Why Don't States Switch Sides Anymore? The Rise and Fall of American Electoral Volatility

Dean Lacy & Zachary D. Markovich

Dean Lacy, Department of Government, Dartmouth College, HB 6108, Hanover, NH 03755, dean.lacy@dartmouth.edu, phone: 603-646-9228 (corresponding author)

Zachary D. Markovich, Department of Political Science, Massachusetts Institute of Technology, 77 Massachusetts Avenue E53-470, Cambridge, MA 02142, zmarko@mit.edu

Abstract

American electoral volatility is in a free fall. Overtime variation in the partisan balance of presidential elections across states has matched an all-time low in American history and is a fraction of its 1970's peak. The current decline in volatility parallels declines during the Gilded Age and Franklin Roosevelt's presidency. Electoral volatility also varies by state beyond simple regional patterns and different than the current red state – blue state divide. This paper develops a theory of electoral volatility based on the premise that volatility is due to voter uncertainty. Party polarization makes the parties' positions distinct and reduces volatility. Strong third-party candidates increase voter uncertainty and, therefore, increase volatility. Close elections increase incentives for voters to become informed and for campaigns to inform voters, which reduce voter uncertainty. Increased voter turnout and a larger number of votes cast per state also decrease volatility. The model is empirically validated using both historical aggregate data from 1828 to 2016 and American National Election Studies (ANES) data from 1952 to 2016.

1   Introduction

Electoral volatility in the United States varies considerably across states and time. In Vermont the twoparty voteshare won by the Democratic presidential candidate swung by fourteen percentage points between 2000 and 2008, from fifty-five to sixty-nine percent, more than four times the corresponding national swing in the same period. Similarly, from 1988 to 1992 the Democratic twoparty voteshare spiked by an equally large twelve percent. This volatility is not new. From 1964 to 1968, Vermont's Democratic twoparty voteshare collapsed by nearly twenty percentage points, from sixty-six percent to just forty-five. In contrast, Minnesota's Democratic twoparty voteshare over the last forty years has been nearly constant, hovering near its mean of fifty-four percent.

American electoral volatility is generally low compared to other countries because recent elections have displayed extreme consistency. For example, one cross-national study determined that the United States has the lowest volatility in legislative elections of any country examined (Mainwaring and Zoco 2007). Focusing on the national average volatility obscures the fact that there is tremendous variation in volatility across American states. Some states exhibit stability over a long period of time, while others have seen their results oscillate wildly, a fact exemplified by Vermont and Minnesota. Moreover, most studies of volatility include only recent elections in their analyses, missing the fact that American electoral volatility has plummeted in recent elections to levels not seen since the last three decades of the nineteenth century (Mainwaring and Zoco 2007)

This paper represents a unique effort to examine electoral volatility in the United States across all of the states and across most of US history. The set of presidential elections analyzed stretches back to 1828, allowing an examination of the effects of events as disparate as the Civil War and the Great Depression on American electoral volatility. This long time period also provides context to the current period of low volatility in American politics. Although researchers have noted the recent decline in electoral volatility (Abramowitz 2012), the fact that this decline parallels similar trends during the Great Depression and Gilded

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Age has gone unnoticed.

American electoral volatility also presents a useful case study for understanding electoral volatility in general. The fifty states and the District of Columbia are different culturally and demographically. Yet, at the presidential level their electoral processes are very similar. The same candidates campaign in the same states with mostly identical messages, and, with a few historical exceptions, the states have similar mechanisms for determining the winner. The gradual expansion of the franchise over US history, changes in ballot qualification standards, the direct election of presidential Electors, and new campaign technologies make elections in 2016 different from elections in 1828. However, these changes have been relatively muted compared to the upheavals common in many countries, and have taken place against the backdrop of a near-constant constitutional order.[1]

This study of electoral volatility also paints a new picture of the geography of American electoral politics. Typically, the American electorate is divided into red and blue America, without paying much regard to other features of voting outcomes (Seabrook 2009), but electorate volatility adds a new dimension to this political geography and does not match the red state – blue state divided of recent elections.

Documenting changes in American electoral volatility over time and across states is interesting and revealing in its own right. However, the more important purpose of this paper is to develop and test a model to explain electoral volatility. We theorize that electoral volatility is due to voter uncertainty. The model echoes a previous analysis of the volatility in polling during American presidential elections, which suggested that polling is more volatile early in a campaign because voters are less informed about the candidates (Gelman and King 1993). We find that party polarization, economic inequality, the closeness of the election, and voter turnout affect electoral volatility across time and states. Changes in economic conditions, surprisingly, have no effect on volatility.

Section 2 presents a measure of electoral volatility. Section 3 describes electoral volatility

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1. The random effects statistical model we present controls for these sorts of unobserved confounding variables over time and across states.

across time and states. Section 4 shows the geography of electoral volatility in ways that reflect but also move beyond the red state – blue state divide. Section 5 develops the theory and hypotheses. Section 6 presents the results. Section 7 concludes.

2   Measuring Volatility

Researchers usually study electoral volatility cross-nationally in order to identify its causes (Roberts and Wibbels 1999; Budge 1982). Most studies focus on a specific region of the world, while others examine electoral volatility in specific countries (Mair 2008; Nooruddin and Chhibber 2008).

Scholars of American politics focus less on volatility, or over time variation, and more on shifts, or over time average votes, in the parties' electoral fortunes. For example, theories of critical elections seek to identify durable turning points in the parties' support rather than sources of variation in the vote across states or elections (Key Jr 1955; Burnham 1965; Converse et al. 1969; Brady, Cogan, and Fiorina 2000). Most studies focus on the national level, such as the voluminous literature on realignments, but recent studies examine state-level shifts in the parties' votes (Holbrook 2016; Erikson and Tedin 1981; Mayhew 2004).

Volatility in US elections is seldom studied in depth. brown1991ballots considers several instances of very high electoral volatility in the United States (specifically, 1928-1936 and elections with a strong third party candidate). Our approach differs in two ways. First, a measure of electoral volatility is identified and used as the dependent variable. Brown treats volatility implicitly by modeling only the determinants of change in partisan turnout. Second, our analysis places as much emphasis on periods of low electoral volatility as periods of high volatility.[2]

Researchers commonly measure electoral volatility using the Pedersen index (Pedersen

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2. Relatedly, some authors include heteroskedastic terms in their elections forecasting models to model varaince across elections (Boscardin and Gelman 1996; Gelman, King, and Boscardin 1998). These models have included effects for only the number of votes cast, without building a broader causal model for explaining electoral volatility. Additionally, these models use multiple other variables to determine the expected voteshare in a state, meaning that they are measuring unpredictability more than volatility.

1979). A systematic analysis of measures of electoral volatility concluded that the Pedersen index best satisfies a number of criteria (Taagepera and Grofman 2003). The Pedersen index sums the absolute differences in parties' voteshares and divides by 2. For election t, electoral volatility is defined as,

$$v_t = \frac{\sum_{i=1}^{n} |p_{i,t} - p_{i,t-1}|}{2} \tag{1}$$

where $p_{i,t}$ is the fraction of votes won by party i in election t. The index effectively sums the aggregate vote share that changed between two elections and is normalized by two so that it is bounded above by one (one party went from winning all of the votes to winning none, and vice-versa for the other parties) and below by zero (the parties' vote shares remained constant). Normalization by two is necessary, because changes in voteshare are zero sum. One party's loss is another party's gain.[3]

Because American politics is so heavily dominated by two parties, this analysis groups all third parties together so that they are treated as a single party in calculating electoral volatility. This is done to simplify the calculations, but it is also empirically justifiable, as third party voters are often unified by a dissatisfaction with the choices presented by the two major parties rather than a coherent set of governing principles. This is obviously a somewhat tenuous assumption, but the voteshare won by a third party is also generally very small.[4]

3. This measure does not take into account changes in turnout.
4. Prior to the emergence of the Republican party, the two major parties are the Whigs and Democrats. Prior to the emergence of the Whigs, the two majors parties are the Democrats and the anti-Jacksonians. We treat the Anti-Jacksonians then Whigs as one party. The appearance of the Republicans in 1860 is a new party. The Democrats remain a party across all elections in the data series.

3 Back to the Future: Electoral Volatility Over Time

Figure 1 shows a box-and-whisker plot of the electoral volatility of the US states for each presidential election from 1832 to 2016.[5] The line through the plot fits a loess regression of average volatility on election year. Figure 2 shows the proportion of US states that changed their presidential vote from the previous election over the same time period. Both figures show that, regardless of how measured, electoral volatility displays significant historical variation. We focus on the continuous measure of volatility rather than the binary measure of whether a state switches sides.

Electoral volatility has declined significantly in recent years. The United States is currently experiencing an extended period of remarkably low volatility, measured not only by mean volatility but also by the variance in volatility across states. In the 2012 election, the average state experienced a change of only 3.8 percentage points in partisan voteshare, the lowest on record. Electoral volatility increased slightly in 2016, but remains at historical lows. This protracted period of low volatility is the most similar to the Gilded Age. Some authors have called the contemporary era a New Gilded Age (Bartels 2008). Between 1872 and 1888, the average state experienced a swing in voteshare of 8.7 percentage points. The average for elections held from 1996 on is only slightly less, 8.02 percentage points. Both time periods were characterized by intense partisanship and national elections fought to nail biting finishes. Between 1876 and 1888, no election was decided by a margin of victory greater than 3 percentage points, even narrower than the close elections in recent history, which have featured comparative blowouts, such as Barack Obama's victory by 7 percentage points in 2008. Neither time period bears much resemblance to the double digit popular vote landslides of Ronald Reagan, Franklin Roosevelt, or Andrew Jackson in Figure 1. It is also noteworthy that all four elections in which an Electoral College winner lost the popular vote – 1876, 1888, 2000, and 2016 – occurred during the Gilded Age or recently.

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5. 1828 is the first election in the data series, but 1832 is the first election in the electoral volatility series, which measures change from the previous election.
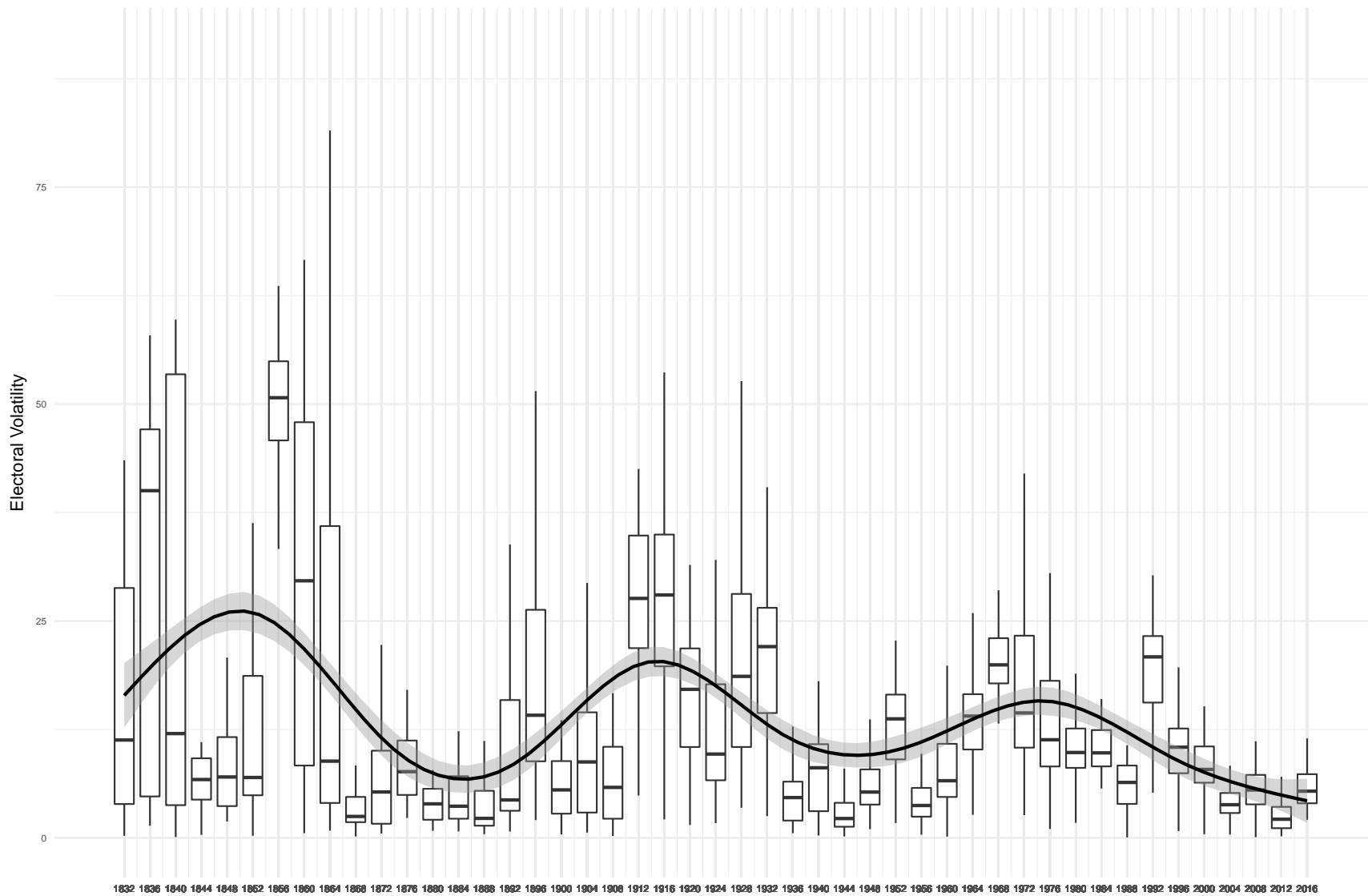
Figure 1: State Electoral Volatility in US Presidential Elections,1832-2016
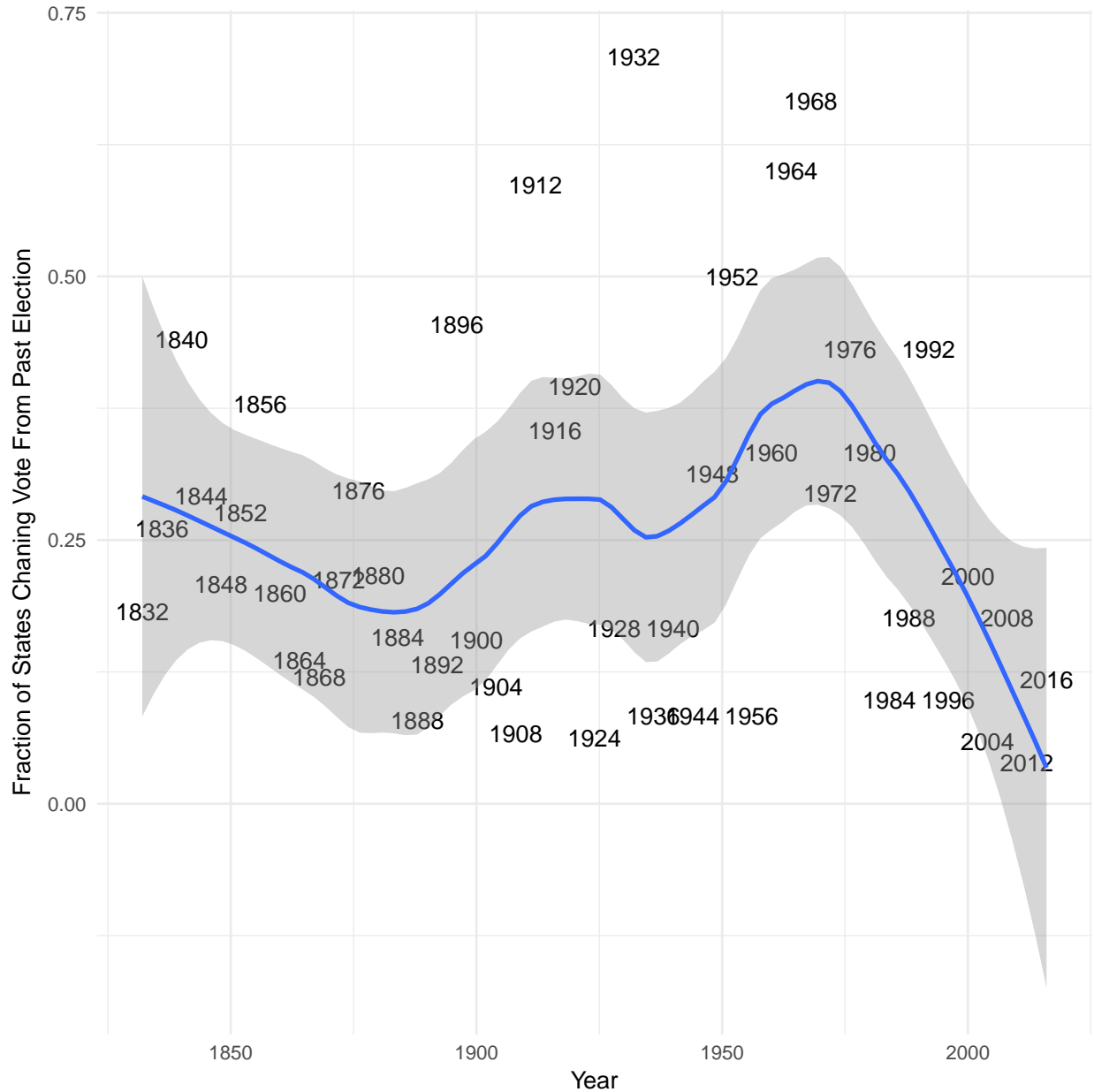
Figure 2: Proportion of US States That Changed Presidential Vote from Previous Election, 1832-2016

Additional parallels emerge between the present and Gilded Age. Wealth inequality skyrocketed in both periods, and concerns about the influence of money on politics became more salient (Gilens 2005; Piketty, Goldhammer, and Ganser 2014). The levels of geographic political polarization were also high in both periods as blocks of Southern and Great Plains states voted together against the Northeast and, recently, Pacific Coast. However, the regions

have flipped their partisan allegiance between the Gilded Age and current elections.

Another period of low electoral volatility also emerges during the Roosevelt and Truman years. Anchored by the trials of the Great Depression and World War II, the New Deal coalition delivered consistent victories for the Democrats in this period. Although the low points of this trough were quite low — 1944 saw an average change of only 4 percentage points in partisan voteshare from the previous election — it was not as pronounced or durable as the troughs in recent years and during the Gilded Age. The current trough and Gilded Age trough both reached their nadir in a run of three elections that all experienced under ten percentage points of average partisan shift (1880-1888 and 2004-2012). No similar sustained trough is present during the Great Depression and World War II.

During the Antebellum period, two forces pulled American electoral volatility in competing directions. The intense polarization around the issue of slavery prompted stability in partisan preferences. At the same time, the constant flux of the party system – the Whig Party rose and collapsed within a span of 20 years – resulted in great volatility. Consequently, the Antebellum experienced high average volatility, while a few states, particularly in the South, displayed electoral stability.

Two main periods of high volatility are also observed in Figure 1. During the 1910's and 1920's, the Progressive movement and the rise of the Fourth Party System brought profound change to politics, creating higher levels of electoral volatility. Women's suffrage brought a wave of new voters into the electorate, further amplifying volatility. Another high point of electoral volatility occurred during the 1960's and 1970's, when the Civil Rights movement expanded the franchise further, followed by Vietnam and Watergate, which turned many voters away from politics. The Southern realignment also introduced dramatic changes in partisan preferences into this period. Indeed, the decline of electoral volatility in recent elections can be interpreted as the completion of the Southern realignment.

Although electoral volatility has oscillated over the course of American history, the overall trend has been downward. The highest period of electoral volatility occurred in the 1830's

and the lowest is the present. Over time the troughs of electoral volatility have become lower, while the crests have become higher. In particular, the two-way contest between the Democrats and Republicans has persisted for well over a century now, allowing partisan identification to form a part of an individual's personal identity in a way that it could not early in the country's history.

4   Beyond Red and Blue: Electoral Volatility Across States

Presidential elections are often described as national elections. The Great Depression drove a national tide that elected Roosevelt in 1932. In 2008 the unpopular war in Iraq and collapsing economy buried the McCain candidacy. In many cases these national narratives are misleading. In each case examples remain to prove the adage that "all politics is local." In 1932, Herbert Hoover saw only a very modest reduction in his level of support in a handful of New England states despite the Great Depression. And Republican voteshare actually improved in parts of Appalachia in 2008 relative to 2004, while most of the rest of the country witnessed a decline in Republican voteshare.

These anecdotes suggest that there is an underlying geography to American elections. Although presidential campaigns are national events, each state responds to those events in different ways. The electoral history of the United States allows the states to be partitioned into different clusters based on their similar or different electoral histories. Volatility can be an important tool in analyzing the geography of American elections.

The growing polarization of American elections has led many observers to identify regional groupings of the country (Abramowitz 2012). The unique racial divisions and electoral history of the South identify it as a distinct political region, while the Northeast and Pacific West have become a left-leaning "blue wall" that has voted for the Democratic nominee for six straight elections (Campbell 1977; Trende, n.d.). Although qualitative assessments focus on geography in identifying clusters in American elections, quantitative analyses have instead delved deeper and uncovered clusters based on the demographic characteristics of the states

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(Seabrook 2009). For instance, Liberal clusters tend to be centered around diverse, urban areas while conservative clusters are rural and overwhelmingly white. Changes in the level of clustering over time have also attracted attention from political scientists. Polarization in American politics has increased over time, and some studies propose geographic sorting as an explanation for why electoral polarization has increased (Levendusky 2009; McDonald 2011).

Electoral volatility varies by geographic region. Figure 3 shows electoral volatility by state. The top panel shows elections since 1960 (volatility since 1964), which encompasses the era of the Southern realignment and modern, candidate-centered, televised campaigns. The bottom panel shows the full range of elections, going back to 1828 (volatility since 1832) or to the first election after statehood for some states. The shading of states corresponds to the average electoral volatility over the timespan. The average level of volatility from 1832 onward is much greater than from 1964 onward, even though the greater number of elections in the full data set should reduce average volatility rather than increase it.

Southern states – especially Alabama, Georgia, and Mississippi – display greater levels of electoral volatility than rest of the country since both 1832 and 1964. This may be due to the electoral tumult brought on by the Civil War, Reconstruction, and the Civil Rights movement. In general, the South's position on race issues has differed from the rest of the country, and the South has flipped party allegiances as the parties have changed positions on issues related to race.

Since 1964, Utah also shows high levels of volatility even though it is a reliably Republican state. Third party candidates have done well in Utah. Ross Perot's vote shares in Utah – 27% in 1992 and 10% in 1996 – exceeded his national averages. In 2016, Evan McMullin received 21% of Utah's vote, far exceeding his next highest finish of just under 7% in Idaho. The least volatile states since 1964 have been California, Illinois, Pennsylvania, New York, and New Jersey. Across all elections, Indiana, New Mexico, Delaware, and New Hampshire show the least volatility.
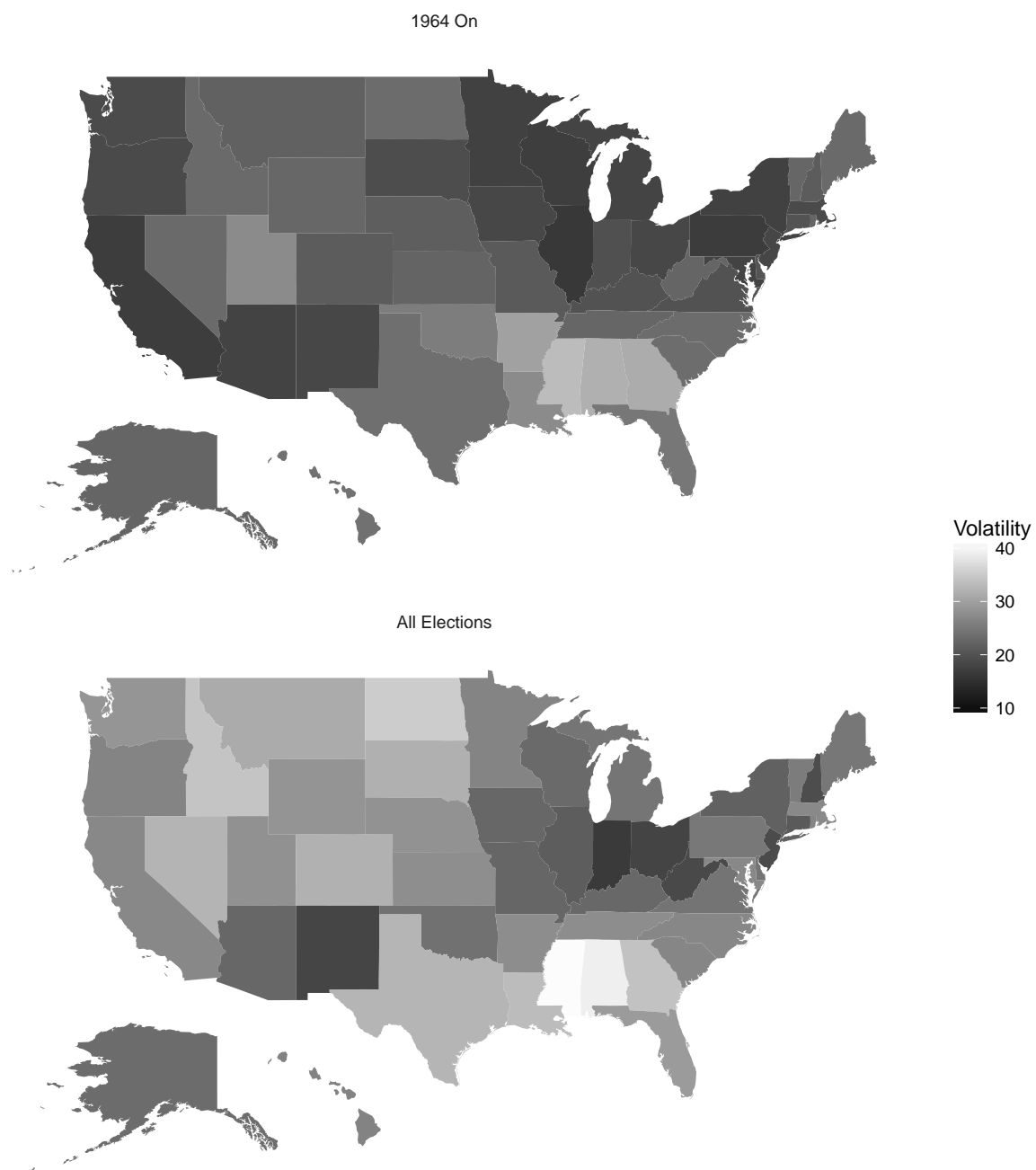
1964 On

All Elections

Volatility
40
30
20
10

Figure 3: Average Electoral Volatility by State

Swing states seem to display lower volatility than similar and similarly-sized neighboring states. In the post–1964 map, Ohio is less volatile than Pennsylvania or Michigan, Florida less volatile than Georgia, and New Hampshire less volatile than Vermont.

5   Explaining Volatility

To explain electoral volatility, we start at the level of the individual voter. We posit that each voter is characterized by a predisposition to vote for one the competing candidates as well as a random error. The random error in a voter's decision-making is increased by uncertainty about which candidate to select, or whether to vote at all. The policy differences between the candidates and the voters' access to or incentive to acquire information about the candidates reduce uncertainty. When the difference between parties' policy positions is large, voters are better able to distinguish between the two candidates, and their voting behavior becomes more stable. The particular pattern of volatility in the South may result from the parties switching positions on salient regional issues during the 1960s through 1980s (Sniderman and Stiglitz 2012).

Voter engagement also reduces electoral volatility. When an election is close and voters believe their votes matter, they gather more information about the candidates. The campaigns also put more resources into informing voters in swing states where the election is likely to be close.

The unifying factor between these two explanations is voter uncertainty. When voters can easily distinguish the two parties from each other and have an incentive to put the needed effort into doing so, electoral volatility declines.

Previous research supports these causal mechanisms by which growing ideological polarization and heightened voter engagement reduce electoral volatility. First, these two factors strengthen voters' confidence in their policy preferences, which are more stable over time, and mean that voters are less influenced by things that are unstable between elections and maybe not even clearly under the president's control, such as economic growth and international

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crises (Campbell 1983). Polarization also reduces the number of persuadable "floating" voters, therefore reducing electoral volatility (Bartels et al. 2011). Finally, polarization may raise the stakes for partisans by increasing the policy consequences when the other party is elected (Hetherington 2001).

5.1   A Model of Electoral Volatility

We theorize that electoral volatility is rooted in voter uncertainty. Electoral volatility declines when voters are able to easily distinguish the parties. Using a model of the expected utility of voting for a party (Downs 1957), suppose that voter i chooses among J parties, $j \in \{1, ..., J\}$. If $E(U_{ij})$ and $E(U_{ik})$ denote the voter's expected utility from the election of parties j and k, for all $k \neq j$, then voter i votes for party j if and only if

$$E(U_{ij}) - E(U_{ik}) > 0 \quad \forall k \neq j \tag{2}$$

One shortcoming of this model is that it assumes that voters have perfect information about the utility they will derive from a party. In reality though, voters can seldom perfectly estimate these utility functions. Political information is fraught with error and ambiguity. Common sources of political information, such as the news, blogs, friends, and family are frequently tinged by partisan bias, and a voter's exposure to these potentially misleading sources is often haphazard. Last-minute attack ads and changes in economic conditions or current events also introduce stochastic shocks to voters when the parties have similar positions. Sources of (mis)information and changes in the issue environment are essentially random and can be modeled by adding a stochastic error term ϵ_{ij}. We define the error as specific to each party, j, but the error could also be general across all parties or correlated across parties. Voter i will vote for party j if and only if,

$$E(U_{ij}) + \epsilon_{ij} \quad > \quad E(U_{ik}) + \epsilon_{ik} \tag{3}$$

$$E(U_{ij}) - E(U_{ik}) \quad > \quad \epsilon_{ik} - \epsilon_{ij} \quad \forall k \neq j \tag{4}$$

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To simplify, define $\eta_{ijk} = \epsilon_{ik} - \epsilon_{ij}$ so that

$$E(U_{ij}) - E(U_{ik}) > \eta_{ijk} \qquad \forall k \neq j \tag{5}$$

$_{ijk}$ can be an element of a matrix of errors, with a separate error term for each combination of parties when there are three or more parties in an election.

This model of voter choice makes no strong assumptions about how voters choose among candidates. For example, if most voters are ill-informed and only minimally influenced by the parties' issue positions, this simply means that the magnitude of η_{ijk} is very large (Converse 2006; Achen and Bartels 2016). Similarly, if voters formulate their candidate choice by randomizing among a set of "considerations," the expected utility term, $E(U_{ij}) - E(U_{ik})$, can be thought of as representing the average balance of those considerations and η_{ijk} introduces the stochastic component of randomizing among them (Zaller and Feldman 1992). Even if the bulk of the processing of political information occurs subconsciously, the expectation term can still be interpreted as the average outcome of those processes, and η_{ijk} represents the randomness that those processes introduce (Lodge and Taber 2013). The error term η_{ijk} can also capture strategic substitutability between parties in a three-party race, such as voters who prefer party k but vote for party j in order to avoid the election a less-preferred party. The models that follow include third-party vote shares as a control variable, but the variable also captures

The probability, p_{ij}, that voter i votes for party j is,

$$p_{ij} = P(E(U_{ij}) - E(U_{ik})) > \eta_{ijk} \qquad \forall k \neq j \tag{6}$$

And the variance of voter i's probability of voting for j is,

$$p_{ij}(1 - p_{ij}) \tag{7}$$

Voter i can reduce the magnitude of η_{ijk} by devoting more effort to learning, l_i, about the parties and candidates. So,

$$\eta_{ijk}^2 = f(l_i) \tag{8}$$

f is a function that determines how much voter i's uncertainty is reduced from investing resources into learning about the campaign.

This model can be extended to draw conclusions about the causes of volatility in aggregate voteshare. Since the aggregate voteshare is the sum of a series of Bernoulli random variables with differing means, the aggregate voteshare will be distributed as a Poisson binomial. Then, if the electorate has n voters, the fraction of the twoparty voteshare won by party j, μ_j is,

$$\mu_j = \frac{\sum_{i=1}^n p_{ij}}{n} \tag{9}$$

and its variance, σ^2 is,

$$\sigma_j^2 = \frac{\sum_{i=1}^n p_{ij}(1 - p_{ij})}{n} \tag{10}$$

It is straightforward to see the Pedersen index is increasing with $\sum_{j=1}^n \sigma_j^2$.[6]

5.2 Hypotheses

Based on the model, there are four factors that reduce electoral volatility and one factor that increases volatility. The first variable that reduces volatility is party polarization, or the distance between the parties on issues.

Hypothesis 1: Increasing the difference in expected utility between parties, $(E_{ij} - E_{ik})^2$, reduces electoral volatility.

Voters are more likely to change their votes in response to random error due to shocks or advertising or campaign events when the difference between $E(U_{ij})$ and $E(U_{ik})$ is small

6. Let v_{tj} denote the voteshare of party j in election t. Then, $E(\text{Ped}) \propto \sum_{j=1}^n E(|w_{2j} - w1j|)$ which increases montonically with $\sum_{j=1}^n E((^2w_{2j} - w1j)^2) = \sum_{j=1}^n E((^2w_{2j} - E(w_j) - w1j + E(w_j))^2) = \sum_{j=1}^n 2\sigma_j^2$

than when it is large. A last minute attack ad or a conversation with a friend could easily sway a voter. The occurrence of these sorts of encounters are nearly random, and, if they have the potential to change a person's vote, they will introduce a significant amount of volatility into the election. In contrast, when the parties are heavily polarized, events or new information will have little effect on voters' expected utility, and the election results will be preordained months in advance. This finding contradicts the theoretical relationship between electoral volatility and polarization advanced by roberts1999party, but corroborates their empirical findings. dalton2007partisan agrees with this finding, arguing that as the fraction of weak partisans and late deciders increases, so does electoral volatility. smidt2015polarization shows using panel data in recent US elections that polarization reduces the number of floating voters in the electorate, which should reduce volatility. Also consistent with smidt2015polarization, voters do not need to know the parties' positions explicitly since they can take cues from political elites and discussion networks. Voters do not have to be informed in our model. Uninformed voters may have a large stochastic component to their votes compared to informed voters. Regardless of the magnitude of this noise or error in vote choice, polarized parties reduce voter uncertainty, and, therefore, electoral volatility. hetherington2001resurgent argues that polarization raises the stakes for voters, increasing their incentives to seek political information as well as validating the assumption that elite polarization increases the perceived ideological gap between the parties.

Political polarization may be policy-oriented or ideological and captured in a spatial model of voting. Polarization may also be economic in origin, a product of a widening income gap and the concentration of wealth. Even if the parties are close together on a catch-all ideological dimension of liberal-conservative, they may be far apart in their representation of economic interests. mccarty2016polarized (2016) find a reciprocal relationship between party polarization and economic inequality. Economic inequality is another form of polarization when one party represents upper income groups and the other party represents lower income groups. Therefore, a second mechanism affecting electoral volatility is:

Hypothesis 2: Increasing economic inequality reduces electoral volatility.

The third mechanism by which electoral volatility will decline is a reduction in voter uncertainty about the candidates' positions.

Hypothesis 3: Reducing ϵ_i by increasing effort put into gathering political information, l_i, reduces electoral volatility.

When voter engagement is high, voters will devote more time to analyzing and understanding the election. As they do so, their beliefs will become more certain and their openness to persuasion will decline. States in which the cost of acquiring information is low or the populations are well informed or interested in politics will display lower levels of electoral volatility than than states with high information costs or disinterested citizens.

The fourth mechanism for the decline in electoral volatility is purely mathematical and results from larger numbers of voters, which, in the aggregate, decreases the magnitude of average errors in voting.

Hypothesis 4: Increasing the size of the electorate, n, reduces electoral volatility

This is due to the Central Limit Theorem: the greater the number of observations of a random variable, the lower the variance around the mean. Each voter in our model can be thought of as a realization of a random variable. Although there are a large number of voters in every election, so that the incremental reduction in volatility from the addition of a single voter is quite low, the range of votes cast across states and years is large enough that the number of votes cast can be a significant factor in explaining electoral volatility. For example, in Nevada in 1900 only 10,196 votes were cast, while in California in 2008 13,561,900 were cast.

Finally, viable third-party candidates increase voter uncertainty. Third party candidates may crowd the issue space, reducing the differences in utility between any pair of candidates. Third party candidates may also increase strategic voting or strategic confusion. In 1912, for

instance, voters who did not want to see Woodrow Wilson elected had to choose between two other options – Theodore Roosevelt and William H. Taft. Some voters may have preferred Taft but voted for Roosevelt if they thought Taft could not win. Therefore,[7]

Hypothesis 5: Increasing vote shares for third-party candidates increases voter uncertainty and increases electoral volatility.

6 Testing the Model

We test the model using two different types of data. First, we examine voter-level data from the American National Election Studies (ANES) since 1952 to test whether year-aggregated perceptions of the difference between the parties and the vote share for third parties explain volatility across years. Second, we examine state- and year-level data from all elections since 1832 to assess the effects of party polarization, closeness of the election in a state, number of voters in a state, changes in gross domestic product, and war. For the post-1832 analysis, we further examine different windows of time, including 1916 onward to include economic inequality, and 1964 onward to capture the modern era of televised campaigns and the Southern realignment.

6.1 Testing the Model After 1952

Since 1952, the American National Election Studies (ANES) has included a question asking voters whether they believe there is an important difference in what the Republican and Democratic parties stand for. This question effectively measures voters' ability to distinguish the policy stances of the two parties. Voters who answer that they do not perceive a major difference between the two parties are likely uncertain about which candidate best maximizes their utility function (E_i in the previous model). Presumably, the answer to this question could be changed by increasing the ideological gap between the two candidates, $E(U_{ij}) -$

7. The appendix extends our model to consider strategic voting

$E(U_{ik})^2$, or the amount of political information the voter consumed (r_i), and so measures the joint effect of both factors. The effect of these two variables on aggregate electoral volatility can then be tested by comparing national electoral volatility with the fraction of people in the ANES who answered that they believer there is an important difference between the two parties, where each election year is an observation (N=15).

Table 1: Percent of People Who Believe There is an Important Difference Between the Parties is Negatively Related to Electoral Volatility, Controlling for Third-Party Vote Share

	Dependent variable:
	National Electoral Volatility
% Yes, Difference Between the Parties	-0.324^*
	(0.062)
% Third Party Vote Share	0.498^*
	(0.115)
Intercept	27.042^*
	(3.943)
Observations	14
R^2	0.828
Adjusted R^2	0.797
Residual Std. Error	2.457 (df = 11)
F Statistic	26.545^{***} (df = 2; 11)
Note:	*p<0.05

The percentage of total votes awarded to a third party candidate is also included as a control in this model. Credible third party candidates introduce substantial volatility into the model by expanding the number of choices that voters have. Consequently, electoral volatility will be much higher than otherwise expected in these elections.

The multiple regression model indicates that each percentage point increase in the percent of respondents who believe there is an important difference between the parties decreases the expected electoral volatility by 0.324 percentage points (s.e.=0.062). The regression explains 83% of the variance in electoral volatility. The number of votes cast is not included in this

Figure 4: Electoral Volatility versus Percent of People Who Believe There is an Important Difference Between the Parties
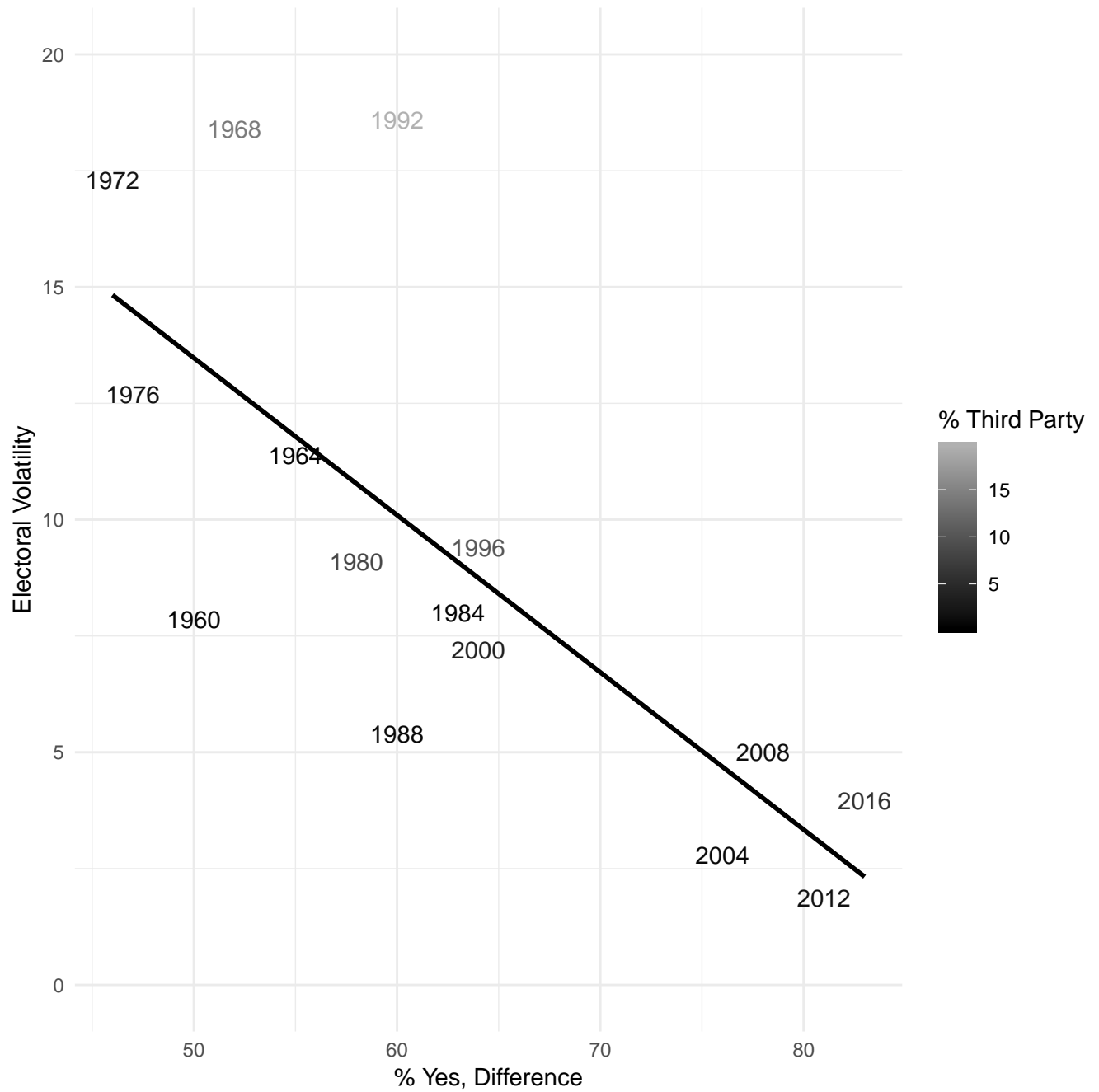
model because there are so many votes cast nationally in each election after 1952 that the impact of an increase in the number of voters on expected volatility is small.

Figure 4 visualizes the relationship between electoral volatility and party polarization. The figure matches the expected relationship. The low levels of electoral volatility seen in recent elections are associated with high percentages of voters indicating that they do not perceive a difference between the parties. The 1968 and 1992 elections emerge as obvious outliers to this downward trend due to the successful third party candidacies of George Wallace and Ross Perot. Interestingly, 1980 did not feature a high degree of electoral volatility in spite of the reversal of a Democrat's victory from the previous election and the third party candidacy of John Anderson.

6.2 Testing the Model For All Years

We also test the model historically, including years prior to the availability of modern survey data. The data are cross-sectional time series where every observation corresponds to a unique state and election. Electoral volatility is measured in each state in each year. A panel model with state and year random effects is then used to estimate the relationship between the variables.[8] The model is estimated on three sets of years: 1832 onward, 1916 onward to include income inequality, and 1964 onward to capture the modern era of televised campaigns.

The squared difference between party means in the house DW-Nominate scores measures the expected utility difference between the two candidates (Poole and Rosenthal 2000; Carroll et al. 2008).[9][10] This is obviously an imperfect proxy since the ideology of House members will not perfectly correspond to the ideology of the candidates nominated, and the aggregated ideological difference between the two parties may not capture the true difference

8. We do not measure polarization of state congressional delegations since this is a study of presidential elections, where the candidates are the same across states in each election.

9. Only the first dimension is used.

10. The squared nominate scores are multiplied by ten so that they are on similar scale to the other variables.

in voter utility because voters might weight certain issues more heavily than aggregation. Nevertheless, in aggregate, *polarization* is a useful proxy for the difference in voters' expected utilities between the two parties. Party polarization should be associated with a larger gap in voters' expected utilities, and polarization positively correlates with the percentage of voters who say that they care about the outcome of the election for elections since 1952 in which both variables are available ($r = .88$).

Economic inequality is available from 1916 onward, after the creation of the federal income tax provided a source of data on income. Economic inequality is measured as the percentage of total income held by the top one tenth of one percent of households (Piketty, Goldhammer, and Ganser 2014). This varies nationally across years but does not vary by state. Economic inequality is a measure of national interests rather than local interests represented by the parties.

Voter information increases with the *closeness* of an election for two reasons. First, voter enthusiasm is likely to be higher in close elections, and voters are more likely to seek information about the candidates. Second, campaigns will target states that are more competitive, providing voters with additional sources of information about the candidates. Two variables measure the effect of voter information. *Closeness* is the negative square root of the distance from a fifty–fifty two party voteshare in each state in each year. A square root transformation is used to capture diminishing returns from closeness. The increase in voter engagement gained by moving from 50% to 55% Democratic twoparty voteshare is likely much greater than that gained by moving from 75% to 80%. Higher values on this variable indicate a closer election, which should reduce volatility.

The effort that voters put into acquiring new information should rise with *turnout*. Turnout is measured as the number of ballots cast divided by the population of the state according to the Census. Turnout is an indirect measure of voter enthusiasm, which is in turn a measure of the effort that a voter puts into learning about the candidates. The same forces that motivate voters to turnout should also motivate them to follow the campaigns

more closely and to devote more time to learning about the candidates. Turnout is defined as the number of votes divided by the total population of the state.

The total *number of votes cast* in a state in an election corresponds to n in the formal model. Whereas the number of votes cast was dropped from the aggregate, post-1952 model, we include it here since there is significant variation in the number of votes cast across states and also across years.

The model controls for economic conditions, which exert a strong influence on aggregate election outcomes (Kramer 1983; Fiorina 1981; 1978; MacKuen, Erikson, and Stimson 1992; Jacobson 1990; Erikson 1989; Baum and Kernell 2001; Lewis-Beck 1990; Lewis-Beck and Stegmaier 2000, e.g.). The model includes the percent change in per capita gross domestic product in each election year. A declining economy typically reduces the incumbent party's vote share. An improving economy may have an asymmetric effect of either increasing the incumbent party's vote share, which would also imply an increase in volatility, or of maintaining the incumbent party's vote without necessarily increasing volatility. The model includes the change in per capita GDP in the year before the election, which should be negatively related to volatility. The model also controls for war years: 2008, 2004, 1972, 1968, 1952, 1944, 1900, 1864, and 1848. War may create a rally-'round-the-flag effect, increasing support for incumbent presidents.

Results appear in Table **??** and are presented graphically in Figure 5. The dots in Figure 5 show the expected effect on volatility of a one standard deviation increase in each independent variable. The horizontal lines are 95% confidence intervals. Focusing first on the results of all elections from 1832 onward, we find that all of the variables have effects in the expected direction, but only turnout and the number of votes cast are statistically significant predictors of volatility since they are the only variables with a confidence interval that does not cross the vertical zero line. Easing the threshold for statistical significance to an 80% confidence interval, closeness also explains volatility.

The results for elections from 1916 onward again show that all effects are in the expected

direction. All variables but closeness are also statistically significant with a 95% confidence interval after controlling for income inequality, and closeness is significant with an 80% confidence interval. Polarization, turnout, and closeness all have substantively significant effects on volatility. A one standard deviation increase in polarization, a difference of about .25 points on the DW-Nominate scale, drops volatility by two points. Economic inequality is also a significant predictor of volatility.

The results are strengthened for polarization, closeness, and turnout when examining elections since 1960. The results for polarization and closeness confirm the theory that volatility is due to voters' uncertainty. One explanation for the stronger results from 1960 onward is that the efficiency of effort invested into gathering political information has become greater over time. It has become dramatically easier to transmit political information and for voters to discern differences between the parties. The rise of railroads and later jet travel made it progressively easier for the candidates and campaign staff to travel to meet voters. The invention of radio, television, and the Internet reduced the cost of information about politics and made it easier for voters to become informed about the candidates and the issues. Notably, both ease and travel and efficiency of communication took large steps forward during the 1960 election, the first to feature prominent television coverage of the campaigns, the first televised debates, and jet travel by both candidates. Additionally, when year random effects are dropped and year is included as a covariate for the model including all elections, electoral volatility shows a statistically significant downward trend, suggesting that increasing access to political information over time has reduced electoral volatility.

Changes in per capita GDP have no consistent effect on volatility. The raw percent change in GDP has a negative effect from 1916 and 1832 onward but not from 1960 onward. Greater GDP growth reduces electoral volatility while declines in GDP growth increase volatility.

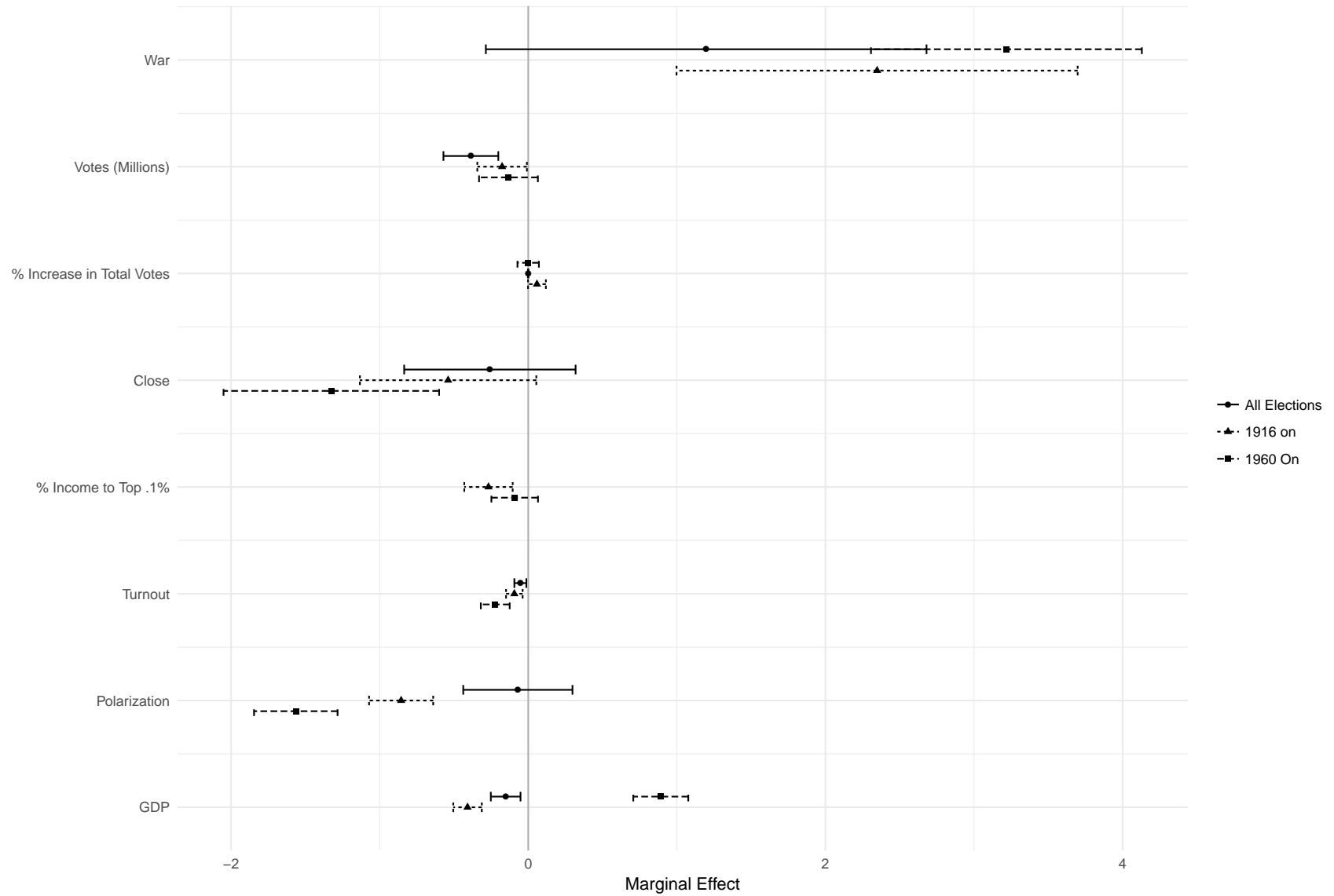Figure 5: Determinants of Electoral Volatility, Random Effects Model

	All Elections	Electoral Volatility 1916 on	1916 on
	(1)	(2)	(3)
Close	−0.258 (0.294)	−0.022 (0.296)	−0.539 (0.303)
Polarization	−0.070 (0.188)	−0.882* (0.161)	−0.856* (0.110)
Turnout	−0.053* (0.021)	−0.082* (0.031)	−0.094* (0.028)
Votes (Millions)	−0.386* (0.094)	−0.290* (0.092)	−0.176* (0.085)
% Increase Total Votes	−0.001 (0.001)	0.057* (0.027)	0.058 (0.031)
Frac Income .1%			−0.268* (0.083)
% Third Party	0.574* (0.022)	0.730* (0.029)	0.704* (0.028)
% Change GDP Per Capita	−0.152* (0.051)	−0.129* (0.050)	−0.409* (0.049)
War	1.197 (0.757)	1.116 (0.775)	2.348* (0.689)
Constant	11.479* (1.598)	16.370* (1.675)	16.188* (1.655)
Observations	1,848	1,185	1,126
R^2	0.304	0.310	0.391
Adjusted R^2	0.301	0.305	0.386
F Statistic	100.234* (df = 8; 1839)	65.044* (df = 8; 1176)	78.079* (df = 9; 1116)

Dependent variable: Electoral Volatility

Note: *p<0.05

Table 3:

	Dependent variable:	
	Electoral Volatility	
	All Elections	1916 on
	(1)	(2)
Close	−1.025*	−1.325*
	(0.483)	(0.370)
Polarization	−1.714*	−1.564*
	(0.163)	(0.143)
Turnout	−0.171*	−0.222*
	(0.063)	(0.050)
Votes (Millions)	−0.081	−0.133
	(0.106)	(0.101)
% Increase in Number of Votes	0.018	−0.001
	(0.039)	(0.037)
Frac Income .1%	0.597*	0.587*
	(0.020)	(0.020)
% Third Party		−0.091
		(0.080)
% Change GDP Per Capita	0.963*	0.892*
	(0.112)	(0.094)
War	3.189*	3.218*
	(0.460)	(0.465)
% Increase Total Votes	19.376*	20.893*
	(2.110)	(1.905)
Observations	659	648
R^2	0.525	0.550
Adjusted R^2	0.519	0.544
F Statistic	89.676* (df = 8; 650)	86.401* (df = 9; 638)

Note: *p<0.05

In general, the results confirm that factors affecting voters' expected utilities of voting for each candidate also affect volatility. Closer elections, higher turnout, and parties with distinct positions all reduce electoral volatility. The size of electorates and their turnout rates are generally increasing over time, therefore we should continue to expect downward pressure on electoral volatility. Party polarization and inequality may vary over time. Polarization and inequality will increase volatility as the parties adopt less distinguishable positions and as economic inequality declines. Volatility will decrease when, as in the current era, the parties have distinct positions and economic inequality is high. Close elections also reduce volatility. Taken together, we expect that only significant shocks to the political or economic system will likely spur increased volatility and more states switching sides in elections.

7   Conclusion

The United States is a useful case study for determining the causes of electoral volatility for two reasons. First, The US's exceptionally stable twoparty system means that electoral volatility is easily calculated and directly comparable over an incredibly large period of time. Second, the US states create a natural experiment for comparing behavioral sources of volatility because the institutions, electoral systems, and presidential candidates that determine each party's electoral success are constant across states in any year.

Electoral volatility arises from two general factors: volatility induced by institutions such as electoral laws, and volatility that is due to voter behavior. The first two sources of volatility have been studied extensively in cross-national contexts that provide variation on electoral institutions. This paper takes a different approach by identifying volatility as a behavioral question and leveraging the variation in US states over time to examine it. Building off a model of voter choice with a stochastic error term in voter decisions, we identify four behavioral factors that determine electoral volatility. We then verify the model using empirical data on American elections from 1832 to 2016.

Electoral volatility is fundamentally a product of voter uncertainty. When voters are

confident in the difference between the two candidates, their decisions are clearer. In contrast, if substantial voter uncertainty prevails, chance plays more of a role in voting and voters can have their votes unsettled by last minute campaigning and short-term changes in economic conditions or current events. Moreover, if the candidates' ideologies are frequently stable between elections due to party polarization, voters will change their partisan choices infrequently. This hypothesis is assessed using ANES data as well as several other variables that correlate with voter uncertainty.

In the process of assessing this hypothesis, we find that American electoral volatility is on a dramatic, decades long decline. Electoral volatility is at its lowest historical level and is now under a fifth of its peak value. This decline represents a significant and relatively invisible trend in American electoral politics. Potential causes for this decline include increasing polarization, increasing voter enthusiasm, improved access to political information, and increasing income inequality. The previous nadir of electoral volatility occurred during the Gilded Age, a time period that was also characterized by intense partisan polarization, record income inequality, and close, hard fought elections.

Electoral volatility also identifies an increasing regionalization in American politics. In particular, the division between the North and South, which has been such a prominent feature of American elections for so long, is more robust when measured using volatility rather than raw voteshare. This surprising result shows that while electoral volatility is partly a national phenomenon, it is also a state-level phenomenon affected by differing political histories and cultures across states.

A Proof that Centrist Third Parties Increase Volatility

Suppose that in the presence of a third party , voter i will observe the probability of that party winning such that it is the sum of the true probability of that party winning, w_j, and an error term τ_j,

$$\hat{w}_{ij} = w_j + \tau_j$$

Also suppose that voter i will vote strategically if,

$$\hat{w}_{ij} > C_i$$

and will vote honestly otherwise, for some constant C_i. If the voter votes strategically, then they will limit their choice to only the two major parties, and the model will be the same as before. In this case, the variance of the voter's choice will be,

$$p_1(1 - p_1) + p_2(1 - p_2) = 2\,p_1(1 - p_1)$$

where p_1 and p_2 are the voters probabilities of voting for the two major parties

If the third party is considered instead to have a high enough probability of winning that the voter votes honestly then, assuming without loss of generality that, the voter is more likely to vote for party 1 over both party 2 and party 3, the variance of the voters choice will have increased if,

$$p_1^*(1 - p_1^*) + p_2^*(1 - p_2^*) + p_3^*(1 - p_3^*) > p_1^*(1 - p_1^*) + p_3^*(1 - p_3^*) > p_1(1 - p_1) + p_2(1 - p_2)$$

which will hold if,

$$p_1^* < p_1$$

and

$$p_3^* > p_2^*$$

Which will hold if the voter is ideologically closer to party 3 than party 2. This indicates that the introduction of a credible party that is ideologically between parties 1 and 2 will increase electoral volatility. Since this model suggests that only centrist third party candidates will be viable, the introduction of additional third parties will only increase electoral volatility.

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