gasper and Reeves 2011, Wolfers 2007, Healy, Malhotra and Mo 2010).
Drawing on these empirical observations, some scholars (Zaller 1992, Lodge and Taber 2013) have tried to model the micro-processes that shape voter opinion of issues and candidates. The literature on behavioral voting has been largely developed in isolation from the literature on electoral competition. It focuses on criticizing the underlying premises of rational voter models without examining the consequences of having behavioral voters for electoral competition. The purpose of this paper is to close this gap. That is, we examine electoral competition with behavioral voters. We model behavioral voters who engage in impressionable voting. In particular, they do not base their vote choice on a comparison of policy platforms, but rather adjust their voting propensities in response to (past) experiences. This view of voting bears a superficial similarity to retrospective voting and its formal representation in, e.g. Barro (1979) and Ferejohn (1986). However, in these models, voters use Bayes’s Rule to update their beliefs about candidate actions or types. Our voters do not engage in rational retrospection; they adjust their voting propensity following a simple feedback mechanism that has been widely studied in behavioral psychology.

We show that under the assumption of behavioral voters, policy divergence emerges naturally even if candidates are purely office-motivated, provided the electorate is polarized in terms of policy preferences. In particular, parties develop policy biases where they occupy different sections of the policy space. Moreover, the dynamic nature of our model allows us to explicitly show that the parties maintain the same ideological biases over time. In other words, office-motivated parties respond to a polarized electorate by adopting policies of distinct and persistent ideological biases. We refer to this feature as "party identities".

The way we model behavioral voters is inspired by models of adaptive learning (see Hart (2005) and Young (2008) for an introduction). Although the traditional focus of this literature has been to provide a foundation for equilibrium play (see Borges and Sarin 2000, Bendor et al. 2001), the tractability of the framework makes it an attractive approach for investigating applied problems, especially ones that are dynamic in nature. This motivates us to adopt the adaptive learning framework, which seeks to establish the persistence of policy bias over time. In the context of our model, the voters are behavioral in that they do not engage in equilibrium-thinking; they react to their past experiences following simple heuristics. The key characteristic of the heuristic rule is that an agent is more (less) likely to undertake an action if it yielded (un)satisfactory payoffs in the past. This assumption, often referred to as the Law of Effect, has featured prominently in many adaptive learning models and is well supported empirically in behavioral psychology (e.g. Bush and Mosteller 1955, Mookherjee and Sopher 1992; and Roth and Erev 1995). The Law of Effect applied to
our model means that a party can build a set of core supporters overtime if it continuously pursues policies attractive to those voters. When the electorate is polarized, the parties have strong incentives to build a core constituency of partisan voters by persistently pursuing policies of a certain ideological bias.

Our paper adds to the nascent field of behavioral political economy. While there is no canonical paradigm for modeling behavioral voters, the adaptive learning approach has been used in several papers. Bendor, Diermeier and Ting (2003) explore the “paradox of voting” and show that unlike rational voters, adaptive voters turnout in large numbers even in large elections with costly voting. Andonie and Diermeier (2013) examine the possibility of coordination among adaptive voters in elections with more than three candidates. Diermeier and Li (2014) examine electoral accountability with adaptive voters. Their results suggest that electoral accountability does not necessarily suffer in the presence of behavioral voters, contrary to what many presumed. In a paper that investigate a complementary issue to ours, Bendor, Kumar and Siegel (2010) examine how adaptive voters can develop partisanship towards a candidate over the long run. However, in their model, the candidates are not strategic; their policy positions are fixed. In contrast, the strategic selection of policies is at the core of our model.

Our model also speaks to the literature on the polarization of the political elites (e.g. parties and politicians) relative to the general electorate (see Fiorina and Abrams 2008; and Layman, Carsey and Horowitz 2006). The puzzling observation has been that although the voting behavior of both the elites and the electorate has become more partisan, the underlying voter preferences have been fairly stable. Adaptive voting can offer a potential explanation for this phenomenon. We observe that adaptive voters can develop partisan biases towards a party if they had good experiences with the party in the past, which is due as much to chance as is to actual policies. Moreover, the parties have an incentive to appeal to partisan voters by persist in its policy bias. This in turn strengthens voter’s partisan sentiment. Therefore, polarization of policies and partisanship among the electorate is mutually reinforcing, and we would observe growing polarization among the elite and electorate even if the underlying policy preferences are stable. We discuss this issue in more detail in Section (3.1).

The paper is organized as follows: in the next section we describe the model; we discuss the result in Section 3; Section 4 provides several robustness checks; Section 5 examines the

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5Bendor et al. (2011) provides an excellent summary of the existing behavioral models in political economy. Papers using other approaches to model behavioral voters includes Ortoleva & Snowberg (2014) and Lizzeri & Yariv (2013)
implication of behavioral parties and Section 6 concludes.

2 The Model

Two parties \{A, B\} compete in elections at time \(t = 0, 1, \ldots, T\), where \(T\) may be infinity.\(^6\) An election is held in the beginning of each period and the winner is elected via majority rule. The winning party (the incumbent) at date \(t\) is denoted \(I_t\). After the election, the incumbent chooses a policy \(\theta \in [\bar{\theta}, \tilde{\theta}] \subset \mathbb{R}\), which has an effect on voter payoffs and consequently the outcome of future elections. We assume for now that the incumbent chooses the policy to maximize the probability of being reelected. An alternative party objective is considered in Section 4.2.

There are \(n\) (odd) voters. The probability that voter \(i\) votes for candidate \(A\) at the date \(t\) election is denoted as \(p_{it}^A\); note that \(p_{it}^B = 1 - p_{it}^A\). We shall often refer to \(p_{it}^A\) and \(p_{it}^B\) as voting propensities. Voting propensities are determined recursively: the propensity at date \(t\) is determined by the the voter’s payoff at date \(t - 1\) as well as her propensity at the beginning of \(t - 1\), which can be interpreted as her sentiment.\(^7\) The voters’ sentiments can be thought of as an aggregate measure of payoffs prior to the incumbent’s policy choice at \(t - 1\). In other words, the voters’ sentiments are information to the incumbents when they make policy choices. Formally, let the set of payoffs be \(\Pi \subset \mathbb{R}\), the voting propensity adjusts according to a function \(\alpha : [0, 1] \times \Pi \to [0, 1]\) where \(p_{it+1}^I = \alpha(p_{it}^I, \pi)\). We impose Assumption (2.1) below on \(\alpha\). This assumption embodies one of the most fundamental insights in adaptive learning: the Law of Effect. It states that an agent’s propensity to undertake a particular action should be increasing in past payoffs of that action. As alluded to previously, the Law of Effect is viewed as "the most important principle in learning theory" (Hilgart and Bower, 1966; p. 481) and is well supported by many experimental studies.

**Assumption 2.1.** \(\alpha(\cdot, \cdot)\) is increasing in both arguments.

Assumption (2.1) states that propensity is increasing in voter sentiment (the first argument) and payoffs (the second argument). To understand how this captures the Law of Effect. Observe first that monotonicity in payoffs means that a higher payoff for a voter at date \(t\) increase the propensity to vote for \(I_t\) at date \(t + 1\). In addition, monotonicity in voter propensities means that a higher voter sentiment at date \(t\) should increase the propensity to vote for \(I_t\) at date \(t + 1\). We often omit the date subscripts when no confusion arises.

\(^7\)Note that the recursive definition of propensity adjustment is not crucial for our results. This will be discussed in more details in section 3.3.
sentiment means that a high payoff at \( t \) not only boost propensity at \( t+1 \), it also has residual effects on elections later on. More specifically, conditional on the payoff at \( t+1, t+2, \ldots, t+k \), the propensity to vote for \( I_t \) at date \( t+k+1 \), conditional on him winning elections at date \( t+1, t+2, \ldots, t+k \), is increasing in the payoff at date \( t \). Within the context of our model, the Law of Effect allows for the emergence of “political capital”: all else equal, voters are more likely to vote for one party over another if they had positive experience under the parties tenure. Below, we provide an example of adjustment functions that satisfy Assumption (2.1).

**Example 2.1. (Bush-Mosteller)** A classic parametric form of propensity adjustment is the Bush-Mosteller rule, which is used widely in adaptive learning.\(^8\) The propensity increases if the payoff is above a threshold and decreases otherwise. Conditional on being above (or below) the threshold, the payoff has no effect on the size of adjustment. Formally:

\[
\alpha(p, \pi) = \begin{cases} 
(1 - \beta)p + \beta & \text{if } \pi > 0 \\
(1 - \beta)p & \text{otherwise}
\end{cases}
\]

where \( \beta \in [0, 1] \) is a parameter. Fix \( p \), \(|\alpha(p, \pi) - p|\) is an increasing function in \( \beta \). Thus \( \beta \) governs the magnitude of adjustment from one period to the next.

As mentioned in the introduction, despite that voters pay attention to the incumbent’s ideological/policy position, there is strong evidence suggesting that voters are often influenced by random events outside the incumbent’s control. To capture this phenomenon, we assume that the voter’s payoff is composed of a deterministic and a stochastic component. The deterministic component captures the traditional notion of Downsian voting: voters evaluate policies relative to her ideal policy position. In particular voters are endowed with bliss points \( a = b_1 < b_2 < \ldots < b_{n-1} < b_n = \bar{a} \), and let \( u(b_i, \theta) \) be a symmetric single peaked utility function.\(^9\) Note that we will often identify voter \( i \) by her bliss point \( b_i \). We assume that the distribution of voters is symmetric around the median voter \( m \). For the stochastic component, let \( \epsilon \) be a random variable which is independent of policies and has independent realizations across voters. This captures noisy events such as global oil prices and the weather. We define voter payoff to be \( \pi = u(b_i, \theta) + \epsilon \). This essentially means that the policy chosen by the incumbent induces a stochastic distribution over the payoffs. We denote the distribution of voter \( i \) payoffs given policy \( \theta \) as \( \Psi^\theta_i \). Note that due to the properties of \( u(b_i, \theta) \),

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\(^8\)See Borgers and Sarin 2000, Karandikar et al. 1998, and Bendor et al. (2003, 2011) for example.

\(^9\)That is, \( u \) is a decreasing function of \(|b_i - a|\).
Ψ_i^\theta first order stochastically dominates Ψ_i^{\theta'} if |\theta - b_i| < |\theta' - b_i|. Observe that because payoffs is an argument in the propensity adjustment function, the next period propensity, α(p, π), is a random variable as well.

Although our set up shares many similarities with probabilistic voting models, there is some major differences between our model and a (repeated) probabilistic voting model. First, voters vote retrospectively in our model as opposed to prospectively in probabilistic voting models. More specifically, voters as described in our model do not to vote by proactively comparing what will happen under each of the two parties. The voters’ decision is determined by past outcomes. Moreover, voters in our model are not strategic; they are not consciously best responding to the politician’s actions. Rather, their behavior is prescribed by adaptive learning heuristics. These differences have various consequences. For example, in the standard probabilistic voting model, both parties have a winning probability of 1/2 in equilibrium.\textsuperscript{10} This is not true in our setting. Depending on past outcomes, the incumbent party may win with probability greater or less than 1/2. Our setting also differs from Downsian competition in terms of policy prediction. While policy convergence is the norm in Downsian models, this is not to be expected in our model.

To contrast our model with retrospective voting models, note that the latter are usually common value in nature: the voters have common interest in incentivizing efforts from the politician or screening for a more competent politician. We introduce of Downsian elements into a retrospective-like model, and this allows for the discussion of private value voting. Another difference between our model and a standard retrospective voting model is the incorporation of adaptive learning. This means that the current payoff (i.e. \pi) alone cannot pin down voting behavior; past outcomes also exert influence on voter behavior.

\section{Results}

Before we prove our main result we will provide a simple example that illustrates the workings of our model. This example also serves to show that parties may undertake increasingly extreme policy positions even though the underlying voter “preferences” are unchanged. This provides one explanation to the empirical puzzle in American politics where the political elites have exhibited increasing polarization over time though the electorate’s preferences seem to have remained stable.

\textsuperscript{10}The party can always deviate to adopt the same strategy as its opponent.
3.1 An Example of Elite Polarization

Suppose that \( \theta \in [0, 1] \) and there are three voters \( i \in \{l, c, r\} \) with bliss points \( b_l = 0, b_c = \frac{1}{2} \) and \( b_r = 1 \) respectively. Let the propensity function \( \alpha \) be as described in Example 1, with \( \beta = \frac{1}{2} \). In other words:

\[
\alpha(p, \pi) = \begin{cases} 
\frac{1+p}{2} & \text{if } \pi > 0 \\
\frac{p}{2} & \text{otherwise}
\end{cases}
\]

And suppose that \( u(b_i, \theta) = -|b_i - \theta| \) and \( \epsilon \) is a uniform distribution on the interval \([-\frac{1}{2}, \frac{1}{2}]\). Note that \( P(\pi < 0) = 1 \) if \( |b_i - \theta| \geq \frac{1}{2} \). In other words, the propensity of leftist (rightist) voter would decrease by a half if the incumbent chooses a policy to the right (left) of 0.

Now let’s consider a simple three period setting where the initial propensity for \( l \) is 1, for voter \( c \) 0.99, and for voter \( r \) is 0. We shall show below that with positive probability, the policy implemented by the incumbent may become more extreme over time, even as the voter preferences, as encapsulated by the utility function \( u(b_i, \theta) \), remain stable. The presence of noisy events (i.e. \( \epsilon \)) drives this observation. The fact that voter decisions are partially determined by random shocks means that policy choices must respond to those random events. In particular, the policy positions may become more or less extreme from one period to the next.

**Proposition 3.1.** The optimal first period policy is to the left of \( \frac{1}{2} \) (i.e. it has a leftist bias).

*Proof.* The initial incumbent \( I_1 \) choose first period policy \( \theta_1 \) given the initial propensities to maximizes his probability of reelection \( P(I_1 = I_2) \). Let :

\[
\theta_1 = \arg\max_{\theta \leq \frac{1}{2}} P(I_1 = I_2)
\]

\( \theta_1 \) is the optimal policy among all leftist policies. We will argue that \( \theta_1 \) dominates all rightist policies i.e. \( \theta > 1 \)

First, we need to calculate the probability of reelection for \( \theta_1 \). For \( i \in \{l, c, r\} \), let,

\[
P_i(p, \theta) = P(\pi_i < 0)\frac{p}{2} + P(\pi_i > 0)\frac{1+p}{2}
\]

Thus for \( \theta \leq \frac{1}{2} \):

\[
P(I_1 = I_2) = P_l(1, \theta) \times P_c(1, \theta)
\]
After some algebra, one obtains:

\[
\begin{align*}
\mathcal{P}_l (p_l, \theta) & \equiv \frac{1 + p_l}{2} \left( \frac{1}{2} - \theta \right) + \frac{p_l}{2} \left( \frac{1}{2} + \theta \right) \\
& = \frac{p_l}{2} + \frac{1}{4} - \frac{\theta}{2} \\
\mathcal{P}_c (p_c, \theta) & \equiv \frac{1 + p_c}{2} (\theta) + \frac{p_c}{2} (1 - \theta) \\
& = \frac{p_c}{2} + \frac{\theta}{2}
\end{align*}
\]

And this implies that:

\[
\mathcal{P}_l (p_l, \theta) + \mathcal{P}_c (p_c, \theta) = \frac{p_c + p_l}{2} + \frac{1}{4}
\]

The RHS is a constant, and it follows that the optimal policy \( \theta \) will equate \( \mathcal{P}_l \) and \( \mathcal{P}_c \) i.e. :

\[
\mathcal{P}_l (p_l, \theta) = \mathcal{P}_c (p_c, \theta) = \frac{p_c + p_l}{4} + \frac{1}{8} \tag{2}
\]

This means that probability of reelection for \( \theta_1 \) is greater than 0.3875.

Now, I will argue that \( \frac{1}{4} \) also dominates all policies \( \theta > \frac{1}{2} \). Noting that in this case, \( p_{2,l} = \frac{1}{2} \) (recall that \( P(\pi < 0) = 1 \) if \( |b_i - \theta| \geq \frac{1}{2} \)) it follows after some algebra:

\[
\begin{align*}
P(I_1 = I_2) & = \mathcal{P}_c \mathcal{P}_r + \mathcal{P}_l (\mathcal{P}_c + \mathcal{P}_r) - 2\mathcal{P}_l \mathcal{P}_c \mathcal{P}_r \\
& = \frac{1}{2} (\mathcal{P}_c + \mathcal{P}_r)
\end{align*}
\]

Recall that for \( \theta > \frac{1}{2} \), the quantity \( (\mathcal{P}_c + \mathcal{P}_r) \) is a constant that equals to \( \frac{p_c + p_r}{2} + \frac{1}{4} = 0.745 \), and thus we get for \( \theta > \frac{1}{2} \), the probability of reelection is 0.3725. This is less than the probability of reelection for \( \theta_1 \).

Next, we will give a sufficient condition on the realization of voter payoffs in the first period that ensures the second period policy is to the left of the first period policy. In other words, we show that with positive probability, the second period policy is more leftist than the first period policy.

**Proposition 3.2.** If the realized payoff for both \( l \) and \( c \) is greater than 0, then, assuming the incumbent is reelected for date 2, the optimal policy in the second period will be to the left of the first period policy i.e. \( \theta_2 < \theta_1 \).
Proof. Following the strategy of proof for Proposition 3.1. We will prove first that that

\[ \theta_2 \equiv \arg\max_{\theta \leq \frac{1}{2}} \mathbb{P}(I_2 = I_3) < \theta_1 \]

where \( \theta_1 \) is defined as in Proposition 3.1. Note that our assumptions on the payoffs implies \( p_{2,c} = 0.995 < p_{1,l} = 1 \). Therefore, the condition for optimum (2) and the observation that \( \mathcal{P}_l(1, \theta_1) < \mathcal{P}_c(0.995, \theta_1) \) implies that \( \theta_2 \) will be to the left of \( \theta_1 \). Note that the probability of reelection under \( \theta_2 \) is greater than 0.389.

Now, to show that the \( \theta_2 \) dominates all \( \theta > \frac{1}{2} \), note that for \( \theta > \frac{1}{2} \), one can calculate \( \mathcal{P}_l = \frac{1}{2} \).

Thus following (3);

\[
\mathbb{P}(I_2 = I_3) = \frac{1}{2} (\mathcal{P}_c + \mathcal{P}_r) \\
\approx 0.374
\]

which is less than the probability under \( \theta_2 \). \( \Box \)

Thus, the two propositions above demonstrate the possibility that a party may adopt increasingly polarizing policies over time. Thus, adaptive voting can provide an explanation of the puzzle that the political elites have become more polarized in behavior while the preferences of the electorate seem to have remained stable.

### 3.2 Characterization of Equilibrium

Following the arguments in Section 3.1, one can show that the incumbent may choose a leftist policy at date \( t = 1 \) but there is a possibility that upon reelection, he chooses a rightist policy. In other words, the incumbent may not choose policies of a consistent policy bias through time. Such flip-flopping does not constitute a party identity. This phenomenon is driven by the fact that the model defined thus far allows for the possibility that a voter, say with a rightist orientation, votes for a party who implements a policy that is far from her ideal point (e.g. a leftist policy). This creates an incentive for the incumbent to drastically change his policy stance to exploit potential support from rightist voters. This support arises solely due to favorable noisy events, as the utility associated with policies \( u \) implies that rightist voters would vote against the incumbent in the absence of noise. More important, this type of voting behavior does not match with empirical regularities. Indeed, some voters
exhibit strong partisanship and vote deterministically, never shifting their votes to a party of opposite ideological basis. We shall argue below that when the presence of partisan voters is significant, then party identities develop. First, we need to operationalize the notion of partisan voters. We do so by restricting how much noisy events can affect voter behavior via Assumption 3.1. One consequence of this assumption is that a voter votes against the incumbent with certainty if the policy implemented by the incumbent is sufficiently far away from the voter’s bliss point.

**Assumption 3.1.**

- $\exists \bar{\pi}, \bar{\pi}$ such that $\alpha(\cdot, \bar{\pi}) = 1$, and $\alpha(\cdot, \bar{\pi}) = 0$.

- The noise $\epsilon$ has bounded support $[\theta, \bar{\theta}]$.

- The quantity $u(b_i, \theta)$ converges to $-\infty$ as $|b_i - \theta|$ converges to $\infty$.

The first item of the assumption simply states that deterministic voting is possible. The second and third item capture, in a rough sense, that policy ideology becomes much more salient to the voters than noisy events if the ideological difference becomes large. An immediate corollary of Assumption 3.1 is that when the policy chosen by an incumbent is sufficiently far from the voter’s bliss point, the propensity to vote for the incumbent is zero.

**Corollary 3.1.** There exists $\delta > 0$ such that $|\theta - b_i| > \delta$ implies that the propensity to reelect the incumbent is 0.

**Proof.** The second and third item of the Assumption 3.1 imply that there exist $\delta > 0$ such that for $|b_i - \theta| > \delta$ it is the case $u(b_i, \theta) < \bar{\pi} - \bar{\theta}$. The first item then implies that the policy induces the propensity to be 0 with probability 1.

We provide a parametric example below that satisfies both Assumption 2.1 and 3.1.

**Example 3.1.** Let the support of the payoffs be $\Pi = [-1, 1]$, the utility function be $u(b_i, \theta) = -|b_i - \theta|$ and $\epsilon$ be a uniform distribution on the interval $[-\frac{1}{2}, \frac{1}{2}]$. Lastly, let $\alpha$ be defined as follows:

$$\alpha(p, \pi) = \begin{cases} 
(1 - \beta(\pi)) p + \beta(\pi) & \text{if } \pi \geq 0, \\
(1 - \beta(\pi)) p & \text{if } \pi < 0.
\end{cases}$$
where \( \beta(\pi) = \min\{|\pi|, 1\} \). Thus, the function \( \alpha(p, \pi) \) is a piecewise linear function of \( \pi \) with a “kink” at \( \pi = 0 \). It is easy to check that this example satisfies Assumption 2.1 and 3.1. Note that \( \beta(\pi) = 1 \) for \(|\pi| \geq 1\), and therefore if \(|\theta - b_i| > \frac{3}{2} = \delta\) then \( P\{\alpha(p, \pi) = 0\} = 1 \). The adjustment process described in the example can be seen as a generalization of the Bush-Mosteller process described in Example 2.1.\(^{11}\) Unlike in Bush-Mosteller, where the propensity increases discontinuously in payoffs, our formulation allows the marginal adjustment in propensity to vary continuously with the payoff by having the parameter \( \beta \) as a function of \( \pi \).

Our main result Proposition 3.3 below shows that when the electorate (i.e. their bliss points) are sufficiently polarized, the incumbent will choose a policy that is either to the right or the left of the median voter, and furthermore:

- if the incumbent is reelected, he will choose a policy of the same bias as in the previous period.
- if he is replaced, the new incumbent adopts a policy of the opposite bias.

For our formal result, we assume that \( \bar{\theta} - \hat{\theta} < 4\delta \) to ensure the existence of a majority-winning policy. In particular, this implies that \( \frac{\theta + b_m}{2} \) and \( \frac{\theta - b_m}{2} \) are two policies that can attain a majority of votes with positive probability.

Before proving our result, we will illustrate the intuition by describing a simple scenario. Consider three groups of voters: the conservatives, the centrists, and the liberals. All voters within a group share the same bliss point. Suppose that the conservatives and liberals have sufficiently extreme policy preference such that a centrist policy is unacceptable to them (i.e. they vote against the incumbent for choosing such a policy). For simplicity, suppose the policies have no influence on centrists’ behavior. In this case, the incumbent must either compromise with the conservatives or the liberals by adopting a policy of either rightist or leftist bias. Without loss of generality, suppose the incumbent adopts a leftist policy in period \( t \), then both the centrists and liberals vote for him with positive probabilities. The conservative voters, however, are marginalized and will vote against him. If the incumbent is reelected, then it is in his interest to persist in his leftist bias because of the political capital/support he has among liberals. In particular, he gains more votes (from the liberals) by sticking with some leftist policy than the votes he would have gained from the conservatives.

\( ^{11}\)Note that if \( \beta \) were independent of \( \pi \), then \( \alpha \) is simply the Bush-Mosteller adjustment process.
by switching to any rightist policy. Suppose on the other hand, the incumbent loses the reelection, then his successor would have an incentive to implement a policy with rightist bias because he (the new incumbent) can exploit the goodwills from conservatives who have been marginalized by the leftist policies by his predecessor. We are now ready to present our formal result:

**Proposition 3.3.** Suppose that Assumption 3.1 is satisfied and in addition, the distribution of bliss points is such that \( b_{m+1} - b_m > \frac{\delta}{2} \) and at least half of the voters have bliss points that are \( b_{m+1} - b_m + \delta \) distance away from \( b_m \), then

Given \( \mathcal{I}_t \) chooses policy \( \theta_t < b_m \) (resp. \( \theta_t > b_m \)):

1. If \( \mathcal{I}_t = \mathcal{I}_{t+1} \), then \( \mathcal{I}_{t+1} \) chooses a policy \( \theta_{t+1} < b_m \) (resp. \( \theta_{t+1} > b_m \))

2. If \( \mathcal{I}_t \neq \mathcal{I}_{t+1} \), then \( \mathcal{I}_{t+1} \) chooses a policy \( \theta_{t+1} > b_m \) (resp. \( \theta_{t+1} < b_m \)) with probability \( \rho \). With probability \( 1 - \rho \), \( \mathcal{I}_{t+1} \) is indifferent between some policy \( \theta < b_m \) and \( \theta' > b_m \). Finally, \( \rho \to 0 \) as \( n \to \infty \).

**Proof.** First, note that since at least half of the voters are \( b_{m+1} - b_m + \delta \) away from the median voter, the median policy \( \theta = b_m \) cannot obtain a majority. In fact, only policies to the left of \( b_{m-1} \) or to the right of \( b_{m+1} \) induces positive probability of a majority. Without the loss of generality suppose incumbent at date 0 is \( A \) and it chooses policy to the left of \( b_m \), then the fact that \( b_{m+1} - b_{m-1} > \delta \) implies that voters to the right of \( b_m \) have propensity 0 for \( A \) (i.e. \( p_i^A = 0 \) for \( i > m \)) at \( t = 1 \). If \( A \) is reelected at \( t = 1 \), then all voters to the left of \( b_m \) (\( i \leq m \)) have positive propensity for \( A \). We will show in this case, it is strictly optimal for him to continue adopting policy to the left of \( b_m \). We will show that any right wing policy \( \theta > b_m \) is dominated by the symmetrically opposed left wing policy policy \( 1 - \theta \). Note that since the distribution of voters is symmetric around \( b_m \), policy \( a \) induce the same distribution of outcome for voter \( i > m \) as policy \( 1 - \theta \) for voter \( n - i \). Thus the distribution over the vector of outcomes for voters \( i \leq m \) under \( 1 - a \) is the same as the distribution over the vector of outcomes for voters \( i \geq m \) under \( a \). Condition on the realization of a vector of outcomes \( \{\pi_i\}_{1 \leq i \leq n} \), the probability of reelection in \( t = 2 \) under policy \( a \) is:

\[
\alpha(p_m^a, \pi_m) \cdot \prod_{i > m} \alpha(0, \pi_i)
\]

while the probability of reelection under policy \( 1 - \theta \), conditional on the symmetric vector
of outcome is:

\[ \alpha(p^A_m, \pi_m) \cdot \prod_{i<m} \alpha(p^A_i, \pi_i) \]

By the monotonicity of \( \alpha \), \( \prod_{i<m} \alpha(p^A_i, \pi_i) > \prod_{i>m} \alpha(0, \pi_i) \), and thus applying the law of total probability, the probability of reelection is greater under policy \( 1-\theta \) than \( \theta \).

Now, suppose \( B \) defeats \( A \) in \( t=1 \), then it is strictly optimal for \( B \) to choose a rightist policy \( \theta > b_m \) as long as \( p^A_i > 0 \) for at least some \( i \) at \( t=2 \), since now the conditional probability of reelection in \( t=2 \) under an arbitrary policy \( \theta > b_m \) is:

\[ \alpha(1-p^A_m, \pi_m) \cdot \prod_{i>m} \alpha(1, \pi_i) \]

while the conditional probability of reelection under policy \( 1-\theta \) is:

\[ \alpha(1-p^A_m, \pi_m) \cdot \prod_{i>m} \alpha(1-p^A_i, \pi_i) \]

Because of the monotonicity of \( \alpha \) in the first argument, as long as \( p^A_i > 0 \) for one \( i \), \( B \) has a strict incentive to adopt a rightist policy at \( t=1 \). Now if \( \Psi^\theta_i(\pi < \pi_i) > 0 \) for all \( i \leq m \), then with probability \( \rho = \prod_{i \leq m} \Psi^\theta_i(\pi < \pi_i) \) (\( \theta_0 \) is the policy chosen by \( A \) at \( t=0 \)), second period propensity \( p^A_i \) is zero for all \( i \). However, note that \( \Psi^\theta_0(\pi < \pi) \) is bounded above, then as the number voters becomes large \( \rho \) approaches 0.

Note because of the stochastic nature of voter payoffs, the policy path is stochastic in equilibrium. Nonetheless, we have shown that (opposite) directional biases in the policy platforms by the two parties are persistent. We interpret this as party identities. They develop despite the fact that the parties are purely office-motivated and are ex-ante identical.\(^{12} \) Figure 1 below is an illustration of a sample policy path in equilibrium. Here, party \( A \) (red crosses) is the incumbent at \( t=1, 2, 3 \) and party \( B \) (blue dots) is the incumbent at date \( t=0, 4, 5, 6 \).

Note that we have assumed that the polarization of the electorate is such that a leftist (rightist) policy adopted by the incumbent party will completely alienate the rightist (leftist) voters (i.e. they vote with probability 0). This serves to simplify the proof but is not essential to the intuition. Consider a more general environment where it is possible for some rightist

\(^{12} \)If the voters are sufficiently dense such that any policy the incumbent chooses is close to the bliss point of some voters, then those voters may vote for the incumbent with probability 1. And this would imply that \( \rho = 0 \).
Red crosses are policy positions of Party A during its tenure, blue dots are policy positions of Party B during its tenure.

(leftist) voters to vote for a leftist (rightist) policy. We shall refer to them as the swing voters, and the rest of the electorate partisan voters. Without loss of generality, suppose the incumbent at date $t$ chooses a leftist policy and he is reelected. Leftist partisan voters provide the incentive for the incumbent to continue his policy bias because they vote with higher probability than right partisan voters would if the incumbent were to choose a rightist policy. The swing voters, however, may be more receptive to a leftist or a rightist policy depending on the realization of outcomes. Nonetheless, the incumbent find it worthwhile to switch to a rightist policy only if the gain in votes from the swing voters outweighs the loss of votes from the leftist partisan voters. This only happens if the political capital the incumbent has among the left partisan voters is low. Now, assuming the number of partisan voters relative to swing voters is high, then this event occurs with small probability. In other words, the incumbent will persist in his leftist bias with a high probability. Similarly, if the incumbent is voted out, his successor would adopt a leftist bias (as his predecessor) only in the event that the new incumbent has high support from left partisan voter, which is an unlikely event given a high proportion of partisan voters. In sum, our insight remains valid as long as the number of partisan voters is sufficiently high.

These type of voters would be in an interval around the median voter.
3.3 Generalization

We have assumed that the voter payoff is an additive function of a deterministic component and a stochastic component. This particular specification is not essential. Our result goes through if \( \Psi_\theta \) satisfies the following conditions:

1. \( \Psi_\theta^i = \Psi_\theta^j \) if \( |a - b_i| = |a' - b_j| \).
2. \( \Psi_\theta^i \) first order stochastically dominates \( \Psi_\theta^i \) if \( |a - b_i| < |a' - b_j| \).
3. \( \frac{d\Psi_\theta^i(\pi < \pi)}{d(a - b_i)} > \kappa > 0 \).

Condition 1 is a symmetry condition: the distribution of payoffs depends only on the distance between the implemented policy and the voter’s bliss point, and the distribution is the same for all voters conditional on the distance. Condition 2 implies that while voters are affected by noisy events, ideology does have an influence on payoffs. Condition 3 is a generalization of Assumption 3.1. It is a restriction on the extent of influence of noisy events. In particular, Condition 3 implies that the existence of a threshold \( \delta \) such that if the distance between the policy and the bliss point is above \( \delta \), then voter \( i \)'s propensity for the incumbent becomes zero. In other words, a voter’s decision would not be influenced by extraneous events if the incumbent’s policy is in sufficient conflict with the voter’s ideology. It is straightforward to see that the proof of Proposition 3.3 relies only the three properties of \( \Psi_\theta^i \) described above.

Now, we shall show that our result hold under a more general formulation of the propensity adjustment process. In the standard model, the propensity is defined recursively. In particular, there exist a function, \( \alpha \), that links propensity for next period, \( p_{i,t+1} \), with the current period’s propensity, \( p_{i,t} \). One can define more general propensity adjustment processes with the property that current outcomes have lingering effect on the future. Formally, let \( h_t = (\pi_t, I_t) \) be the pair of outcome and the identity of incumbent at date \( t \). Denote \( h^t = \{h_1, h_2, \ldots, h_t\} \) as a history of outcomes up to date \( t \), and let \( \{\alpha_t\}_{t=1}^\infty \) be a collection of functions such that \( \alpha_t(h^{t-1}, h_t) = p_{i,t+1}^A \). It is straightforward to see that this is a more general description of the propensity adjustment process than the recursive formulation. To see this, note that for some \( \alpha \) as in the recursive formulation, we can simply define

\[
\alpha_t(h^{t-1}, h_t) = \begin{cases} 
\alpha(p_{i,t}^A, \pi_t) & \text{if } c_t = A \\
1 - \alpha(p_{i,t}^B, \pi_t) & \text{if } c_t = B 
\end{cases}
\]
We see that given the initial propensity, \( p_{i,0} \), as well as the history of outcomes, the current propensity, \( p_{i,t} \) can be computed either via \( \alpha_t \) or \( \alpha \).

Assume that \( \{a_t\} \) satisfy the following conditions,

1. \( \alpha_t \) is increasing in \( \pi_s \) with \( s \leq t \) if \( I_s = A \) and decreasing in \( \pi_s \) with \( s \leq t \) if \( I_s = B \).
2. \( \exists \pi, \bar{\pi} \in \Pi \) such that \( \alpha_t(\cdot, \pi) = 0 \) and \( \alpha_t(\cdot, \bar{\pi}) = 1 \). And furthermore, \( \alpha(\cdot, \pi) > 0 \) for \( \pi > \bar{\pi} \).

The two conditions are generalizations of Assumption 2.1. The first condition says that the propensity to vote for party \( I \) at date \( t \) is increasing in the payoff at date \( s \leq t \) given \( I \) is in office at date \( s \). The interpretation of the first condition is similar to the first assumption in Assumption 2.1; it embodies the Law of Effect. The second condition is analogous to the second assumption in Assumption 2.1. It allows for deterministic voting if the payoff is sufficiently high or low. In other words, there are partisan voters whose ideology affinity to a party dominates the influence of noisy events. It is easy to see that Proposition 3.3 goes through under so long as the propensity adjustment process satisfies the above two conditions. The proof of Proposition 3.3 would be unchanged except for a change of notation for \( \alpha \). Intuitively, as long as the propensity adjustment process is responsive to past experiences, political capital can emerge, and the incumbent faces the exact same incentive as discussed at the end of Section 3.2. Under the recursive formulation, the current propensity (i.e. the first argument in the adjustment function) is just a particular way of aggregating the history whereas history is taken into account explicitly in the more general setting here.

4 Robustness of the Result

4.1 Incomplete Information

So far, we have assumed that the politicians can observe voters’ propensities. In reality, the politicians may not observe voter payoffs nor propensities, although coarse information on those quantities exist in the forms of polls and surveys. In this section, we assume that the parties are aware of the propensity adjustment process and the relationship between payoffs and policies, but they do not observe the realized voter payoffs. We do assume
that the number of votes for/against the incumbent becomes public information after each election. The candidates are Bayesian rational in processing this information, and we place no restriction on the initial prior on voters’ initial propensities. We show that our result goes through in this incomplete information environment.

**Claim 4.1.** (Proposition 3.3 holds) Suppose that Assumption 3.1 is satisfied and in addition, the distribution of bliss points is such that $b_{m+1} - b_m > \frac{\delta}{2}$ and at least half of the voters have bliss points that are $b_{m+1} - b_m + \delta$ distance away from $b_m$, then

Given $\mathcal{I}_t$ chooses policy $\theta_t < b_m$ (resp. $\theta_t > b_m$):

1. If $\mathcal{I}_t = \mathcal{I}_{t+1}$, then $\mathcal{I}_{t+1}$ chooses a policy $\theta_{t+1} < b_m$ (resp. $\theta_{t+1} > b_m$).

2. If $\mathcal{I}_t \neq \mathcal{I}_{t+1}$, then $\mathcal{I}_{t+1}$ chooses a policy $\theta_{t+1} > b_m$ (resp. $\theta_{t+1} < b_m$) with probability $\rho$. With probability $1 - \rho$, $\mathcal{I}_{t+1}$ is indifferent between some policy $\theta < b_m$ and $\theta' > b_m$.

Finally, $\rho \to 0$ as $n \to \infty$.

*Proof.* Again, we will only provide the argument for the case $\mathcal{I}_t = \mathcal{I}_{t+1}$ (the argument for the case $\mathcal{I}_t \neq \mathcal{I}_{t+1}$ is similar). Without the loss of generality, suppose that $\mathcal{I}_t$ chose a leftist policy at date $t$. Since the incumbent is reelected, he can infer that the propensities of leftist voters are positive while the propensities of the rightist voters are 0. To be more precise, each point on the support of the posterior is a distribution of propensities where the leftist voters have positive propensities and rightist voters have zero propensities. Without calculating the exact form of posterior, this information along is sufficient for the incumbent to continue adopting leftist policy at $t + 1$ (one can simply apply the argument in Proposition 3.3 to each point on the support of the posterior). Note that the exact location of policy will be different in the complete/incomplete information setting since it depends on the details of the distribution of propensities.

4.2 Alternative Candidate Objectives

In the benchmark model, we assumed that the parties act to maximize the probability of reelection. This may be unsatisfactory since the incumbents may be concerned with not only the upcoming election but future elections as well. In this section, we incorporate this observation by assuming the incumbents have longer time horizons and maximize expected discounted utility. Formally, normalize the utility for holding office for one period be 1
and let $\beta$ be the discount factor. The incumbent $I_t$ maximizes $\sum_{k=1}^{\infty} \beta^k \Pr(I_{t+k} = I_t)$. As evident from the specification of the preference, the candidates are homogeneous and office-motivated, in keeping with our original motivation. Note that we will maintain the assumption that voters vote for candidates based on their party affiliation. Countless studies have shown that voters’ evaluation of candidates is based strongly on the candidate’s party affiliation, as captured in the notion of party identification (see Fiorina 2002 and Bartels 2008 for overviews).

To simplify the analysis, we will make the assumption that there is a pool of infinitely many identical candidates. Moreover, the challenger is selected randomly from this pool. This implies that an incumbent who lost will not come back to run for the same office again in the future. We shall show below that our insight goes through despite a slightly more complicated argument.

**Claim 4.2.** (Proposition 3.3 holds) i.e. Suppose that Assumption 3.1 is satisfied and in addition, the distribution of bliss point is such that $b_{m+1} - b_m > \frac{\delta}{2}$ and at least half of the voters have bliss points that are $b_{m+1} - b_m + \delta$ distance away from $b_m$, then

Given $I_t$ chooses policy $\theta_t < b_m$ (resp. $\theta_t > b_m$):

1. If $I_t = I_{t+1}$, then $I_{t+1}$ chooses a policy $\theta_{t+1} < b_m$ (resp. $\theta_{t+1} > b_m$).

2. If $I_t \neq I_{t+1}$, then $I_{t+1}$ chooses a policy $\theta_{t+1} > b_m$ (resp. $\theta_{t+1} < b_m$) with probability $\rho$. With probability $1 - \rho$, $I_{t+1}$ is indifferent between some policy $\theta < b_m$ and $\theta' > b_m$.

Finally, $\rho \to 0$ as $n \to \infty$.

**Proof.** Note first that the utility-maximizing strategy for the incumbent is also one that maximizes his expected length of tenure. We will provide the argument for the case of $I_{t-1} = I_t$, the argument for the case $I_{t-1} \neq I_t$ is similar. Without the loss of generality, suppose $I_{t-1}$ chose a leftist policy at $t - 1$. His reelection ($I_t = I_{t-1}$) means that the propensity of leftist voters are strictly positive while the propensities of the rightist voters are zero. We will show that the length of tenure, $n$ (as a random variable at date $t$) given a rightist policy $\theta > b_m$ is first order stochastically dominated by the symmetrical leftist policy $\bar{\theta} - \theta$. We will do this by induction. First, the probability that $n \geq 2$ (i.e. the incumbent is reelected at $t + 1$) is greater under $\bar{\theta} - \theta$ than under $\theta$. This is essentially the result in Proposition 3.3. Now we have to show the probability that $n \geq 3$ is also greater under $\bar{\theta} - \theta$.

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14 This is standard in the retrospective voting literature (see Ferejohn 1986)
Note that this probability that $n \geq 3$ is equal to $\Pr(I_{t+1} = I_t) \cdot \Pr(I_{t+2} = I_{t+1} | I_{t+1} = I_t)$. The conditional probability is higher under $\bar{\theta} - \theta$ because the propensities of leftist voters first order stochastically dominates the propensities of rightist voters at date $t + 1$. In particular, conditional on any realization of $\{\pi_i\}$ at $t$, the optimal continuation policy at date $t + 1$ gives higher reelection probability at date $t + 2$. Reiterate this argument for $n \geq 4$ and so on, we see that the length of tenure under $\bar{\theta} - \theta$ at date $t$ (and optimal continuation strategy) first order stochastically dominates $\theta$. This implies that the expected length of tenure (i.e. the expected value of $n$ ) is higher under a leftist policy. And therefore at date $t$, $I_t$ will adopt a leftist policy. 

4.3 Policy Motivated Parties

So far we have assumed that parties are office-motivated (i.e. maximizing the probability of winning). More generally, the parties may also care about the actual policy implemented. In this section, we examine the robustness of our result to policy-motivated parties. In particular, we assume each party has a policy bliss point: $b_A$ for party $A$ and $b_B$ for party $B$. And the parties are endowed with single peaked utility functions like the voters; we denote the utility $u(p, b_i)$. We assume the objective for the incumbent (say party $A$) is to maximize $u(b_A, \theta) + \Pr(\text{win}) \cdot V$, where $V \geq 0$ represents the (continuation) value of winning office.\footnote{It’s possible that one endogenize $V$ in a fully dynamic game with pure policy motivated parties, but doing so would complicate the analysis (e.g. $V$ can possibly depend on $\theta$) and not likely to add any additional insight.}

One can also view $V$ as a parameter for the relative importance of office motivation relative to policy motivation. Clearly, for $V = 0$, the incumbent would simply choose $\theta = b_A$; in this case, our result would hold if and only if $b_A$ and $b_B$ are on opposite side of the median policy. On the other hand, if $V \approx \infty$, then we would expect the result in the benchmark model would hold regardless of the specification of $b_A$ and $b_B$. For intermediate values of $V$, a sufficient condition for party identity is if $b_A$ and $b_B$ are on opposite sides of the median policy. In this case, Party $P$ would always choose policy on the same side as $b_P$. The argument is a simple extension of the argument for Proposition 3.3, and is omitted for simplicity.
5 Behavioral Parties

So far we have assumed that the parties are rational agents capable of understanding how the electorate responds to the policies, and can best respond accordingly. While this may seem reasonable considering that political parties devote much time and resources to formulating policies, it is worthwhile to consider the consequences of parties who, like voters in our model, deviate from perfect rationality in their decision making. We are going to follow the modeling assumptions common in the existing literature that studies behavioral parties. The standard assumption is that the party who wins elections keeps the policy position for the next election, while the loser adopts a new policy position for the next election (e.g. Kramer 1977, Kollman, Miller, and Page 1992, Bendor, Mookherjee, and Ray 2006, Bendor, Diermeier, Siegel, and Ting 2011). In simple terms: winner stays, loser searches. The assumption is perhaps too extreme, but it does seem to be a reasonable lower bound on party rationality. Thus, observations that we establish under this assumption should hold under any higher degrees of party rationality.

Fortunately, it is not difficult to adapt the concept of “winner stays, loser searches” to our setting. More specifically, for “winner stays” we assume that if the incumbent wins a reelection, he adopts his previous policy. For “loser searches”, we assume that if the incumbent party loses an election, it will adopt a different policy the next time he is elected to office. There is a variety of possible assumptions on the searching behavior for the loser (e.g. Kollman, Miller, and Page 1992). Generally speaking, the loser would choose a new policy according to some probability distribution over the policy space. For simplicity, we assume that the distribution is time invariant. Assumption 5.1 below formalizes the notion of “winner stays, loser searches.”

Assumption 5.1. If $I_{t+1} = I_t$, then $\theta_{t+1} = \theta_t$. If $I_{t+1} \neq I_t$, then for $k = \min\{k \mid I_{t+k} = I_t\}$, $\theta_{t+k} \sim F(\theta)$ where $F$ is a distribution over the policy space.

Proposition 5.1 below states the implications of Assumption 5.1. The incumbent, if reelected, sticks with the policy (bias) he adopted previously. This is congruent with the result in the benchmark model. However, if a challenger wins the election, he only adopts a policy bias opposite of his predecessor with some probability, as induced by $F$. This is weaker

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16In Section 4.1, we relaxed the assumption that the parties are aware of the realization of voter payoffs, but we still maintain that the propensity adjustment process is known to the politicians.

17More complex assumption can dependent on past outcomes in a variety of manners.
than our benchmark result. It is worth noting that Proposition 5.1 does not require any assumption on voter behavior. Behavioral postulates on voters become irrelevant, since the politicians behavior are independent of voter propensities. This is in stark contrast to the benchmark model, where the result depends on certain restrictions the electorate’s behavior (e.g. polarization of bliss point, the propensity adjustment). In this sense, the (partial) party identity that arises given behavioral party is more robust than in the benchmark setting.

**Proposition 5.1.** Suppose $F$ is independent of history and is continuous, and $I_t$ chooses policy $\theta_t < b_m$ (resp. $\theta_t > b_m$), then

1. If $I_t = I_{t+1}$, then $\theta_{t+1} = \theta_t$.  

   If $I_t \neq I_{t+1}$, then $\theta_{t+1} > b_m$ with probability $1 - F(b_m)$, and with the rest of the probability chooses $\theta_{t+1} < b_m$.

The proof is straightforward (it follows from assumptions on search behavior) and we omit it.

### 6 Conclusion

The traditional literature on policy competition suggests that political parties develop distinct ideological identities only when they have intrinsic preferences regarding policies i.e. policy-motivated. In this paper, we show that office-motivated parties can develop identities in the presence of behavioral voters. There are two key features to our model. First, the voters votes in response to past experiences instead of engaging in proactive comparison of future policies as in the Downsian framework. The behavioral postulate we use is well supported by the learning literature in psychology. Second, our model is fully dynamic, and therefore we can explicitly examine policy paths. This is important since we define a party’s identity as pursuing policies of similar ideological bias consistently over time. In our main result, we show that distinct party identities develop when noisy events have only limited impact and voters are polarized. We find the result to be robust to incomplete information and other specifications of party objectives.
References


