

ASSESSING THE CAUSES AND EFFECTS OF ELECTORAL VOLATILITY:  
PARTY SYSTEM FRAGMENTATION, TIME, AND EXECUTIVE TURNOVER

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## ABSTRACT

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Assessing the Causes and Effects of Electoral Volatility:  
Party System Fragmentation, Time, and Executive Turnover  
(Under the direction of Jonathan Hartlyn)

What effect do political parties and the system in which they function have on the amount of electoral instability generated during election periods? This study confirms that party system fragmentation, disaggregated into twin components of party system *size* and *discontinuity*, plays a deterministic role on volatility levels and that conceptual disaggregation improves the fit of this model over alternate models. Additionally, the inclusion of a time-sensitive control variable reveals the significant impact of inter-election period length which had not been controlled for in earlier analyses. The results of this analysis do not uphold prior findings of region- or time-specific data with respect to alternative explanations of economic voting, institutional characteristics, or class cleavage structures. Finally, examination of the relationship between electoral volatility and executive turnover reveals that party system size and discontinuity, as well as time, can mitigate the negative effect of electoral volatility on executive policy tenure.

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## **Introduction**

Political scientists have long been concerned with political party systems, their characteristics, functions, representation and effects on overall political stability within a state. Links between party systems and electoral instability have been suggested as a way to explain uncertainty during election periods that are outside the scope of “normal,” ideological politics; some aspect of the party system itself, besides the typical functions of the parties as vote-seeking organizations, can create instability in the electoral arena. One way of capturing electoral instability is through measuring volatility in the electoral outcome – the amount of vote-share turnover that all parties experience can tell us about how unstable the electoral system is. Systems with little or moderate change in party vote-share from election to election are thought to be stable and systems where large portions of the electorate flee from party to party in each election are thought to be unstable. What, then, determines this electoral volatility?

What effect do political parties and the party system in which they function have on the amount of electoral instability generated during election periods? Is there a particular aspect of party systems that causes either a higher or lower level of volatility or an increase in stability over time? The role of political parties and the dimensions and strength of the party system in which they operate in determining electoral volatility have long been debated by advocates and opponents of traditional party system and class cleavage theories. A party system, defined by Mainwaring and Scully as the “set of

patterned interactions in the competition among parties (Mainwaring & Scully 1995, p.4),” means there is some recognition of and behavioral adherence to rules of interparty competition within a given electoral system, and interaction between parties under those rules determines what the size of a party system will be. Economic voting, institutional characteristics and class cleavage structures are primary factors thought to contribute to electoral fluctuations within party systems by affecting party incentives and ideologies. Examinations of cross-regional and cross-temporal electoral outcomes have revealed varied support for these factors that contribute to electoral instability. This paper proposes some theoretical and methodological revisions to recent works on the proposed causes of electoral volatility in an attempt to further understanding about the causes of party system stabilization. In addition to re-evaluating the causes of volatility, this paper also evaluates the effect that volatility has on executive turnover and stability.

This paper makes theoretical and methodological contributions to the literature on electoral volatility and party system stability in three particular ways. First, it is the most up-to-date analysis of electoral volatility in a cross-regional and cross-temporal approach, accounting for more electoral periods of more countries than any prior study. This allows for greater variance on the dependent variable (electoral volatility) in comparisons over time and across and within regions, as well as greater variance on the explanatory variables again due to fewer geographic and temporal constraints. It is an improvement over previous cross-regional analyses that had only one or two electoral periods in post-1978 democracies that may have still been exhibiting transitional, rather than consolidation, effects on interparty competition.

Second, a revised indicator of party system fragmentation allows for a more nuanced and accurate evaluation of fragmentation's impact on electoral volatility. Instead of confining the data to previous indices of fragmentation via Laakso and Taagepera's traditional effective number of parties (ENP) measure, this analysis incorporates a more complete conceptualization of party system fragmentation that measures not only the size of the party system as the ENP measure does, but the inter-electoral consistency of parties in the system, as well. While this study tests the traditional measure, the addition of a measure that captures the proportion of parties *consistently contesting elections*, by acknowledging the de-stabilizing impact of constant birth of new and death of old parties, provides an additional way to evaluate fragmentation that simply measuring the size of the party system does not.

Third, there are examples of cases where legislative electoral volatility is high and yet executive turnover is low (e.g., Chile or South Korea). In some cases, then, even with high changes in the vote-shares of parties in the legislature, there can be consistent governance in terms of who controls the executive. In both presidential and parliamentary electoral systems, legislative electoral volatility may estimate instability in the party system differently than a measure such as executive turnover. Rather than using only electoral volatility as a measure of party system stability, I include an analysis of the explanatory power of electoral volatility on cross-regional and cross-temporal executive turnover. There are theoretical implications for the results of the impact of electoral volatility on the duration of policy orientation of the executive.

Results of the volatility analyses reveal regional and temporal patterns that diverge from prior studies. This study confirms through the scope of the enlarged data

set that party system fragmentation plays a deterministic role on volatility levels, but the results do not uphold prior findings of region-specific or time-limited data with respect to alternative hypotheses of economic voting, institutional characteristics, or class cleavage structures. Additionally, the inclusion of a time-sensitive control variable reveals the significant and influential impact of inter-election period length, something that had not previously been controlled for in earlier analyses. Second, the revised fragmentation indicators' components reveal support that not only does party system *size* have an impact on electoral volatility, but party system *continuity* also has a significant impact on volatility and improves the fit of this model over previous models. Finally, while increased electoral volatility has the predicted effect of raising the frequency of executive turnover, closer examination of some outliers suggests that, in extreme cases, party system size and continuity, as well as time, can mitigate or reverse the effects of electoral volatility on executive policy tenure.

By evaluating through quantitative methods the effects of the explanatory variables on the dependent variable, this pooled-time series analysis seeks continuity and consistency with prior empirical analyses. However, inconsistency between case classifications in prior models led to qualitative analysis of the components of the explanatory and dependent variables and the need for re-conceptualization and new measurements for the qualitative model. Qualitative methods were used to set rules for the recoding of some control variables where previous studies had imputed large quantities of data, as well as construction of new independent and control variables. The integration of both qualitative and quantitative examination speak to the importance of

both approaches for properly evaluating party system stability cross-regionally and cross-temporally.

This paper will begin with an overview of existing theories and arguments about the causes of electoral volatility, and then will proceed to suggest necessary theoretical and methodological improvements or extensions to the current literature. Following a time-series analysis of the causes of electoral volatility, a subsequent hypothesis about the positive relationship between volatility and executive turnover will be offered, as well as some statistical and case study evidence in support of that hypothesis. Finally, a discussion about the causes of electoral volatility and its relationship to executive turnover will conclude with some potential questions for future raised by these findings.

### **Current explanations and models**

The logic behind the use of electoral volatility as a measure of party system stability or institutionalization is sound: the more stable the party system, the more likely it is to produce consistent legislative vote-shares for parties over time. The importance of party system stability itself is well-documented in literature related to political parties, party systems, and democratization. In representative democracy, the effectiveness of programmatic representation is linked directly to the performance and evaluation of governments, and effective programmatic representation is needed for citizen identification of relative party platforms and political goals (Katz & Mair 1995; Mair 1996; Wolinetz 2006). High electoral volatility appears to reflect either citizen rejection of poorly performing governments or the weakness of party cues to the electorate

regarding platforms and political goals; if it is more difficult to identify a party on the basis of ideology or program, consistent voting and electoral accountability are likely to falter (Mainwaring & Scully 1995). Similarly, if it is difficult to distinguish a party's ideological or programmatic position relative to other parties in the electoral system, the electorate's ability to hold politicians accountable for particular policy choices or economic performance may be diminished (Mair 1997; Mainwaring 1999; Coppedge 1998; Dalton & Russell 2007). Thus, party system stability is important to the development of democracy, and depends on the development of institutionalized parties as well as somewhat predictable interparty competition.<sup>1</sup>

Recent work on the proposed causes of electoral volatility has demonstrated a mixture of theoretical perspectives tested on a range of cases. Most of these analyses take the literature on Latin American party system institutionalization by Mainwaring and Scully or work by Bartolini and Mair with respect to social cleavages and stabilization of post-World War II West European party systems as starting points for theoretical arguments and measurement. The majority of new analyses is confined to within-region or within-time periods for the analysis, but draw on work done in other regions. Recent comparisons of both large-N and case studies in Africa and East Asia that seek to replicate some of the Mainwaring and Scully indicators have tried to transport measurement tools from region to region and over different time periods (see discussion below for detailed analyses of literature using Mainwaring and Scully's "institutionalization" framework in other regions and cases outside Latin America).

The literature on volatility suggests that there are systemic causes of electoral volatility, rather than simply chalking volatility up to an uneducated population that has

not yet figured out the democratic rules of the electoral process or to sheer chance (Mainwaring & Scully 1995; Roberts & Wibbels 1999; Mainwaring & Torcal 2002; Mainwaring & Zoco 2007). In countries with occasional episodes of electoral volatility, some analysts have extrapolated that the key culprit is institutional change, such as the adoption of a new constitution or executive overthrow (Roberts & Wibbels 1999). Models focusing on the role of institutional change and the impact on electoral volatility have been confined to data sets that cover time periods that represent transitional elections in the short-term, such as post-transition Latin America from 1978-1997 (Roberts & Wibbels 1999). Exporting arguments about the impact of institutional change to broader data sets that include few observations of such change within a larger set of observations should yield limited, if any, support when more observations in non-exclusively transition democracies are incorporated into the observed set of cases. In order to support this argument, the same measure used by Roberts and Wibbels to test for the impact of institutional change on electoral volatility will be constructed and included in the following analysis. Additionally, the institutional change explanation about the role of volatility does not tell us much about trends in countries with persistently high volatility, or persistently irregular volatility levels, if the arguments are confined to change-specific episodes. The question remains, is the institutional argument important in explaining countries that have high volatility both prior to and following the changes, relative to other systemic factors?

Often seen as alternative explanations to institutional theories for explaining electoral volatility, economic voting models have tended to produce different and mixed results for legislative and executive electoral volatility (Remmer 1991; Roberts &

Wibbels 1999; Mainwaring & Zoco 2007). Most arguments center around the logic of voters who will hold those in office accountable for economic outcomes, voting with their pocketbooks (Keech 1995). However, proper testing of this argument, much as with the prior argument about institutional change, suffers from the problem of a limited set of observations: across a wider range of cases and time, where economic downturns represent a limited percentage of the overall set of observations, we should not expect to see strong support for such explanations. Once again, does this phenomenon explain both cases with and without high levels of volatility in the periods *before and after* those affected by economic voting? And furthermore, when the origins of most of the economic voting literature mostly applied to incumbent executive retention (Alesina 1992; Powell & Whitten 1993; Keech 1995), how much support would we expect to see for the explanatory power of such a theory on *legislative* electoral volatility?

The final alternative explanation for the cause of electoral volatility has settled on how the electorate composes itself into parties, if organizational and membership ties are strong and consistent then a party system will be composed of parties whose electoral constituencies are loyal, producing limited vote-share or seat turnover between parties in each election (Lipset & Rokkan 1967; Blondel 1968; Duverger 1954). Most theory in this area looks at traditional socio-economic cleavages as such organizational and membership hotbeds, industrial working classes formed ties through labor unions that provided for logical party mobilization (Lipset & Rokkan 1967; Bartolini & Mair 1990). However, if we assume that globalized economics and relatively open markets have begun to deconstruct traditional working class unions and the basis for class cleavages,

how much then does a class cleavage argument tell us about party system development and function in democracies created post-1975?

Three primary explanations in the literature have been used to account for variation in electoral volatility across time: institutional constraints, economic voting, and the structure of social cleavages. Several scholars have indicated that economic voting may have a detrimental impact on party system stability, and that in countries with persistently low levels of economic growth or high levels of unemployment and inflation, the electorate is more likely to simply take out frustration on the incumbent part(ies) rather than retain programmatic or ideological bases for their votes. Economists and political scientists have long sought empirical support for economic voting models (Alesina 1992; Powell & Whitten 1993; Pacek 1994; Keech 1995), and many models of the causes of electoral volatility have either included control or primary explanatory measures for “pocketbook” explanations of volatility (Remmer 1991; Roberts & Wibbels 1999; Mainwaring & Torcal 2002; Mainwaring & Zoco 2007).

Institutional explanations have focused on two particular systemic influences on volatility: party system instability, which includes various theoretical analyses of system fragmentation and polarization, and institutional type and discontinuity, which includes analyses of presidentialism and changes in constitutional laws or abbreviated executive terms of office. Those focusing on party system instability have drawn both from Western European and Latin American sources primarily (Bartolini and Mair 1990; Mainwaring and Scully 1995). Recent studies have looked at the effects of fragmentation and polarization on stability by analyzing the size of party systems and ideological placement of parties within systems (Coppedge 1998; Remmer 1991). These studies

have suggested that when a system contains too large a number of parties or too ideologically polarized a set of parties, electoral volatility will remain extremely high. Analyses focusing on institutional type and discontinuity have been more recent, as more political systems have democratized since 1978 and many have been semi- or entirely presidential, presenting new concerns about differences between legislative and executive elections and accountability (Roberts & Wibbels 1999; Mainwaring & Zoco 2007). These analyses have linked major episodes of institutional change, often during democratic transition and consolidation, to heightened electoral volatility.

The third explanation, of social cleavage structure, has the deepest roots in Western European party system literature. Starting from the theoretical foundations of Lipset and Rokkan, social cleavage explanations suggest that in political systems based around traditional socio-economic divisions, the likelihood of programmatic parties increases and voters can more readily identify with parties over time and thus the likelihood of instability and electoral volatility decreases (Lipset & Rokkan 1967; Bartolini & Mair 1990; Dix 1989). However, various explanations of fragmentation and polarization in Latin America and Eastern Europe suggest that there may be limitations to applying social cleavage arguments to countries in the post-industrial global economy (Lewis 2001; Kitschelt 1994; Thames 2007). These authors point to contextual differences between the industry-defined social classes that mobilized in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries in Europe and the less cohesive class structures of modern developing economies. Without the need for disenfranchised working classes to mobilize for voting and basic social rights, since most newer democracies have nominal universal suffrage and social rights, traditional social cleavages that produced workers' parties are a rarity in

late 20<sup>th</sup> century young democracy. Furthermore, as the size of the service sector expands world-wide and the informal sector expands in the developing world, the likelihood that traditional social cleavage structures and measurements apply to party system stability appears to decrease (Roberts & Wibbels 1999; Mainwaring & Zoco 2007). Finally, recent work regarding the methodological constraints on accurate assessments of social cleavages and their impact on party system size have revealed two operationalization problems confronting most testing and evaluation of social cleavage theories: 1) most studies only attempt to test one cleavage at a time or have inadequately accounted for multiple cleavages that may be both exclusive or cross-cutting (Stoll 2008; Lijphart 1999; Fearon 2003), and 2) in most analyses cleavages, by definition, are politically exogenous but are then only observable once they form political groups that are included as measures within statistical models (Stoll 2008; Fearon 2003; Laitin and Posner 2001). These concerns about the validity of testing social cleavage theories combined with evidence of a decline of traditional socio-economic cleavages in the modern global economy suggest a need for examination of support for socio-economic cleavage theory.

### **Limitations of current explanations and models**

The measurements used to test these explanations have often suffered from misconceptualization or data limitations. Much of the newer work on electoral volatility has either confined itself to testing only one of these explanations, testing a limited number of measures for certain explanations, or testing only on case studies or limited numbers of cases within temporal or regional boundaries. In this paper, I will address

three issues which stand out as most concerning for the study of electoral volatility, if volatility is to be understood in a broader political context than simply as a measure of aggregate change in vote-share between elections. They are: 1) the lack of sensitivity of current measures of party system fragmentation, 2) the lack of studies of observations across a range of time periods and geographic distance, and 3) a lack of attention to the theoretical implications of disparities between legislative and executive volatility and trends of volatility over time.

The first concern is related to the misconceptualization of the concept of party system fragmentation. There are many measurement “standards” in the study of electoral volatility and party systems, and even when those measurements are revisited for theoretical or conceptual reasons, refinements tend to only pertain to a revision of current measurements rather than introduction of new measures. The traditional method of measuring party system fragmentation has been either the original or some variation of Laakso and Taagepera’s “effective number of parties” measure either by vote-share or seat-share (Laakso and Taagepera 1979). New permutations and evaluations have included fixes for system disproportionality, overcounting of large parties, and applications of effective parties to government formation rather than simple seat or votecounts (Anckar 2000; Taagepera 2002; Taagepera & Grofman 2003; Blau 2008; Molinar 1991; Siaroff 2003; Remmer 1991). Coppedge has a refined evaluation of Latin American party systems that accounts for polarization levels as well as system size, but has not been applied to a broader evaluation of the concept of party system fragmentation, partly due to a lack of data or in-depth case knowledge needed to construct such a measure for a cross-regional study (Coppedge 1998).

The word “fragmentation” implies not simply a quantitative evaluation, but a qualitative one: fragmented systems may require a relatively large number of parties, but suffer particularly from some sort of disconnectedness or some disaggregation of parts that ‘should’ be connected. Furthermore, the sheer number that constitutes a “large” and therefore “fragmented” system has not really been established in the literature; while this has not been an operational problem in region-oriented studies, what constitutes a “large” and therefore “fragmented” system in some regions is mostly the norm in others. In order to more clearly understand the effect of party system fragmentation on electoral volatility, I argue that fragmentation needs to be measured as something more than simply the size of the party system. In this case, I evaluate not only the party system size, via traditional methods used in the literature on both electoral volatility and party systems, but I will also include a measure of party system *discontinuity* which measures the amount of flux in the party system between election periods. Discontinuity, measured here as a ratio of the number of parties contesting *either* of two consecutive elections relative to the number of parties contesting *both* of two consecutive elections, assesses the constancy with which parties persist in the electoral system and whether voters might be constantly facing new party options, both familiar and unfamiliar.

The concepts of party system size and party system discontinuity can and do capture theoretically distinct components of party system fragmentation, with independent causes and interactive impacts on electoral volatility. The differences begin with their origins: party system size is ultimately caused by voters who determine which parties receive portions of the overall vote-share. Party system discontinuity is ultimately caused by elites who determine what parties will run in any given election. The

differences also extend to the political factors that each concept captures. Party system size captures a variety of factors regarding the permissiveness of the electoral system; some examples are that majoritarian systems are likely to produce smaller party systems than proportional systems and electoral systems with higher thresholds are likely to discourage larger party systems. Party system discontinuity captures the amount of upheaval and disturbance within the electoral system; some examples are that party system polarization is likely to be exacerbated by systems with higher levels of discontinuity and programmatic self-identification is more likely to occur by parties in systems with lower levels of discontinuity.

The two concepts differ less in their independent expected impacts on electoral volatility but have compounding effects when both are taken account of in an electoral context. Large party systems need not produce high levels of electoral volatility as long as all the parties in the system retain relatively constant proportions of the vote-share, and high levels of discontinuity need not produce high levels of electoral volatility as long as the parties consistently contesting elections all receive relatively constant proportions of the vote-share. Thus, increases in electoral volatility require neither a large party system nor a particularly discontinuous one. However, this only speaks to pure mathematics. In practice there can be the outcome of heightened volatility in both large and small systems: larger party systems tend to have higher levels of volatility on average because there are always more options available to voters whereas smaller party systems tend to have higher levels of volatility when related to specific electoral contexts, such as poor government performance in combating an economic recession. Similarly, more discontinuous party systems tend to have higher levels of volatility all the time since

more discontinuity implies more options for voters. However, less discontinuity does not necessarily mean lower levels of volatility, since less discontinuity can possibly mean better identification of major parties and thus more direct accountability by voters to “vote the rascals out.” Thus while the discontinuity in the party system often depicts the voter options presented by elites, the size of the system reflects choices by the voters concerning those options. These can have an augmenting impact on electoral volatility if the discontinuity level and size of the system are both large, in the case of an inchoate array of parties with limited or no identifiability, and can also have an augmenting impact if both discontinuity level and size are small, in the case of holding incumbents accountable for policy choices. Party system size and discontinuity together then, I argue, more accurately captures this concept of fragmentation and its expected impact on electoral volatility than party system size alone.

The second concern is that by conducting mostly region-oriented or case-oriented studies, previous analyses of electoral volatility have actually been demonstrating case or time-specific effects that explain electoral volatility as either a by-product of particular or extreme regional or transitional situations rather than as a potentially structural problem facing democratic governments. A number of studies on East and Southeast Asian (Stockton 2001; Manacsa & Tan 2004; Ockey 2005), Latin American (Roberts & Wibbels 1999; Kenny 2003; Davis, Camp & Coleman 2004; Rosas 2005) and African (Kuenzi & Lambright 2001; Kuenzi & Lambright 2005; Posner & Young 2007; Rakner & Svasand 2004; Randall & Svasand 2002) cases of electoral volatility have found similar trends to those from the early Mainwaring and Scully analysis on the importance of party system institutionalization to electoral stability and volatility. Findings from

Central and Eastern Europe vary more significantly, with many cases of clear democratic and party system consolidation but little explanation for continuing high electoral volatility levels (Golosov 2005; Herron 2001; Horowitz & Browne 2005; Korasteleva 2000; McAllister & White 2007; Toole 1999). Few of the region or case-focused studies speak much to broader cross-regional or cross-temporal causes and trends, and many actually seem to ignore transitional effects on electoral volatility in newly-democratic states when compared to particulars of the cases or trends within the region. These temporal oversights are not the result so much of lack of theoretical attention as they are merely unlikely to vary within regionally- or temporally-similar cases that all bear transitional features, and thus have not been addressed because the transitional effects are “universal” to the regional studies themselves.

Some studies have begun to analyze party systems cross-regionally and cross-temporally (Mainwaring & Zoco 2007; Maeda & Nishikawa 2006), but have been hampered by limited numbers of observations in newer democracies, and within limited methodological parameters and constrained by the third concern: lack of attention to and theoretical explanation for particular trends evidenced by the data, especially trends concerning variation by region, by democratic wave, and by democratic development. Mainwaring and Zoco do actually introduce concerns about the impact of democratic waves and their analysis and results demonstrate wave period effects. This analysis extends their set of observations (many legislative elections are held in countries in their dataset from 2006-2007) which allows for a wider view of such wave effects, and the addition of more variables that account for regional variations, prior democratic periods,

and length of inter-election period time provide some support for their findings, as well as some new theories.

### **The theory and the model**

Recent analyses of electoral volatility, particularly those of Roberts and Wibbels and Mainwaring and Zoco, emphasize the explanatory power of more persistent, cumulative or structural factors, such as the strength of socio-economic cleavages, the length of the democratic experience, and the size of the party system or party system fragmentation, while controlling for the temporary ones. The argument made most often is that a stable party system should be able to withstand or rebound from some level of temporary system shocks due to the strength and institutionalization of parties and the electoral process (Mainwaring and Scully 1995). Thus in all party systems the longitudinal progression or regression of stability is the result of structural processes rather than the result of temporary shocks whose impact should recede once the shock ends. This long-term approach is the focus of this analysis to find what determines patterns and development of party system stability, and whether different measures of stability can be measured by similar long-term factors. Measures of long-term structural factors as well as short-term election period-specific factors have been included to test arguments for both structural and temporary shock effects on volatility.

The basic theory is relatively straightforward: I will test the effects of party system fragmentation on electoral volatility, including my new discontinuity variable along with the traditional variable of party system size. To make certain I am not ignoring alternative hypotheses, I will also control for economic, social cleavage, and

institutional disruption theories by including measures for them in the statistical model as well. In addition, I am including controls for time and space in my theory: since the cases are drawn from all three major waves of democratization, have varying lengths between election episodes, and cover five geographic regions, I will also account for two time measures and one geographic measure in my model. These are incorporated via an age of democracy score, a length of inter-election time period count, and a region coding for each case in the data set.

### *Case selection*

For practical reasons, non-democratic or clearly authoritarian cases were not included in this analysis, since elections deemed completely uncompetitive or unfair and unfair are unlikely to have much, if any, non-artificial electoral volatility. All cases included in the analysis scored at least a 5 on the Polity scale and span at least four electoral periods, which means each panel has a minimum of three observations of electoral volatility. Volatility scores for 53 country cases have been coded for elections from 1945 through 2007; in cases where a democratic breakdown occurred, only the cases' most recent experience with competitive elections have been coded.<sup>2</sup> The cases span five regions (Western Europe, North America, Latin America, East Central Europe, Asia and the Pacific and the Middle East) across all three waves of democratization. Table 1 demonstrates the range of time periods and mean volatility levels across the cases.

### *Dependent variable*<sup>3</sup>

For the dependent variable of electoral volatility (*Volatility*) I rely on the Pedersen Index, which measures the aggregated change in vote-share throughout the system, by calculating the sum of the absolute change in each party's vote-share between elections at time  $t$  and  $t-1$ . Thus each observation of the dependent variable is continuous and measures change during a single election period. Figures 1, 2 and 3 give more distinct graphic impressions of how much some cases vary or do not vary relative to their mean volatility scores, suggesting that there are differences in particular cases to patterns of changing volatility. Figure 1 shows two examples of cases scoring at the highest Polity level across the democratic period, with a "second-wave" age of democracy, Italy and Japan. Figure 2 shows two examples of cases scoring at the highest Polity level across the democratic period, with a "third-wave" age of democracy, Portugal and Spain. Figure 3 shows two examples of cases scoring at a medium Polity level (for this sample which only includes cases from Polity 5-10 scores) across the democratic period, with a "second-wave" age of democracy. Each set showcases patterns of volatility fluctuations within groups that have similar democratic ages, democracy scores, and close mean volatility levels, but somewhat divergent patterns of volatility over time.

### *Independent variables*<sup>4</sup>

For the independent variable of party system fragmentation, data for two different indicators were gathered to provide two separate terms in the analysis. First is the measure of party system size, using the traditional Laakso and Taagepera effective number of parties by vote-share (*ENPV*) which is calculated by taking the ratio of the

sum of the squared vote proportion of all parties in the system, producing a continuous measure. It is temporally incorporated into the model by using the *ENPV* from the first of the two election periods used to calculate *Volatility*. Second is the measure of inter-electoral party system discontinuity (*Discontinuity*) which is calculated by taking the ratio of the total number of parties contesting either the first or second election to the total number of parties contesting both the first and second elections, producing a continuous measure. It is temporally aligned with *Volatility*, measuring change in the system between two elections within a single election period, but the *Discontinuity* measure is a ratio of a count variable while *Volatility* is a continuous variable measuring the magnitude of party vote-share change.<sup>5</sup> Thus, fluctuations can occur in *Volatility* while *Discontinuity* stays constant and large changes in *Discontinuity* can result in little to no fluctuation in *Volatility* scores.

Following the measurement and construction of Roberts and Wibbels, to address the theoretical explanation of institutional constraints besides party system constraints I construct an aggregate measure of structural changes (*Institutional Disruption*) was included to account for institutional discontinuity in inter-electoral periods. A sum of five components each measured from 0-5 in half-points, *Institutional Disruption* captures early legislative elections, executive interim or early election episodes, introduction of a new constitution, introduction of major electoral law reform, and expansion of suffrage to more than 25% of the population.<sup>6</sup> The models were run with the aggregate *Institutional Disruption* on the 0-5 half-point scale, but also as a dummy variable for any or no institutional discontinuity.<sup>7</sup>

To address the theoretical explanation of economic voting, *GDP Growth* is used to control for the effect on elections of large-scale economic changes during an inter-electoral period. Measured as a per capita change variable, *GDP Growth* is continuous and calculated for either the year of or year prior to the second election in each electoral period, depending on when the election fell during the calendar year. An additional control for change in inflation was initially used but dropped from the model due to collinearity problems and lack of statistical significant in any models.<sup>8</sup>

To address the theoretical explanation of social cleavage impact, I use a measure of industrial share of the workforce (*% Workforce in Industry*) to assess the expectations that socio-economic cleavages impact electoral volatility. The proportion of the working-age population in traditional, industrial employment can be viewed as a way to measure one group in society to whom the social cleavage arguments refer: industrial workers often mobilized and unionized and so the proportion of population involved in industry can be seen as an approximation of the size of a traditional cleavage group. Other methods of calculating union density or percentage of the economy employed in the informal sector are difficult with such a wide array of cases over time, and other attempts to do so have either suffered from missing or flawed data or only addressed a limited subset of cases for which comparable data across cases was available.<sup>9</sup> Lacking a more sensitive or direct measure of socio-economic cleavages, percentage of an economy's labor force working in the industrial sector is used here as a proxy for social cleavages.<sup>10</sup>

To account for the impact on volatility of experience with democracy and competitive elections, *Age of Democracy* captures the country's democratic age in years, measured between the year of democratic transition (or in cases where initial Polity

scores are not high enough in initial transition year(s), from the first year where the case crosses the zero threshold on the Polity IV scale) and the year of the subsequent election in each electoral period. *Age of Democracy* does account for pre-1945 democratic history even though the dataset does not include those earlier election observations.<sup>11</sup> For example, Canada's year of democratic inauguration is 1867, so in the 1949 election, Canada's *Age of Democracy* is 82, even though it is the first volatility measurement in the dataset.

Finally, to account for non-uniform length of time between elections across and within panels, a control variable was included (*Length of Election Period*) that measures, in years, the length of time between legislative elections. Additionally, cases were coded by region in a 5-point scale which was used to control for fixed region effects, and observations were coded according to election number which was used to control for time effects. A range of alternative measurements for economic growth and social cleavage components were considered but were less consistent and complete.<sup>12</sup> Table 2 demonstrates some descriptive statistics about the means, ranges, and distribution of the dependent and independent variables.

### *The Models*

Using a pooled time-series regression analysis, the final regression model testing party system fragmentation theories can be stated econometrically according to the following equation:

$$Y (\text{Volatility}) = \alpha + \beta (\text{ENPV}) + \beta (\text{Discontinuity}) + \beta (\text{Institutional Disruption}) + \beta (\text{GDP Growth}) + \beta (\% \text{ Industry}) + \beta (\text{Age of Democracy}) + \beta (\text{Length of Election Period}) + \mu$$

A second set of regression analyses were then run to look at a specific subset of the data to assess potential democratic transitional effects, dropping all election periods after the initial ten electoral cycles, and incorporating a control for prior democratic experience. The final regression model to test party system fragmentation theories in the subset can be stated econometrically according to the following equation:

$$Y (\text{Volatility}) = \alpha + \beta (\text{ENPV}) + \beta (\text{Discontinuity}) + \beta (\text{Institutional Disruption}) + \beta (\text{GDP Growth}) + \beta (\% \text{ Industry}) + \beta (\text{Prior Democracy}) + \beta (\text{Length of Election Period}) + \mu$$

Running multiple versions of the model to account for heteroskedasticity and serial correlation, three basic models are employed to account for: 1) the entire dataset, 2) the dataset with regional dummies, and 3) two subsets of the data that look particularly at effects in early democratic election periods. The entire dataset models capture the full range of variation across cases in all regions and ages of democracy, and the regional dummy dataset looks at particular region effects between all cases observed. I also examine two subsets. One subset looks at the first 10 election periods of cases to test for different causal mechanisms in young democracies, and another looks at the first 5 election periods for the same reason in the youngest democracies. Each of these basic models is run with two different specifications to account for autocorrelation disturbances.

For the full data model without regional dummies and the longer (10 election) early election model I run two statistical models. The first is a basic fixed effects model with no autoregressive corrections (FE) which is a pooled-time series model that controls for unobserved country-specific effects that are constant over time in individual panels of data. It uses the change in the variables *over time* to estimate the effects of the independent variables on the dependent variable and makes no corrections for the unbalanced number of observations in the cases. I employ this particular FE model because a Hausman test performed in STATA suggested that for the full dataset the random effects estimators would be inappropriate since a fixed effects model produced statistically more consistent estimators than the random effects model did. The second is a fixed effects model with an autoregressive correction to account for serial correlation between electoral periods (FEAR1) which controls for unobserved country-specific effects that are constant over time in individual panels of data. It uses the change in the variables *over time* to estimate the effects of the independent variables on the dependent variables and also provides a basic statistical correction to control for potential correlation between successive observations of each panel's variables. I employ this model because a Wooldridge test performed in STATA suggested that there was indeed first-order autocorrelation that needed to be statistically addressed in the analysis. Neither model makes any corrections for the unequal number of observations in the cases, but the FEAR1 does provide some method to account for time dependence effects from observations in earlier time periods that are likely to influence observations in later election periods. However, the fixed effects models each lose a degree of freedom as the

dummies for the analysis are created, reducing the size of the sample with the introduction of the AR1 correction.

For both the full data model with regional dummies and the shorter (5 election) early election model I run two different statistical models than the prior data subsets. The full dataset with regional dummies requires a random effects model to ascertain the difference between regions, forcing the statistical application to use my particular regions as the likely source of unobserved country-specific effects. This was conducted both without (RE) and with (REAR1) the autoregressive correction to account for serial correlation between electoral periods. For the earliest election periods, where a Hausman test indicated that fixed and random effects models produced statistically equally consistent estimators but random effects estimators that are more efficient, I used random effects models both without (RE) and with (REAR1) an autoregressive correction to account for inter-electoral serial correlation.

The difference between the fixed effects models from the prior two data subsets and the random effects model is that the random effects model can assess both potential unobserved country-specific effects that are held constant over time *and* temporally-specific effects that are held constant across countries. In other words, the random effects models in use in both instances here attempt to use the variation between cases to estimate the potential effect of the unobserved variable on the dependent variable, to control for a potential “regional” or “transitional” effect. Additionally, panel-corrected standard error models were also run, yielding similarly signed and significant results to these fixed and random effects models.<sup>13</sup>

Though there are various hypotheses about how the various models should interact with the dependent variable, Table 3 indicates the predicted signage for the independent and control variables impact on legislative volatility.

### **Results of volatility analyses**

Findings reported in Table 4 suggest support for the hypothesis about the positive relationships between *Volatility* and the *ENPV* and *Discontinuity* variables, both sets of variable coefficients are positive and statistically significant, which suggest that as the size of the party system and lack of consistent parties participating in successive elections increase, so does the amount of electoral volatility. Though the *Discontinuity* coefficient is relatively large and significant across all permutations and models, including the region-dummy models, *ENPV* has a smaller coefficient than *Discontinuity* and is less statistically significant in both fixed effects and both AR1 models. To account for a potential mathematically-constrained relationship between *Volatility* and *Discontinuity*, one set of models included a lagged *Discontinuity* measure, which produced similar significance and coefficient levels to those reported.<sup>14</sup>

With respect to the alternative hypotheses variables, the *Institutional Disruption* variable is not statistically significant in almost any model, but the positive coefficients in the full-dataset models, including the region-dummy models, suggest that such disruption has a positive impact on electoral volatility. In none of the full-dataset models does per capita *GDP Growth* turn out to be statistically significant, although the sign of the coefficient is always negative, suggesting that good economic performance has a negative impact on electoral volatility. The *% Workforce in Industry* is also not statistically

significant and the coefficient is very small and negative across the full dataset models, suggesting that social cleavages have a negative impact on electoral volatility.

The control for the *Age of Democracy* is barely statistically significant in all full dataset models, yet has a large coefficient. This is unsurprising and consistent with findings from Mainwaring and Zoco who find that the longer the experience with democracy, the lower the volatility scores. However, closer evaluation of the individual panels demonstrate that although it produces a somewhat significant result, the likelihood that the *Age of Democracy* variable is highly driven by the length of panels of the long-term democracies demonstrates the limitations of unbalanced panel time-series analysis. Given that more than 1/3 of the observations in the full dataset are from countries with democracy inaugurated well before 1945, the longer panels of countries such as the United States and Canada, both of whom have relatively low volatility scores in almost all elections, are likely to be driving some of these results. The discussion below about the early election periods takes a closer look at the impact of democratic age and experience on newer democracies. I will show in my analysis of the results of the early election periods that not only is democratic age important, but prior experience with democracy matters as well in limiting electoral volatility.

The control for the *Length of Election Period* is both positive and statistically significant, indicating that there are time effects in the model such that a longer length of time between elections leads to an increase in volatility levels. The theoretical implication of such a finding might be intuitively explained by two things: first, that there is a substantive distinction in countries with variable election periods. Countries that can call elections up until a certain point (such as Britain) often have governments that call

elections earlier in the period limit when they are more popular and more assured of victory; in turn, some governments which wait (or must wait) until the full inter-electoral period has elapsed before calling for new elections are ones likely to be voted out of office and so volatility is higher due to cases like these. The second explanation emphasizes campaign and election dynamics, where time may interact with electoral resources to limit the potential pool of parties contesting elections. Countries with short duration of inter-electoral periods have a limited number of parties that can afford to constantly participate in elections and so by nature they tend to have lower volatility levels due to limited choices.<sup>15</sup>

However, these are two very complicated theories to test with the current quantitative model. The most plausible analysis of such theories would be to evaluate within-panel effects via case studies in which the electoral motivations of parties in variable election period systems or the resource constraints of parties in systems with extremely frequent elections could be assessed on an election-by-election basis. It would be difficult to ascertain through a quantitative model whether these two particular temporal theories bear any causal weight, since additional and far more complicated variables to capture both election-specific party motivations and electoral system resource constraints would be needed. This model does not seek to test these two theories, given the project's data constraints, but rather puts them forth as potential explanations for future research projects to tackle.

Region dummies reveal differences between the regions, with the Eastern European region having the largest coefficient and on average highest mean volatility scores, followed by the Asia Pacific region, the Middle Eastern region, and the Latin

American region. Given the data limitations, it was not possible to accurately assess the early election models with regional dummies, and the theory being tested here has not posited a story for specific regional distinctiveness. However, controlling for region does indicate statistical region similarities, suggesting that within regions there may be similarities in democratic age, economic growth, social cleavage structures or party system fragmentation that are not evident in the full dataset model when the variables are run against the entire sample rather than in regional clusters.

The truncated datasets that examined election periods across all cases that included the initial through the eleventh “expanded” (Table 5) and initial through the sixth “transitional” (Table 6) elections, which meant that for any cases such as the US that suffered no departures from democracy with World War II, none of their observations were included in this data subset (cases removed from each subset are indicated in the tables). These models produce relatively similar results to the full-dataset models and region-dummy models only in terms of *Discontinuity* and to some extent *ENPV*. *Length of Election Period* is also moderately significant in the earliest election period dataset, but with a larger positive coefficient than any of the full-dataset models, indicating that in transitional democracy, more frequent elections produce on average less electoral volatility.

The impact of *Institutional Disruption* does not increase in statistical significant or coefficient size even in the early election models, appearing to reduce support for theories of transitional effects specific to institutional change. Similarly, *GDP Growth* and *% Workforce in Industry* produce no greater statistical significance although both tend to deviate in signage from the full dataset models, suggesting that presence of good

economic performance and an industry-based workforce actually increases electoral volatility in transitional democracies. Overall, little more is explained by the three alternative hypotheses with respect to the transitional models than the full dataset models.

These truncated models also include one new control variables: a count variable measuring the total number of years of the 50 prior to the year of democratic inauguration when the country had Polity scores of 5 or higher.<sup>16</sup> This control is included to ascertain if prior experience with democracy had an impact on volatility levels in these “new” democracies. In the expanded early election periods in Table 5, the control is dropped due to collinearity in the fixed effects model. In the transitional early election periods in Table 6, the control did have limited statistical significance and the coefficients were negative. The implication of this control suggests that it is not simply the age of democracy that makes a difference to lowered volatility, but that prior experience with democracy can positively impact electoral instability as well.

Figures 4 and 5 demonstrate the variation in spread between the full dataset and the expanded early election data subset, and show that for the relationship between the *Discontinuity* and *Volatility*, older democracies cluster in the quadrant of relatively low *Discontinuity* and there is a greater spread from the early election period democracies. While in Figure 4, there is a clear clustering of low *Discontinuity* and low *Volatility*, in Figure 5 there is a smaller percentage of cases that have low *Volatility* and low *Discontinuity*, suggesting perhaps some type of transitional effects that the time-series models do not capture. The difference between these two figures suggests that in early periods of democracy, there are simply fewer observations of both low *Volatility* and low

*Discontinuity*, but that the overall relationship between *Volatility and Discontinuity* is not either a facet of long-term or transitional democracy.

These findings both confirm and challenge prior findings about the causes of electoral volatility, and expand what we know about previously unobserved causal factors. These findings confirm the Mainwaring and Zoco finding about the positive impact of the age of democracy on electoral volatility: all else being equal, as democratic age increases volatility levels should decrease substantially over time in a non-linear fashion. Thus the greatest impact of democracy comes as democracies grow much older, with fewer evident differences between moderately and very young democracies. Mainwaring and Zoco find support for the “waves of democracy” explanation by charting the mean deviations from mean volatility scores across their cases in the first through eleventh electoral periods, yet they are excluding most of the older waves of democracy (their analysis for this is 41 countries where democracy was inaugurated after 1909). My separate analysis of the early election periods suggests perhaps that it is not as important to focus solely on the age of democracy, but perhaps prior experience with democracy, too.

These findings suggest almost no statistical support for economic voting or social cleavage indicators, possibly due to broader, more comprehensive data over longer lengths of time in both new and old democracies. With respect to institutional disruptions, the data indicate no statistical support for such a theory, but given the relatively small number of such occurrences across the range of time and cases, this is perhaps an unsurprising given the sample of observations.

However, lack of statistical support for these alternative hypotheses might be attributed to one possibility: regional and temporal validity of all three theories that are “lost” in a model that contains observations across cases, time and developmental periods for which the theories did not intend or expect to see a relationship. For example, the economic voting literature assumes a highly responsive, educated electorate that holds incumbent governments accountable for economic downturns, and has given limited attention to quantitative evaluations of its explanatory power in electorates that do not exhibit such traits or tendencies. Social cleavage literature that looks at socio-economic groups assumes an economy wherein organizational capacity is high and classes can be distinguished by income level or job type, and has limited power of explanation for societies where sectors are difficult to distinguish and mobilization either does not occur or is not inclusive of large segments of industrial working classes. And institutional change literature is directed most specifically at political systems in flux, where changes are likely to cause confusion and instability in an electorate that may not understand the potential political implications of institutional change or have not acclimatized to electoral politics or democratic institutions yet, and has limited power of explanation for political systems that are not institutionally transitory or transformational. Thus, the model and testing method used in this paper, which employs a variety of cases across all three system types to which the three alternative explanations apply, perhaps has simply not captured the direct effects of these three explanations on the electoral volatility levels of the cases to which they theoretically apply. Nonetheless, the model employed here *does* still find support for party system fragmentation theory on the cases tested in this model, suggesting that despite the variety of region-specific theoretical explanations of

the causes of electoral volatility, there may be a more general factor that possesses explanatory weight while traversing both geographic and temporal space. This does not seek to render region-specific effects or study futile, but rather seeks to draw attention to the key factors for a broader, cross-regional theory of the causes of electoral volatility.

Finally, these findings suggest two additional explanatory factors for electoral volatility levels: party system discontinuity and length of election period. While these findings do confirm prior analyses of *ENPV*'s effect on volatility, *ENPV* is a smaller and less consistently significant predictor than system discontinuity in all cases except Model 3.2 where the coefficient for *ENPV* was larger than for *Discontinuity* but was still less statistically significant. In separate analyses, models run with only *ENPV* had lower R-squared values than models run with only *Discontinuity*, which in turn had slightly lower R-squared values than models run with both. This suggests that not only is *Discontinuity* an important component to consider in terms of causal factors of volatility, it is also a sizeable and consistent predictor as well.

Secondly, the inclusion of the length of inter-electoral period also adds both theoretical and methodological improvement to prior explanations. The size and significance of the coefficients suggest that election period length is a causal factor worth future consideration and theorizing, since little has been discussed about the direct impact of frequent elections on volatility or party system stability. Methodologically, by controlling separately for within-panel time variance, some temporal correlation has been addressed that other panel corrections have only approximated through general statistical remedies; this analysis takes each inter-election period length as distinct with respect to time, rather than assuming uniformity of inter-election period length. This method has

specified the serial correlation created by the time gaps in an election-specific way, thus directly tying length of electoral period to the election itself, rather than assuming a general cross-panel fix for all non-uniform period lengths within individual panels, making it a more sensitive and accurate model.

### **Electoral Volatility and Executive Turnover: An Initial Analysis**

Now that the causes of electoral volatility have been examined, what can all of this tell us about governance and stability? One step to take is toward comparing legislative electoral volatility levels with levels of executive turnover, to see if any patterns between the two emerge. A basic hypothesis is to test whether there is a relationship between legislative electoral volatility and executive turnover: does higher level of volatility mean higher level of turnover? Although volatility here is measured for legislative elections, in Parliamentary systems the executive is mostly chosen from within the winning party or coalition from legislative elections, and in Presidential systems often the executive candidates tend to be those from parties that run in legislative elections, although the independent candidacy rate is high in some countries, so the comparison between legislative elections and executive turnover does not seem inappropriate.

Another consideration might be to ask under what circumstances we would not expect to find support for this positive relationship? Do episodes of party splits or coalition formation, the calling of early elections, or high electoral or coalitional thresholds create outliers to the simple expected positive relationship between volatility and turnover? Is there a distinct division between Presidential and Parliamentary electoral dynamics that might produce a deviation from the positive volatility-turnover

relationship? To answer these questions, as well as the basic concern about whether volatility is positively correlated to turnover, let us examine the data about turnover relative to volatility, and examine some cases of support for and divergence from the hypothesized relationship.

Executive turnover in this comparison is defined as the transfer between one policy coalition and another, or measured for comparative purposes in terms of months of consistent policy tenure. Policy tenure refers to the length of time a party or coalition holds control of the executive, measured in months. Thus, policy tenure in the US extends not simply for the 96 months of Ronald Reagan's presidency, but for the 144 months of Reagan and George H. W. Bush's presidencies collectively, followed by 96 months of Bill Clinton before the next transfer.<sup>17</sup>

Each country's mean policy tenure was calculated<sup>18</sup> and the mean policy tenure was put into a category of turnover, so "Low Turnover" is equal to 10-17 years tenure, "Medium Turnover" is equal to 5-10 years tenure, and "High Turnover" is equal to 0-5 years tenure.<sup>19</sup> Then four classifications of volatility levels were calculated as Low, Medium Low, Medium High, and High, into which each country's mean volatility level fit. Table 7 shows the resulting clusters of countries, Figure 6 shows them scattered by scores along two axes for a different perspective about a general relationship.

While Table 7 shows a more linear trend with low levels matching up to low levels and higher levels matching up to higher levels for the most part, Figure 6 shows a bit more spread along volatility scores and more concentration among length of policy tenure. These two demonstrations suggest that there is preliminary support for a hypothesis that high volatility is related to high turnover and low volatility to low

turnover, a fitted linear prediction line in Figure 6 shows a statistical relationship between lower volatility and lower turnover. A closer examination of a subset of these groups gives a better illustration of the potential relationship not only between legislative volatility and executive turnover, but how party size and discontinuity might play a role in the volatility-turnover relationship. Figure 7 demonstrates the cases that will be examined: Austria, the Dominican Republic, Israel, Bolivia, Finland, and South Korea. Austria, the Dominican Republic, Israel, and Bolivia are four cases that fit to the statistical relationship established between electoral volatility and executive turnover; Finland and South Korea are included as outliers that exhibit two deviational patterns: Finland is a case of low volatility and yet high executive turnover while South Korea is a case of high volatility and yet low executive turnover.

*Austria: The Low Volatility – Low Turnover Case*

A democracy inaugurated in 1945 after World War II, Austria is a parliamentary system with a bicameral legislature. Falling into the Low Volatility – Low Turnover cluster, Austria has a mean policy tenure of roughly 13 years and a mean volatility score of roughly 7. However, the volatility trend in Austria is to bounce back and forth between 0.9 and 20.9, which is a good deal of variance, and there does not appear to have been a general trend upward or downward in volatility during the past 60+ years of elections. Along the same lines, with a mean party size of 2.74 and mean discontinuity level of 1.1, Austria has remained a relatively stable party system despite the fluctuations in volatility. Although it has a relatively stable system that exhibits limited fluctuations along all other indicators, the average length of time between legislative elections in

Austria is 3.4 years with a standard deviation of .98 years, so there is some variation in the length of election period during the course of observed elections in the country.

Its economic growth has not seen any individual destabilizations over the past 60 years and the economy has moved during the past few decades towards a more service-based economy, relying less on industrial and agricultural production. A noteworthy electoral period occurred in the mid-1990s as EU accession loomed, and high volatility, party size and discontinuity all rose to higher than average levels as successive legislative elections were held in late 1994 and again in late 1995. For the most part, though, Austria is a textbook case of fairly regularly scheduled and held elections (between 3-4 years with two periods of very early elections), relatively low electoral volatility, and a pretty small (between 2.25 and 4 parties) and consistent (around 1-1.5 discontinuity) party system that produces relatively long policy tenure and limited executive turnover. Thus, Austria is a case of structural party system stability that can withstand and rebound from an international shock (EU accession) and episodes of early elections to demonstrate the relationship between low volatility and low executive turnover.

*The Dominican Republic: The Medium Volatility – Medium Turnover Presidential Case*

A democracy inaugurated in 1978, the Dominican Republic was among the earliest third wave democracies in Central and South America, setting up a presidential system with a bicameral legislature. The mean policy tenure of Dominican parties is roughly 6 ½ years but the average government tenure of a Dominican president is less than 4 years, so there is continuity of parties or coalitions between presidential elections that is not confined solely to individual politicians. The volatility, party size and

discontinuity trends in the Dominican all tend to oscillate rather than follow an upward or downward trajectory, although the inconsistency is much more pronounced for volatility. Though the mean volatility in the Dominican is just about 33, the range is between 13 and 68, with high volatility in the 1994 and 1998 elections as well as the recent elections in 2006, but with relatively lower volatility in all other elections before and in between. The party size is average at 3.3 but ranges from 2.2 to 5, and discontinuity averages around 2.4 but ranges from 1.6 to 3.5. The Dominican Republic holds legislative elections every 4 years, and has not deviated from that electoral consistency since democratization, despite movement of the executive elections ten years ago.

In this case, policy tenure seems to produce consistent executive turnover, averaging one single-term policy orientation per one two-term policy orientation. The relatively small party system size and average discontinuity appear to contribute to the regulation of electoral politics in this case; when there has been critical upheaval, it was often due to periods of unusual politicking. In the case of the 1994 election, incumbent President Joaquin Balaguer narrowly won elections in which his main opponent and international observers declared fraud; the 1998 legislative elections were the first to be held in a non-concurrent year with the presidential election. Thus it is not surprising that the late 1990s are an era of heightened electoral volatility in an otherwise relatively stable system that holds legislative and often executive elections with consistent regularity.

*Israel: The Medium Volatility – Medium Turnover Parliamentary Case*

A democracy instituted in 1948, Israel is a parliamentary system with a unicameral legislature and an average policy tenure of just around 6 ½ years. The Israeli

system has less volatility than its Dominican counterpart, averaging about 22, but with a range from 9.5 to 47 and trending upwards in recent years. Israel has a relatively large party system with roughly 5.4 parties but ranging from 3.6 to 10, also trending upwards in recent years, and a relatively continuous one with an average of 1.6 in discontinuity, with a range between 1 and 2. Holding legislative elections on average every 3.5 years, Israeli elections have been relatively consistently with a standard deviation of .73, so most elections occur every 3-4 years except in the earliest years of democracy when there were two episodes of legislatures lasting only up to 2 years. A state that has undergone almost constant internal and external conflict, Israeli politics have often reflected those conflicts in minor fluctuations in volatility.

Recent trends in Israel suggest a move away from stable coalitions to more fragmented system. Discontinuity during the last three electoral periods has been relatively high, and as such, the party system size has increased as well. Ariel Sharon's rise to the Prime Minister-ship and subsequent break with the Likud Party and center-left coalition in 2005 to form the Kadima Party coupled with a general trend toward more extremist parties meant that forming coalitions would be more difficult in recent years. Recent government-forming coalitions have had to incorporate extreme fragments into ruling cabinets, which has only exacerbated party polarization along issues of the Palestinian conflict, but the consistently regular legislative elections in recent decades mean that perhaps some inter-legislative conflict is diffused by the electoral process. The current size and discontinuity of the party system means that volatility levels are unlikely to fall, which means that policy tenures could shorten in the near future if the polarizing trend continues in Israel.

*Bolivia: The High Volatility – High Turnover Case*

A democracy since 1982, Bolivia has a presidential system with a bicameral legislature and an average policy tenure around 4 years. This means that almost always, neither incumbent presidents nor their party members are elected to the executive. With a mean legislative volatility of 42.8, ranging from 26 to 65, it appears that high turnover rates are a commonality in legislative politics as well in Bolivia, with volatility trending in a U-shape since democratization and currently increasing. A somewhat large party system with 5.3 ENPV but within a high range of 4.6-6.2, and with relatively high levels of discontinuity averaging almost 3 but ranging from 1.6-3.5, all indicators in Bolivia's party system indicated a general trend toward higher levels of volatility, system size and system discontinuity. The notable exception is the regularity of legislative elections which occurred every 4 years until the two most recently elected periods, when the elections scheduled for 2001 were delayed until 2002, and then early elections were called in 2005.

Evo Morales' impact on Bolivian party politics has been virtually inseparable from the economic crises that have plagued the country since the 1990s. Upon failure to win the presidency in 2002, in early 2003 Morales led what would essentially be a virtual shut-down of economic production through protests and road blockades, forcing then president Sanchez de Lozada into resignation, after which Morales won the next popular election in 2005. Worker protests of neoliberal economic policies have led to a polarization of Bolivian politics between center-right coalitions pushing for privatization and liberal market policies and socialists, now united under Morales, pushing for more egalitarian and worker-friendly policies. Such polarization is likely to have a mitigating

impact on both the party system size and discontinuity as Morales attempts to further unify his supporters, but it remains to be seen if his opponents can unify in order to retake the executive or legislative elections (some of which may be dependent on whether legislative elections return to regular scheduling as in the pre-Morales era), which will largely determine how much volatility there is in Bolivia, and whether Morales or his party will be the first serve to consecutive executive terms.

*Finland: The Low Volatility – High Turnover Outlier*

A democracy since 1945 following World War II, Finland is a parliamentary system with a unicameral legislature. What makes Finland unusual is that despite a relatively high executive turnover, averaging less than 4 years per policy tenure, its average volatility is quite low at around 9. The general trend of volatility in Finland is to oscillate, but within a relatively low range of 3.4 to about 25, and the current trend is downward. In contrast, party system size in Finland is relatively large, around 5.5 ENPV, with a range from 4 to over 6, but is relatively stable and also trending slightly downward now. Finally, discontinuity is low, with an average of 1.2 and ranging between 1 and 1.4. The Finnish parliamentary system averages legislative inter-election lengths of 3.78 years and, despite a standard deviation of .81, have mostly occurred every 4 years with a couple exceptions in the early 1970s, making it a very regular system in terms of election frequency.

So then does party system size help explain Finland's high executive turnover? Actually, what seems to account for Finland's high executive turnover is the relative balance between the three dominant parties in the political system, each representing a

relatively distinguishable point along the Finnish political continuum: the Conservatives, the Centre, and the Social Democrats. These three parties make up usually between 2/3 and 4/5 of the vote-share and seats in elections, but even now there are 8 parties represented in the Finnish legislature, to some degree due to a complex system of regional and sub-national representation. Thus it seems that although there is little movement between the three largest parties relative to other smaller parties within the system that accounts for the low volatility, the relatively large size of the party system has meant that even little change in vote-share among all parties can result in frequent transfers of executive power between the three dominant but equally strong parties. Since the average length of executive policy tenure almost perfectly matches up to average election period length, we need to consider the likelihood that in such a balanced parliamentary system, executive policy turnover is simply a highly likely outcome of any legislative election.

*South Korea: The High Volatility – Low Turnover Outlier*

A democracy since 1987, South Korea is a presidential system with a unicameral legislature whose policy tenure averages around 10 years per political party or coalition. With a mean volatility of 36.6, but a U-shaped trend toward higher volatility in the present, South Korea represents the counter to the Finnish example: what type of system creates high volatility but little executive turnover? A country with a larger amount of discontinuity than size of party system, South Korea boasts an ENPV of 3.8 but a discontinuity score of 4.8, with party system size a relatively stable measure and discontinuity starting to trend downward. In its earliest election periods, South Korea

had consistent elections with discontinuity scores of 7, implying a virtually unrecognizable slate of parties in each election. In addition, legislative elections were held every 4 years with no exceptions since democratization, but presidential elections are held every 5 years. So is low executive turnover the result of such stable but differentiated time periods between executive and legislative elections?

South Korea's story seems to be one of persistently high volatility encouraged by both an average-sized party system and fairly high discontinuity between elections, yet dominated by coalitional politics. Two dominant coalitions have been in control of the executive and legislature,<sup>20</sup> but always by fairly slim margins in the legislature, often together just crossing a 60 or 70% threshold. If Korea had a parliamentary system whereby the government could not operate without a majority or large minority coalition, the party system would likely not produce such long executive tenures and would look more like Finland, with executive power alternating more frequently between the two largest parties in the legislature, especially when legislative elections coincide with executive elections. If the discontinuity in South Korea's party system continues to decline as it has the past few elections, it is likely that the volatility levels will decline and the disparity between volatility and executive turnover will not be as unusual as it currently is.

What do our cases tell us about the relationship between volatility, party system fragmentation, and executive turnover? Few general trends exist among all six cases, although it is easier to see that the general relationship of higher volatility and higher executive turnover is mirrored in the relationship between discontinuity and executive

turnover, but that the two outlier cases present the same divergence from such relationships. In the cases of Finland, low volatility and discontinuity are paired with high executive turnover, whereas in South Korea, high volatility and discontinuity are paired with low executive turnover. Detail about the relative strength of parties within the system provide some answer for explaining the different Finnish and Korean trajectories, but brings a new issue to the forefront: that even with a more sensitive measure of party system fragmentation, perhaps relative strength of parties in a system is still not being addressed enough.

With regards to time concerns, since the average inter-electoral period length is relatively similar between all six cases, especially with the two outlier cases, perhaps our cases have indicated that while inter-election period length may tell us a good deal about legislative electoral volatility, a difference between Presidential and Parliamentary systems may here emerge with respect to the volatility-turnover question. In our four “fit” cases, time seems to play little role in terms of the impact of election period length on executive turnover, the four cases have a small range of diversity with respect to length (3.4-4 years) and deviation (0-1 year) and the few deviations from the average inter-electoral length occurred in particular elections that exhibited higher than average electoral volatility in each case. In our two “outlier” cases, time seems to play a greater role in terms of how presidential and parliamentary systems choose executives. Though both Finland and South Korea have legislative elections consistently just about every 4 years, Finland’s average executive turnover at almost every 4 years seems to match perfectly with the average legislative tenure, while South Korea’s average executive

turnover at almost every 10 years seems to not match to the average legislative tenure at all, especially since presidential and legislative elections are not held concurrently there.

While it is unclear if the difference in the volatility-turnover relationship is due to the difference between presidential and parliamentary systems, with respect to the two cases that do not fit the low electoral volatility-low turnover pattern, the time difference seems to be a potentially decisive factor in these two cases. In the Finish case where the executive is determined by the results of the legislative election, the direct link between length of legislative inter-electoral period and executive tenure is in direct contrast to the Korean case where the executive and legislature are elected not only in different elections but in non-concurrent elections and where higher legislative electoral volatility does not correlate to higher executive turnover.

## **Conclusion**

This analysis has attempted to expand the study of electoral politics by more carefully and completely theorizing about the causes of electoral volatility and how those causes might have different impacts on government turnover. While acknowledging the breadth of remaining work in this area, three major advancements have been made through this study of the causes and effects of electoral volatility: 1) more sensitive measurement of party system fragmentation and its theoretical relationship to electoral volatility; 2) more extensive geographic and temporal space to which theories of the causes of electoral volatility now apply; and 3) greater awareness of the potential impact of time on the study of electoral volatility, specifically in terms of measuring the length of inter-electoral periods and how the frequency of elections might affect their outcomes,

as well as democratic experience rather than simple age of democracy. This study has also attempted to link legislative electoral volatility to executive turnover in both presidential and parliamentary systems in an effort to begin new theorizing about the causal role that volatility might play in political systems.

Some avenues for future research arising from the results of these analyses include discerning the mechanism by which frequent elections seem to discourage electoral volatility, finding yet more sensitive measures of the influence of relative party weight in large but balanced party systems, and more careful and thorough analysis of the relationship between electoral volatility (both legislative and executive) on transfers of executive power between parties or coalitions. While it is impossible to take account of all factors and study all possible relationships in every analysis, these are three research areas in which questions have been raised as a direct result of the findings from this analysis and set of case comparisons.

Though this study does not definitively answer the question of why inter-electoral instability matters, it does shed light on some of the primary mechanisms that cause inter-electoral instability, and in so doing, it provides us with a better understanding of why instability is problematic. In the case of newer democracies, we can see that instability caused by the overwhelming size or discontinuity of the party system may have debilitating (as in the case of Bolivia) or potentially consolidating (as in the case of South Korea) effects. If the size or discontinuity matters for maintaining relatively stable or unstable electoral politics, then the direction in which countries move, either toward more or less balance between size and discontinuity, will matter for immediate and longer-term political futures.

## Endnotes

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<sup>1</sup> This does not suggest that the outcomes of elections should be predetermined, but that all parties follow institutionalized rules of electoral competition so *the process* of elections should be consistent and predictable.

<sup>2</sup> The exception to this is the case of Thailand, which was coded through the 2005 elections that occurred well prior to the 2006 military coup and year-long breakdown of democratic government accountability. Thailand's most recent elections in December 2007 have not been added to the dataset, but the prior electoral observations have not been removed from it either.

<sup>3</sup> Appendix A lists all sources used for coding election returns not available in the Mainwaring dataset of raw electoral returns used to calculate *Volatility*, *ENPV*, and *Discontinuity* for recent elections, as well as a listing of all elections included in the original Mainwaring dataset, in case of coding questions on data not collected and coded by the author.

<sup>4</sup> Appendix A contains all sources used to collect data to construct *Institutional Disruption* and *Length of Election Period*. All other sources for variables not included in Appendix A are listed with those variables' descriptions as references in the text, all coding rules for computed or aggregated variables are included in Appendix B.

<sup>5</sup> *Discontinuity* also, to a limited degree, covaries with *Volatility* since the two measures are constructed from the same data components. However, the relationship between *Discontinuity* and *Volatility* is neither additive nor multiplicative and there are a number of cases where change in the components produces extreme change in one and practically none in the second. Pearson Correlations between the two are between .5250 and .5999 in the different models, and the non-uniform or unpredictable effect of one on the other suggests that *Discontinuity* is not an inappropriate measure to use as it is constructed.

<sup>6</sup> *Institutional Disruption* has five separate components, not all of which may be a factor in all types of electoral systems; in Presidential systems this index only codes for early elections or interim episodes of presidents while in Parliamentary systems this index only codes for early elections of the legislature. This does not mean all early scheduled elections are subject to scores of .5 or 1, but rather are accounted for when a specific disruption in the electoral process has occurred and *unexpected* elections are called, such as upon a presidential resignation or vote of no confidence that requires removal of the incumbent government in favor of immediate elections.

<sup>7</sup> Appendix B lists all coding rules for the *Institutional Disruption* and *Length of Election Period* variables, as well as for determining party birth, death, coalition formation and breakdown used to code vote-shares for all parties in all elections coded by the author to determine *Volatility*, *ENPV*, and *Discontinuity*.

<sup>8</sup> All economic variables were gathered from the World Bank's 2007 *World Development Indicators*, except for *% Workforce in Industry* which is gathered from the ILO's *Key Indicators of the Labor Market*, 5<sup>th</sup> Edition.

<sup>9</sup> Roberts and Wibbels address the poor and inconsistent quality of informal sector data, and Mainwaring and Zoco include a within-panel static measure of union density which creates not only non-dummy fixed-effects concerns in what is otherwise a random effects model here, but is also likely to incorrectly assess contemporary changes to union density as countries shift to more high-tech and service-based economies (Roberts & Wibbels 1999; Mainwaring & Zoco 2007).

<sup>10</sup> Many other studies employ a measure of ethnic fractionalization to account for socio-economic cleavages, but this paper is specifically interested in the *economic divisions* that create parties and party membership, rather than ethnic divisions, which often coincide with economic divisions in many developing countries anyway.

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<sup>11</sup> All democracy variables were gathered from the Polity IV dataset.

<sup>12</sup> I included and substituted measures of inflation and % workforce in informal sector, but dropped these due to collinearity problems or flawed data.

<sup>13</sup> Results of these models are not reported in the following tables due to space constraints and a lack of panel-corrected models employed in the body of literature on electoral volatility.

<sup>14</sup> Due to space constraints, the results of these lagged *Discontinuity* models are not reported. Additionally, I feel that the lagged models do not accurately capture the theory set forth in this paper, by accounting for fragmentation that occurred in prior election periods which does not temporally address my theory. It was included more as a robustness check on the potential multicollinearity between the dependent and independent variables, and proved to have the same relationship as the possibly mathematically-determined one in the contemporary *Volatility* and *Discontinuity* relationship.

<sup>15</sup> To account for the outlier of the US, which has the highest average frequency of legislative elections (every 2 years), a model removing all US observations was run, with no change in results.

<sup>16</sup> Another control variable, a summary variable measuring the 50 years of Polity scores for the country prior to the year of democratic inauguration (new countries were given a score of 0, indicating no experience with democracy or autocracy), was included but since it is highly correlated with the first control variable and produced less consistent results than *Polity Years as Democratic*, it was removed from the results table for the analysis.

<sup>17</sup> I have also calculated by a measure of “government tenure” which measures how long an individual executive holds office, rather than the party or coalition. An example would be a US president’s tenure, so where the policy tenure is 144 months of Reagan and Bush, the government tenure would be 96 months of Reagan and 48 of Bush. Since policy tenure is theoretically what I am interested in by party and coalition rather than independent candidates, this volatility-turnover comparison is done with policy tenure measurements, although similar codings and comparisons have been made with government tenure and look relatively similar across the comparisons.

<sup>18</sup> Switzerland is the notable exception here, as I was uncertain how exactly to code for a seven-member executive, and so Switzerland is simply not a part of this analysis rather than incorporate incorrect coding into the dataset.

<sup>19</sup> An alternative measure of tenure by mean and standard deviations from the mean produced relatively similar groups of countries by categories to this reported measure of year groupings.

<sup>20</sup> Name changes to existing parties do not register as “new” parties, by the coding rules for *Volatility*. The newly-named party is treated as a continuation of the previous party in the dataset, although for splits such as the formation of the Uri Party in 2003 which split from the Millennium Democratic Party coalition and ran independently in the next elections, with the expressed purpose of loyalist support for the Roh administration, Uri is treated as “new.”

## Tables and Figures

Table 1. Electoral Volatility in 53 Countries

<i>Country</i>	<i>Elections included for volatility and executive turnover</i>	<i>Year democracy was inaugurated</i>	<i>Mean volatility since inauguration of democracy</i>
United States	1944-2006	1800	3.64
Honduras	1981-2005	1982	6.79
Austria	1945-2006	1945	6.80
Switzerland	1943-2007	1848	7.38
Germany	1949-2005	1945	8.04
United Kingdom	1935-2005	1837	8.05
Australia	1944-2007	1901	8.33
Sweden	1944-2006	1909	8.45
Finland	1939-2007	1917	8.95
Ireland	1944-2007	1921	9.35
Greece	1977-2007	1974	10.56
New Zealand	1943-2005	1857	11.01
Denmark	1945-2005	1945	11.18
Norway	1945-2005	1945	11.27
Belgium	1946-2007	1944	11.96
Canada	1940-2006	1867	11.96
Netherlands	1946-2006	1945	12.93
Jamaica	1959-2007	1959	13.59
Chile	1989-2005	1989	13.88
Japan	1952-2005	1952	14.12
Uruguay	1984-2004	1985	15.59
Portugal	1975-2005	1975	16.14
Italy	1948-2006	1945	16.31
Taiwan	1992-2004	1992	17.31
Spain	1977-2004	1976	17.59
El Salvador	1985-2006	1984	17.84
France	1946-2007	1946	18.99
Brazil	1986-2006	1985	19.62
Mexico	1997-2006	1988	20.56
Israel	1949-2006	1948	21.81
Argentina	1983-2005	1983	23.33
Hungary	1990-2006	1990	25.30
Costa Rica	1946-2006	1889	25.66
Trinidad & Tobago	1966-2007	1962	27.03
Czech Republic	1990-2006	1990	29.65
India	1951-2004	1950	29.98
Turkey	1987-2007	1983	30.61
Slovenia	1992-2004	1991	32.67
Venezuela	1958-2005	1958	32.89
Thailand	1992-2005	1992	33.00

Table 1. Continued

<i>Country</i>	<i>Elections included for volatility and executive turnover</i>	<i>Year democracy was inaugurated</i>	<i>Mean volatility since inauguration of democracy</i>
Dominican Republic	1978-2006	1978	33.14
Ecuador	1984-2007	1979	36.42
South Korea	1988-2004	1987	36.60
Estonia	1992-2007	1991	38.80
Bulgaria	1991-2005	1990	39.34
Colombia	1958-2006	1957	39.47
Poland	1991-2007	1989	41.45
Bolivia	1985-2005	1982	42.80
Philippines	1987-2004	1986	44.83
Ukraine	1994-2007	1991	44.84
Latvia	1993-2006	1991	45.54
Romania	1990-2004	1990	46.48
Lithuania	1992-2004	1991	51.63

Sources: Portions of raw electoral returns from Scott Mainwaring, calculations and coding for each country are available upon request from author.

\* There are bits of missing data for a number of elections, so some panels stop when valid, verifiable election returns are not available, ie. Ecuador legislative elections from 2002+ and the Philippines legislative elections from 2001+.

\* For democracies inaugurated before 1902, volatility and executive turnover have been calculated since 1945.

Figure 1. Volatility and mean volatility in “high Polity, long age of democracy” systems

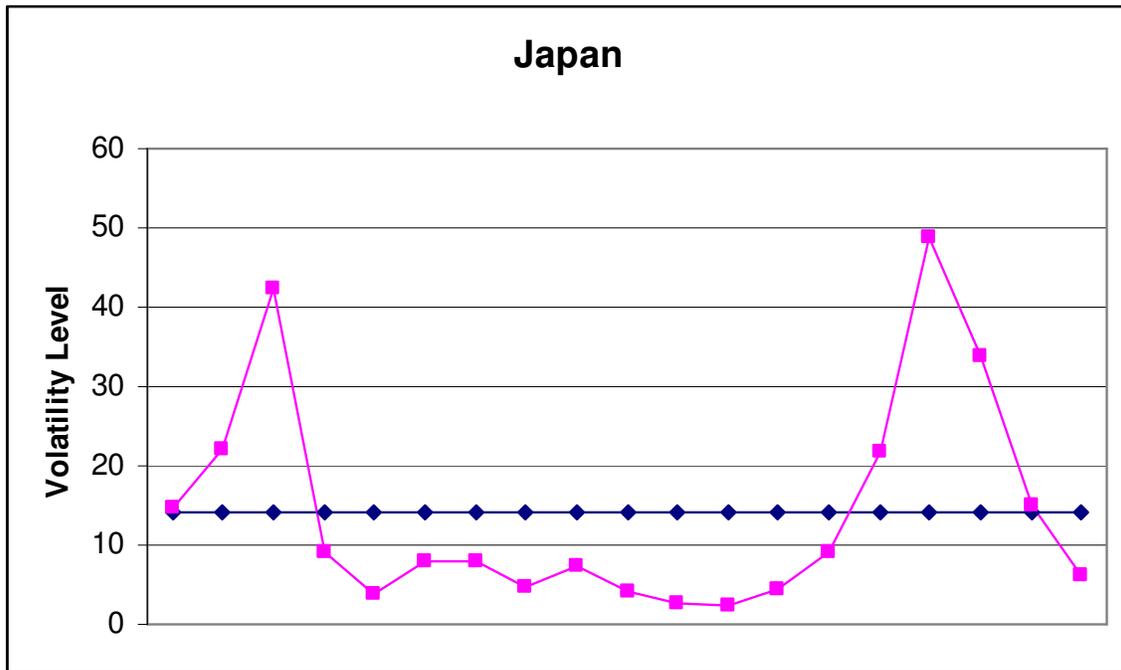
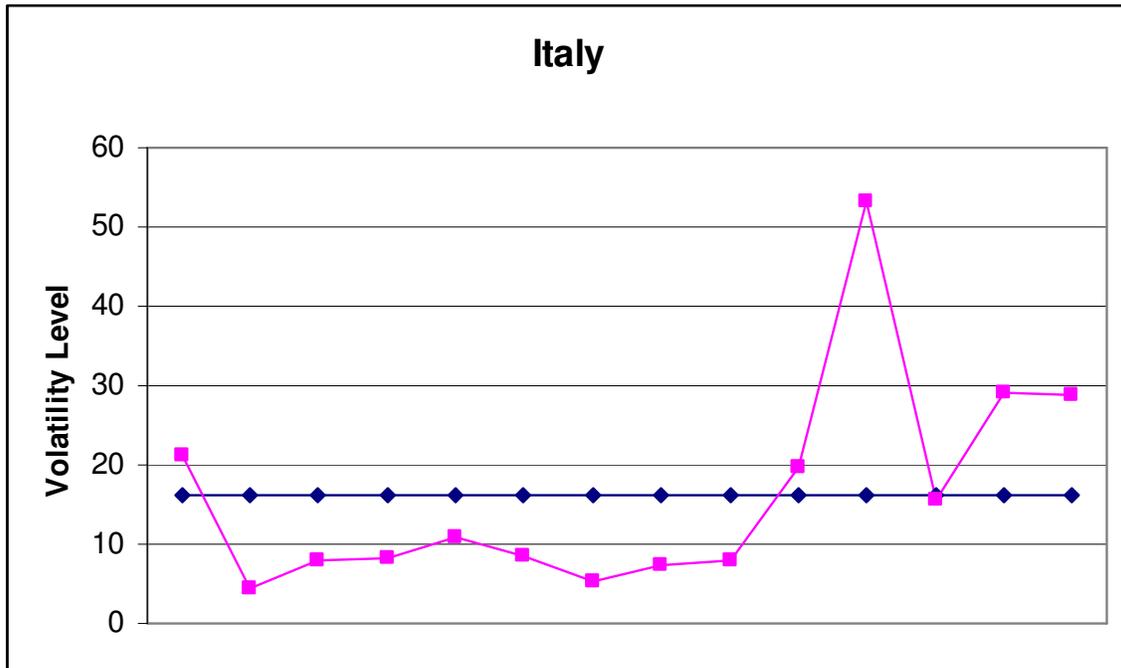


Figure 2. Volatility and mean volatility in “high Polity, medium age of democracy” systems

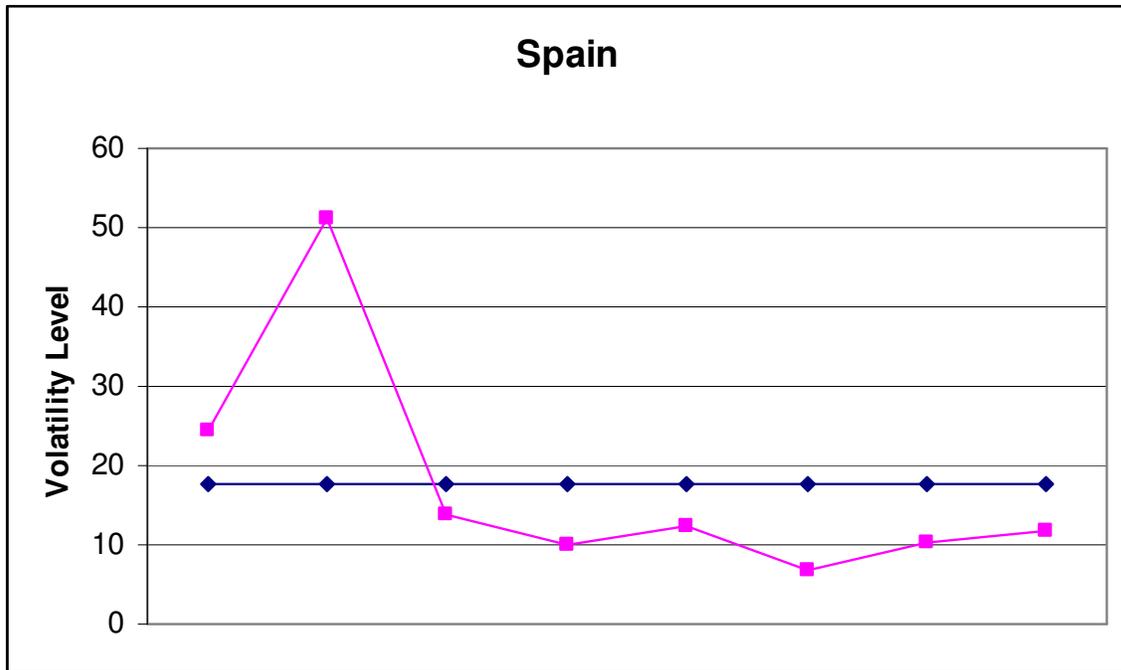
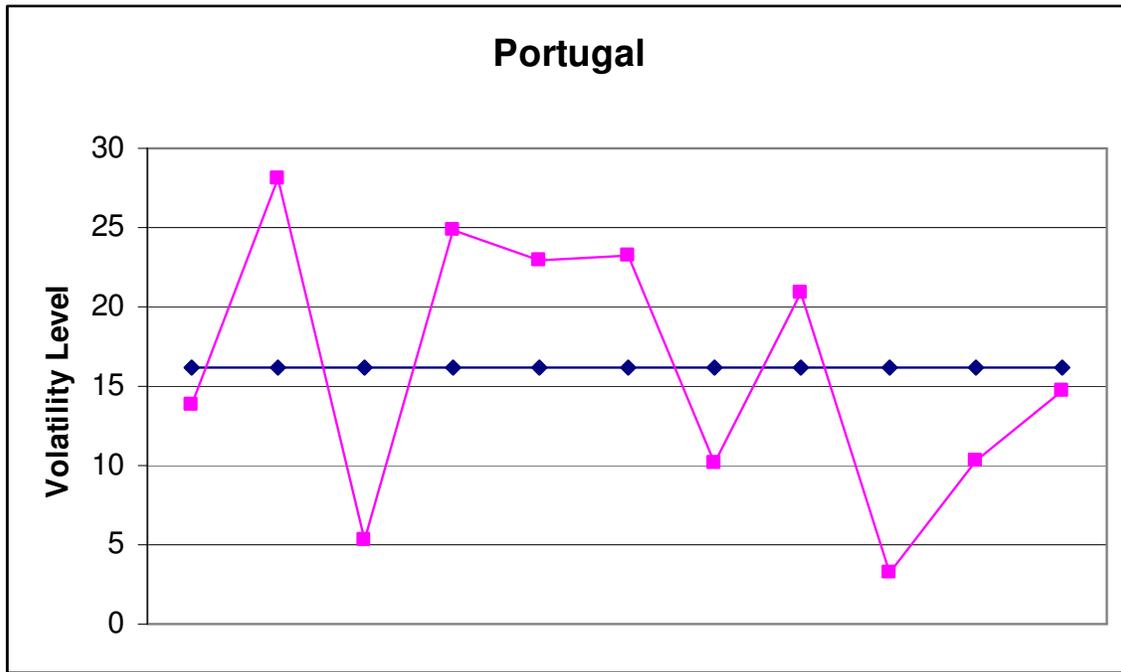


Figure 3. Volatility and mean volatility in “medium Polity, long age of democracy” systems

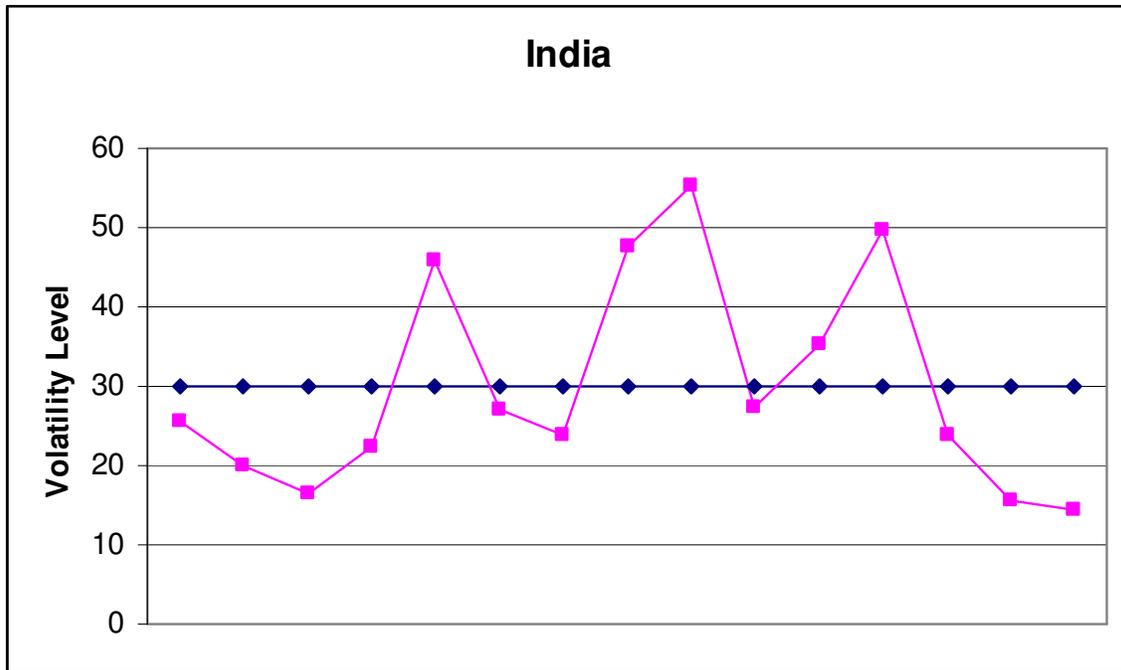
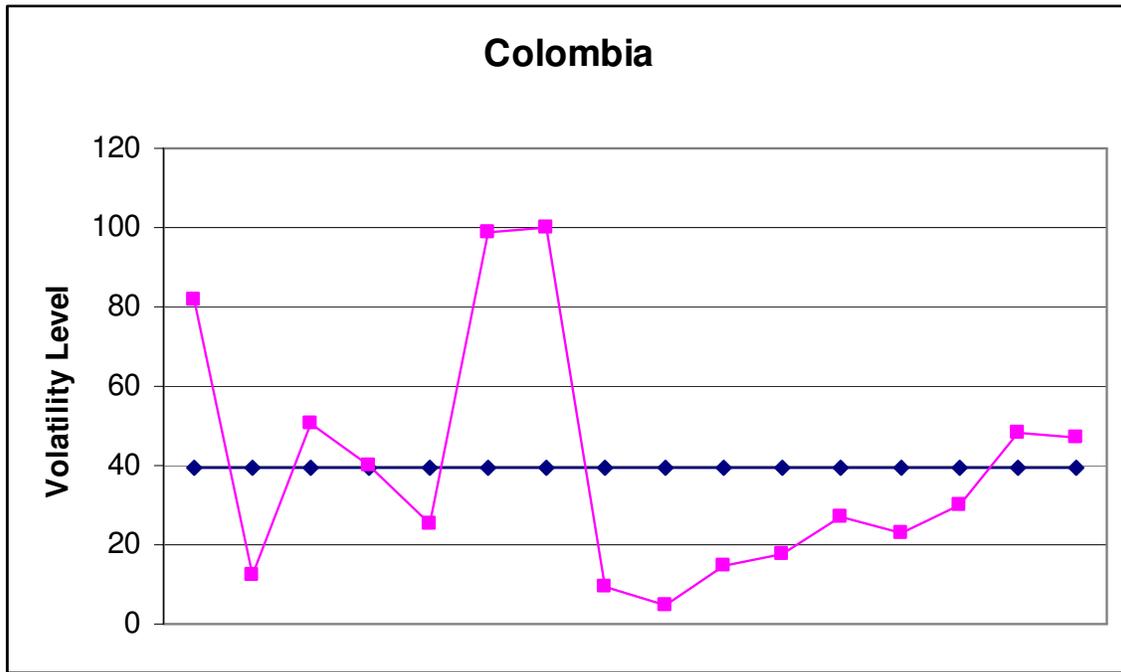


Table 2. Descriptive Statistics of Various Measurement Categories

Variable	Mean	Median	Minimum	Maximum	N
Effective Number of Parties by Voteshare (ENPV)	4.06	3.58	1.24	13.79	578
Mean ENPV	4.45	4.01	1.93	7.86	53
Median ENPV	4.33	3.84	1.97	8.52	53
Discontinuity	1.98	1.4	1	23*	576
Mean Discontinuity	2.45	2.04	1.05	6.14	53
Median Discontinuity	2.21	1.71	1	6.33	53
Volatility	17.23	11.79	.4	100.05	577
Mean Volatility	23.31	19.31	3.64	51.63	53
Median Volatility	21.54	19.35	2.9	58.56	53
Institutional Disruption	.28	0	0	2	584
Age of Democracy (in years)	51.38	35	0	206	584
Previous Experience with Democracy (in # of years)	8.33	0	0	44	45
Length of Election Period (in years)	3.38	4	.42	10	584
Policy Tenure (in months)	74.41	71.67	23.44	168.5	53
North America/Western Europe					351
Asia Pacific					50
Latin America					120
Central Eastern Europe					41
Middle East					22

\* Despite the distance between the mean of 1.98 *Discontinuity* and the range from 1-23, only one observation in 576 is a 23, and 550 observations range between 1-5, so a logged function in the regression analysis would only make results more difficult to interpret, with no greater sensitivity in the measure.

Table 3. Hypotheses about Individual Predictors of Legislative Volatility

Predictor	Legislative Volatility
Effective Number of Parties by Voteshare	+
Discontinuity	+
Institutional Disruption	+
GDP Growth	-
% Workforce in Industry	-
Age of Democracy	-
Prior Experience w/ Democracy	-
Length of Election Period	?
N.America/W. Europe	-
Asia Pacific	+
Latin America	+
Eastern Europe	+
Middle East	+

Table 4. Determinants of Electoral Volatility

	Model 1.1 Fixed Effects	Model 1.2 Fixed Effects w/ AR Correction	Model 2.1 Random Effects w/ Region Dummies	Model 2.2 Random Effects w/ AR Correction and Region Dummies
Constant	16.42* (8.15)	17.89** (6.45)	5.40 (6.51)	7.43 (6.34)
Effective Number of Parties	1.25** (.475)	2.13** (.616)	1.50*** (.382)	1.12** (.370)
Party System Discontinuity	2.32*** (.329)	2.33*** (.345)	2.50*** (.307)	2.47*** (.306)
Institutional Disruption	.938 (1.10)	.768 (1.09)	.904 (1.04)	.992 (1.02)
GDP Growth (per capita)	-.001 (.150)	-.118 (.150)	-.042 (.145)	-.059 (.140)
Workforce in Industry (%)	-.220 (.177)	-.200 (.179)	-.083 (.134)	-.094 (.136)
Age of Democracy (log)	-4.33° (1.73)	-7.58° (3.96)	-3.45° (1.82)	-3.71* (1.82)
Length of Election Period	1.20** (.521)	1.11* (.537)	1.17* (.483)	1.26** (.459)
Asia Pacific Region			13.06*** (3.48)	11.83*** (2.92)
Latin America Region			8.24** (2.60)	8.21*** (2.26)
Eastern Europe Region			19.63*** (3.36)	19.68*** (3.18)
Middle East Region			11.01* (4.92)	10.84** (4.09)
N	444	394	444	444
R <sup>2</sup>	.462	.442	.550	.550

Note: Dependent variable is electoral volatility; standard errors in parentheses.

°p<0.1; \*p<0.05; \*\*p<0.01; \*\*\*p<0.001.

Table 5. Determinants of Electoral Volatility in 1-11 Election Periods

	Model 3.1 Fixed Effects	Model 3.2 Fixed Effects w/ AR Correction
Constant	-2.27 (12.20)	-4.02 (10.85)
Effective Number of Parties	.752 (.841)	3.50** (1.26)
Party System Discontinuity	2.17*** (.495)	2.31*** (.553)
Institutional Disruption	3.77 (2.34)	2.05 (2.43)
GDP Growth (per capita)	-.030 (.288)	-.276 (.327)
Workforce in Industry (%)	.454 (.371)	.114 (.485)
Polity Years as Democratic prior 50 years	dropped	dropped
Length of Election Period (in years)	.923 (1.04)	.846 (1.15)
N	211	169
R <sup>2</sup>	.225	.321

Note: Dependent variable is electoral volatility; standard errors in parentheses.

°p<0.1; \*p<0.05; \*\*p<0.01; \*\*\*p<0.001.

Countries dropping out of the analysis in this truncated model:

Australia, Canada, Costa Rica, New Zealand, Sweden, Switzerland, United Kingdom, United States

Table 6. Determinants of Electoral Volatility in 1-6 Election Periods

	Model 4.1 Random Effects	Model 4.2 Random Effects w/ AR Correction
Constant	1.70 (9.61)	3.18 (9.60)
Effective Number of Parties	1.77** (.688)	1.59* (.692)
Party System Discontinuity	3.38*** (.777)	3.33*** (.784)
Institutional Disruption	2.24 (2.86)	1.67 (2.72)
GDP Growth (per capita)	.038 (.344)	-.050 (.337)
Workforce in Industry (%)	.102 (.241)	.078 (.244)
Polity Years as Democratic prior 50 years	-.275° (.142)	-.273° (.144)
Length of Election Period (in years)	2.30° (1.23)	2.41* (1.22)
N	131	131
R <sup>2</sup>	.329	.327

Note: Dependent variable is electoral volatility; standard errors in parentheses.

°p<0.1; \*p<0.05; \*\*p<0.01; \*\*\*p<0.001.

Countries dropping out of the analysis in this truncated model:

Australia, Canada, Costa Rica, Finland, Israel, New Zealand, Sweden, Switzerland, United Kingdom, United States

Figure 4. Volatility and Discontinuity

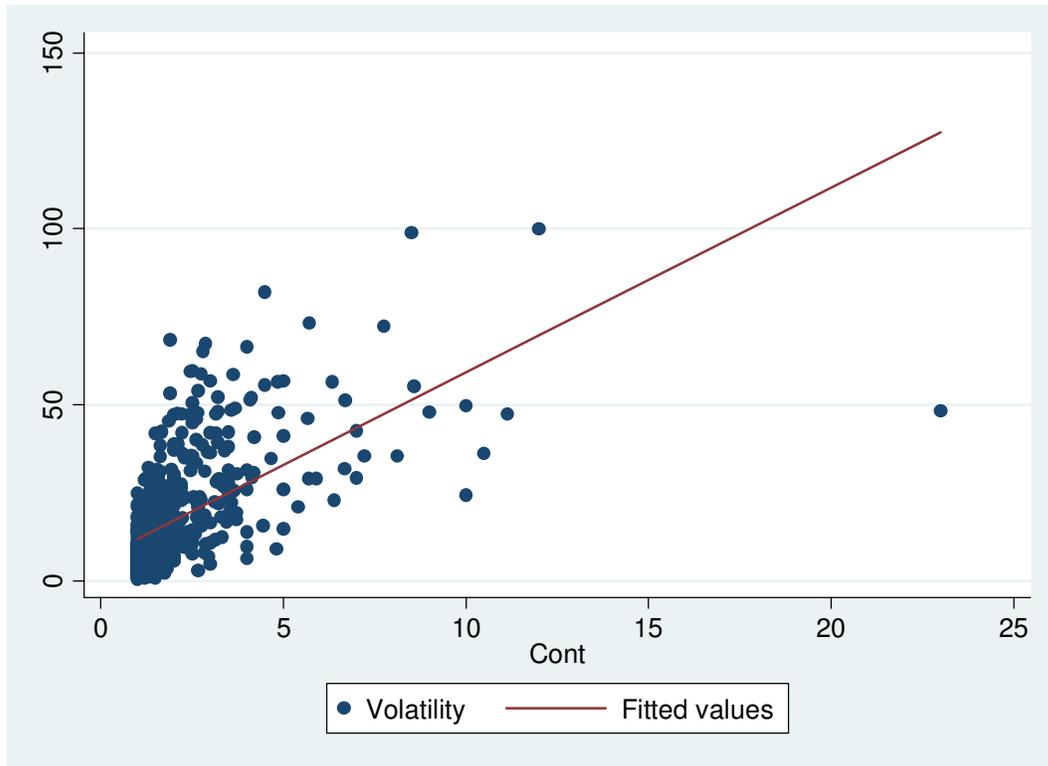


Figure 5. Volatility and Discontinuity in Early Electoral Periods (Elections# 1-11)

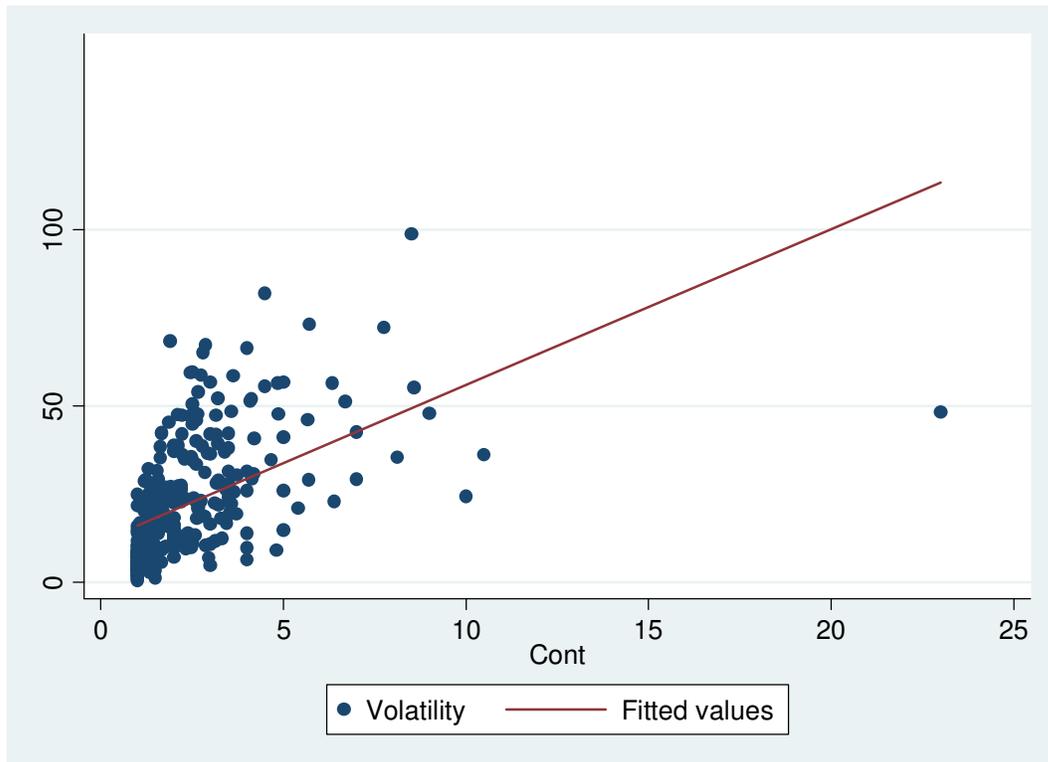


Table 7. Policy Turnover by Mean Volatility Levels

	Low Turnover (10-17 years)	Medium Turnover (5-10 years)	High Turnover (0-5 years)
Low Volatility	Austria Germany	Honduras Ukraine Uruguay Australia Sweden	Finland Ireland
Medium Low Volatility	Mexico El Salvador Taiwan Japan Jamaica	Denmark Netherlands Brazil Belgium Israel New Zealand Greece Spain Chile United States Canada	France Norway Portugal Italy
Medium High Volatility		Argentina Dominican Republic Venezuela India Trinidad & Tobago	Thailand Ecuador Turkey Hungary Czech Republic Slovenia Costa Rica
High Volatility	South Korea	Colombia United Kingdom	Latvia Poland Romania Estonia Lithuania Bulgaria Bolivia Philippines

The volatility level categories are determined by mean and one standard deviation, so Low Volatility contains all the cases between that with the minimum mean volatility score and the mean of the mean volatility scores less one standard deviation. The breakdown of volatility scores by category are: Low Volatility is 3.64-10.043, Medium Low Volatility is 10.043-23.307, Medium High Volatility is 23.307-36.571, and High Volatility is 36.571-51.63.

Figure 6. Policy Tenure and Mean Volatility Comparisons

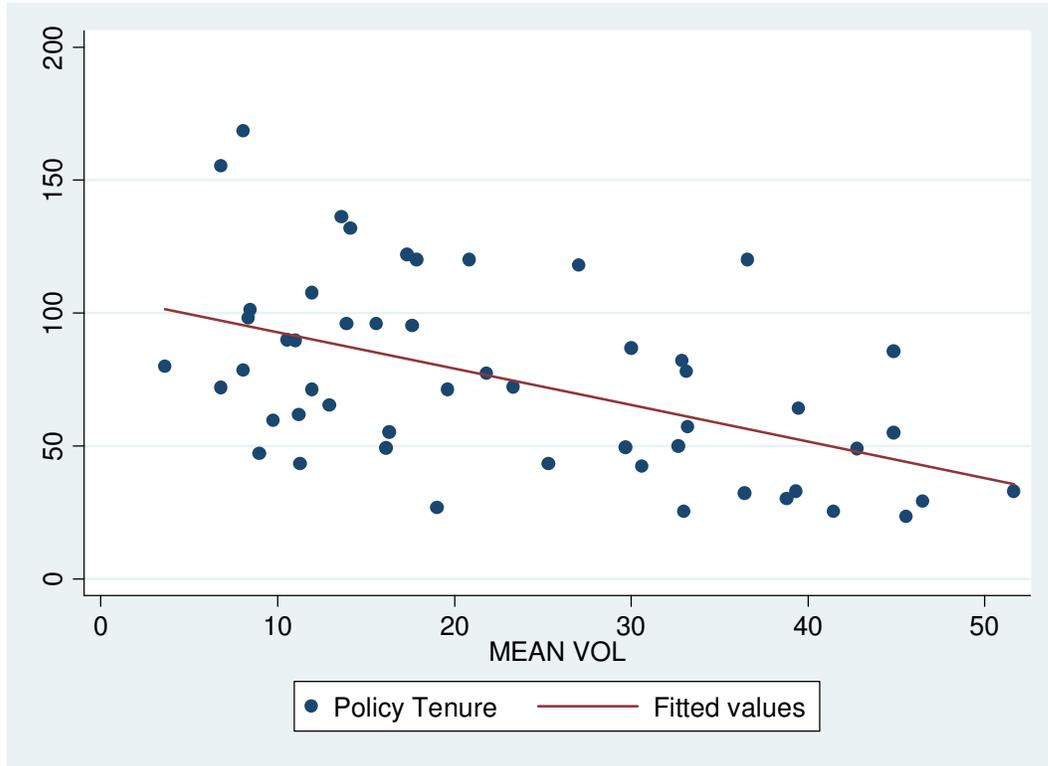
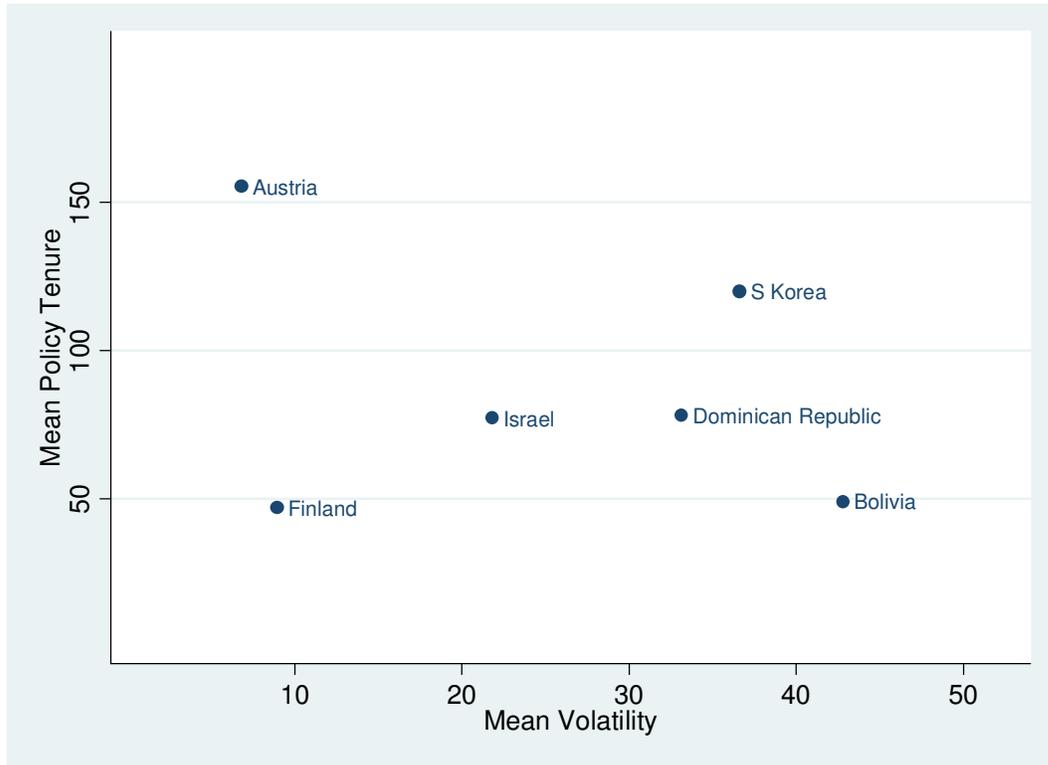


Figure 7. Case Selection Placement along Policy Tenure and Mean Volatility Comparison



## Appendix A. Coding Sources for Parties and Electoral Systems

(All websites listed were active as of 04/29/2008)

### Argentina

Bavastro, Roberto and Celia Szusterman. 2001. "The Congressional Elections in Argentina." *Electoral Studies* 22(2): 352-360.

De Luca, Miguel et al. 2002. "Back Rooms or Ballot Boxes? Candidate Nomination in Argentina." *Comparative Political Studies* 35(4): 413-436.

Ministerio del Interior, Presidencia de la Nacion, Direccion Nacional de Elecciones "elecciones anteriores" [http://www.mininterior.gov.ar/elecciones/estadistica/e\\_ant.asp](http://www.mininterior.gov.ar/elecciones/estadistica/e_ant.asp)

Payne, Mark et al. 2007. *Democracies in Development: Politics and Reform in Latin America*. Washington, DC: Inter-American Development Bank and International Institute for Democracy and Electoral Assistance.

### Australia

Hughes, Colin A. 2001. "Australia" in Nohlen, Dieter et al (eds) *Elections in Asia and the Pacific Vol II*. Oxford: Oxford University Press.

University of Western Australia. "Australian Government and Politics Database: Elections." <http://elections.uwa.edu.au/index.lasso>

Austria Armingeon et al. 2006. *Comparative Political Dataset, 1960-2004*, Institute of Political Science, University of Berne. [Http://www.ipw.unibe.ch/content/team/klaus\\_armingeon/comparative\\_political\\_data\\_sets/index\\_ger.html](Http://www.ipw.unibe.ch/content/team/klaus_armingeon/comparative_political_data_sets/index_ger.html)

### Austria

Parties and Elections in Europe. 2005. "Austria." <http://www.parties-and-elections.de/austria2.html>

### Belgium

Belgium Government. 2007. "Resultats electoraux" <http://www.ibzdgip.fgov.be/result/fr/main.html>

Centre d'etude de la vie politique (CEVIPOL), Universite Libre de Bruxelles "Resultats electoraux" <http://dev.ulb.ac.be/cevipol/>

Fitzmaurice, John. 2004. "Belgium Stays Purple: The 2003 Federal Election." *West European Politics* 27(1): 146-156.

Parties and Elections in Europe. 2005. "Belgium." <http://www.parties-and-elections.de/belgium2.html>

### Bolivia

Corte Nacional Electoral. <Http://www.cne.org.bo>

Georgetown University. Political Database of the Americas "Bolivia: Electoral Results"

Nohlen, Dieter. 1993. *Enciclopedia Electoral Latinoamericana y del Caribe*.

Payne, Mark et al. 2007. *Democracies in Development: Politics and Reform in Latin America*. Washington, DC: Inter-American Development Bank and International Institute for Democracy and Electoral Assistance.

Van Cott, Donna Lee. 2003. "From Exclusion to Inclusion: Bolivia's 2002 Elections." *Journal of Latin American Studies* 35: 751-775.

### Brazil

Nicolau Marconi, Jairo. 1998. *Dados Eleitorais do Brasil (1982-1996)*.

Nicolau Marconi, Jairo. *Banco de dados eleitorais do BRASIL (1982-2006)*. <Http://jaironicolau.iuperj.br/home.html>

Payne, Mark et al. 2007. *Democracies in Development: Politics and Reform in Latin America*. Washington, DC: Inter-American Development Bank and International Institute for Democracy and Electoral Assistance.

### Bulgaria

Ashley, Stephen. 1990. "Bulgaria." *Electoral Studies* 9(4): 312-318.

Bugajski, Janusz. 2002. *Political Parties of Eastern Europe: A Guide to Politics in the Post-Communist Era*. Armonk, NY: The Center for Strategic and International Studies.

Centre for the Study of Public Policy, University of Aberdeen. "Elections in Bulgaria."

<http://www.abdn.ac.uk/cspp/bulgelec.shtml>

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## Appendix B. Coding Rules for Party Vote-shares and Institutional Changes

Party vote-shares are aggregated from various sources listed in Appendix A. Each party's vote-share in each election is coded by the percentage of votes won in the election, and parties are assumed to be new parties whose vote-share is counted independently to each election unless:

- 1) the exact same party ran with the exact same name in the previous election, in which case the party's vote-share is considered a continuation from the previous election
- 2) the exact same party ran with a different name in the previous election but was identifiable as the same party from the previous election, in which case the party's vote-share is considered a continuation from the previous election
- 3) a coalition forms, in which case the coalition's vote-share is counted as a continuation of the largest party's vote-share who ran independently in the previous election, all smaller parties that become a part of the coalition are counted as 0% independent vote-share
- 4) a coalition breaks apart, in which case the largest part as part of the coalition's vote-share is considered to be a continuation of the coalition's vote-share from the previous election and the vote-share of all smaller parties that were a part of the coalition are counted independently as new parties
- 5) coalitions that involve all new parties or all new fragments from previous parties or coalitions are considered new and independent parties in the coded data and are not a continuation of any previous election's vote-share
- 6) fragments of previous parties or coalitions that break off are counted as independent and new, in which case each such new party's vote-share is independent and not a continuation of any prior party's vote-share
- 7) when in coding instances such as #3-6 it is uncertain from names and percentages listed by national election returns or aggregated studies, as much information about the parties and individual election politics are obtained, or case studies from various policy and academic journals are used, to ascertain a party's independence status

Institutional changes are coded in one of five categories and then aggregated into a 0-5 point index for each inter-electoral period in each case. Categories 1, 2, and 5 are based on Roberts & Wibbels coding rules; Categories 1 and 4 are additional categories, coded based on the same rules but just expanding the measurement to parliamentary systems.

The five categories and their coding rules are as follows:

- 1) Early legislative elections are coded from 0-1 and are determined on a case-by-case basis in parliamentary systems only: 0 for regularly scheduled and held elections, 0.5 for elections held within 6 months of the regularly scheduled elections, 1 for elections held 6+ months before the regularly scheduled elections.
  - Although many parliamentary systems allow for early elections, only a limited subset receives scores greater than 0: countries must have constitutional or unwritten but explicit provisions for calling unpredictable and almost immediate early elections upon dissolution of the government due to votes of no confidence by one or both houses of the legislature. All other cases of early elections that are not due to government resignation or deposition, such as most European electoral

- laws that provide for legislative elections to be held “by a certain date” rather than, are not included as part of this measure of *Institutional Disruption*
- 2) Shortened presidencies are coded from 0-1 and are determined on a case-by-case basis in presidential systems only: 0 for regularly scheduled and held elections, 1 for elections held after a voluntary or forced early removal of the executive before the end of term.
    - Presidential resignations, assassinations, or any other voluntary or forced abdications of office are counted in this measure of shortened presidencies.
  - 3) New constitutions are coded from 0-1 and are determined on a case-by-case basis in both parliamentary and presidential systems: 0 for no change in the existing or introduction of a new constitution, 1 for a complete re-writing of the existing or introduction of a new constitution.
    - Constitutional reforms, especially those that do not address specifically representation or electoral concerns, do not count in this measure. A constitution must undergo massive re-writing or be a relatively distinguishable document from the prior constitution, otherwise this category is reserved for entirely new documents.
  - 4) Introduction of major electoral reforms is coded from 0-1 and is determined on a case-by-case basis in both parliamentary and presidential systems: 0 for no introductions of major electoral reforms to either the federal or national electoral system, 1 for introduction of major electoral reform(s) to either the federal or national electoral system.
    - Though there may be sub-national level electoral reforms in federal systems where balloting and elections are the province of sub-national governments, scoring in this dataset is limited to changes that affect the entire national system, whether through new reforms governing units in a federal system or nation-wide redistricting or other similar changes.
    - Re-weighting of seats per district do not count as major electoral reforms in this dataset unless they re-allocate more than 1/3 of the seats in the lower (or only) house of the national legislature, so population-to-seat redistributions are only counted when they redistribute at least 1/3 of seats from prior legislatures.
    - Expansions and contractions of the size of the legislature count as major electoral reforms, except when based on normal population expansion and districts remain relatively equally weighted.
  - 5) Expansion of suffrage to more than 25% of the population is coded from 0-1 and is determined on a case-by-case basis in both parliamentary and presidential systems: 0 for expansion of suffrage to 0-24% of the population, 1 for expansion of suffrage to 25+% of the population.

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