The Effect of Variance in District Magnitude on Party System Inflation

June 23, 2016

Abstract

We argue that one feature of electoral systems—variance in district magnitude—affects party system inflation by shaping coordination incentives across districts. Electoral systems with large variance in district magnitude generate different party systems in different districts in terms of the number and nature of parties due to their uneven permissiveness across districts. This dissimilarity in party systems across districts undermines elites’ incentives to get involved in cross-district coordination and leads to a poor linkage between the district- and national-level party systems (party system inflation). Through numerical simulations and an observational study, we demonstrate that variance in district magnitude is positively associated with inflation in party systems. In addition, we also show that the effect of variance on party system inflation is contingent on social heterogeneity. The marginal effect of variance in district magnitude becomes larger as social heterogeneity increases.

Keywords: Variance in District Magnitude, Party System Inflation, Cross-District Coordination
Party system inflation is the extent to which the number of parties at the national level is higher than the average number of parties at the district level (Cox 1999; Kasuya and Moenius 2008; Moenius and Kasuya 2004; Nikolenyi 2009).1 When electoral support is homogeneous throughout a country, the same parties will be able to realistically compete for seats in all, or most, districts in a country. In such a case, party system inflation tends to be low because party system in each district is similar to the party system for the entire country. In contrast, when supports for different parties are unequally distributed across districts, there is high variation in party systems across districts, which leads to inflation in party system.

In practice, the inflation of party systems is determined by a two-step process through which citizens’ preferences are converted into a national party system: within- and cross-district coordination (Cox 1997, 1999; Ferree, Powell and Scheiner 2014). In the first step, within-district coordination affects party systems at the district level. Electoral institutions have long been known to have an effect on the number of parties in a district (Duverger 1959). Duverger’s law famously states that electoral systems with single-member districts (SMD) will tend to have two parties, whereas proportional representation (PR) systems allow for multi-party systems. The constraining effect of district magnitude in the number of parties is the result of the interplay of three processes: the mechanical effect (the mathematical translation of votes into seats); entry coordination (losing parties coalesce or avoid entrance in anticipation of the mechanical effect); and strategic voting (voters avoid wasting their votes on losing candidates). In addition, many studies show that as social heterogeneity in

1Some authors provide a complex conceptualization of party nationalization. On one side, Morgenstern and Swindle (2005) and Morgenstern, Swindle and Castagnola (2009) suggest a two-dimensional conceptualization of party system nationalization: static—the extent to which a party’s level of support at any point in time is homogeneous across districts—and dynamic—the extent to which a party’s support levels increase or decrease in unison across districts over time. On the other side, Kasuya and Moenius (2008) provide a two-dimensional conceptual map of party nationalization consisting of two factors: inflation—the extent to which the average size of the district-level party systems is inflated to the national level—and dispersion—the extent to which the contribution to each district’s party system to the size of national level party system varies across district (Kasuya and Moenius, 2008: 127). Since the arguments regarding the nature of party competition are tied to the party competition at a single point in time and have a more direct connection to the aggregation in the number of parties, we focus on the static and inflation concepts of party system nationalization, for which we simply use the term party system inflation.
a country increases, the chances of malcoordination (hence of an increase in the number of entrants) also increase. Thus, social diversity determines the extent of party fragmentation at the district-level conditional on the permissiveness of the electoral rules (Cox 1997; Duverger 1959; Ferree, Powell and Scheiner 2014; Neto and Cox 1997; Ordeshook and Shvetsova 1994).

In the second step, cross-district coordination, or strategic coordination among actors from different districts, determines the projection of party systems at the district level onto the national level. To put it in a different way, this stage affects the linkage between the district- and national-level party systems (Cox 1999; Moenius and Kasuya 2004). An extensive literature shows that factors like the salience of politically relevant cleavages (Brancati 2006, 2008; Caramani 2004; Golosov 2014), vertical decentralization of power through federalism and fiscal decentralization (Chhibber and Kollman 1998, 2009; Cox 1999), horizontal decentralization of power through bicameralism, party disunity, and reserved domains (Hicken 2009; Hicken and Stoll 2011), and others condition political elites’ incentives to engage in cross-district coordination and how party systems at the district level are translated into party systems at the national level. Therefore, it is the combination of within- and cross-district coordination that influences the level of party system inflation at the national level.

While we know much about the effects of electoral institutions on within-district coordination among district-level actors (Clark and Golder 2006; Singer and Stephenson 2009), what is largely missing in the literature is how electoral institutions affect cross-district coordination. The existing studies on cross-district coordination often examine the role of non-electoral institutions, such as federalism, bicameralism, and presidentialism, but pay an insufficient attention to electoral rules (Chhibber and Kollman 1998, 2004; Hicken 2009). As a result, we know little about how electoral institutions themselves affect the merging of party systems across districts to form party systems at the national level. This paper

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2Therefore, in this theoretical framework, local elites at the district level organize local parties first, and then they patch some of these local parties together into a large national party (Cox 1999; Moenius and Kasuya 2004).
fills this gap by arguing that electoral systems matter not only to within-district but also to cross-district coordination. However, we claim that a feature of electoral institutions that affects the latter is different from the one influencing the former. That is, while district magnitude is the primary factor shaping within-district coordination and competition (Cox 1997; Duverger 1959), it is variance in district magnitude that conditions cross-district coordination and inflation in party systems at the national level.

Electoral systems in different countries have different variance in district magnitude depending on how legislative seats are allocated to each district (Kedar, Harsgor and Sheinerman 2016; Monroe and Rose 2002). Countries with the nation-wide district, like Israel and the Netherlands, do not have variation in district magnitude simply because electoral competition is held under the single district. Similarly, there is no variation in district magnitude in countries with SMD systems because every district has the number of a legislative seat equal to 1, as is the case in India and the United States. In contrast, other countries exhibit great within-country variation in the size of districts. Under PR systems, the most commonly used systems in the European countries, it is typical to see that some districts have only few seats, while others are assigned to a large number of seats. Importantly, in these countries, there is a wide variation in ways in which seats are distributed to each district, which leads to different variance in district magnitude across countries. For example, in Portugal (2009), the size of districts ranges from 2 to 47, whereas in Norway (2009), it ranges only from 4 to 17. Consequently, the former has a larger variance in district magnitude than the latter.

When a country has large variance in district magnitude, it implies that there exists great unevenness in the permissiveness of electoral rules across districts and that district-level actors have different degrees of incentives to engage in within-district coordination. On the one hand, less permissive, small-magnitude districts provide elites and voters at the district level with strong pressures to coordinate with each other in terms of strategic entry and voting. On the other hand, more permissive, large-magnitude districts allow district actors not to have such incentives. What follows in such a country is that, due to unequal
openness in electoral systems, there emerges different party systems across districts, with the latter districts having more parties than the former. When it comes to the stage of cross-district coordination, the dissimilarity in party systems makes it more difficult for elites from different districts to coordinate with each other because of the great discrepancy in the number and types of parties coming from each district. The failure in cross-district coordination in turn leads to a poor linkage between district and national party systems, i.e. inflation in party system. In short, large variance in district magnitude brings about party system inflation first by generating different party systems across district and second by forestalling cross-district coordination.

To test our theoretical expectation, we rely on two strategies. First, we carry out a simulation exercise to illustrate the effects of variance in district magnitude on the inflation of party systems in a fully controlled environment. Simulation results show the strong positive association between variance and the inflation in party systems (poor cross-district linkage). Second, we continue our empirical examination by testing our hypothesis with observational data from 36 elections. Empirical results confirm our theoretical argument, revealing the same pattern as the simulations. Compared to countries with lower variance in district magnitude, countries with higher variance in district magnitude are likely to have larger inflation in party systems at the national level vis-à-vis the average number of parties at the district level. Further, our empirical evidence also suggests that the variance effect is greater when social heterogeneity is higher.

The rest of the paper proceeds as follows. The next two sections discuss the existing literature on coordination mechanisms and party system inflation and present our theoretical expectations. The fourth section tests our theoretical arguments with simulated data in a fully controlled environment. Our fifth section moves to the empirical part of the paper, where we present our findings from real-world data in 36 elections. The final section concludes the argument.
Cross-District Coordination and Party System Inflation

Party system inflation is a function of two distinct mechanisms, within- and cross-district coordination among electoral competitors and voters. In the first place, the number of political parties within districts is determined by the mechanical effect of electoral systems to translate votes into seats and the psychological incentives among elites and voters at the district level to coordinate through strategic entry or voting (Cox 1997, 1999; Duverger 1959; Ferree, Powell and Scheiner 2014). Following Duverger’s Law and Cox’s “M + 1” rules, the rich literature in comparative electoral studies shows that district magnitude and social heterogeneity jointly affect the level of within-district coordination and the district-level number of parties (Clark and Golder 2006; Neto and Cox 1997; Singer and Stephenson 2009). In particular, these studies suggest that restrictive electoral systems with low district magnitude, such as single-member district (SMD) systems, decrease the number of parties within districts by encouraging strategic coordination among various local actors (Blais and Carty 1991; Gaines 1999). In contrast, permissive electoral systems with high district magnitude, like proportional representation (PR) systems, allow the number of parties to increase at the district level if social heterogeneity generates pressures to form additional parties (Potter 2014; Singer and Stephenson 2009).

Although it is often tempting to apply the within-district logic of electoral coordination to the explanation about party systems at the national level (Benoit 2001; Clark and Golder 2006; Lublin 2015; Mozaffar, Scarritt and Galaich 2003; Ordeshook and Shvetsova 1994; Remmer 2008; Taagepera and Shugart 1989; Stoll 2007), such extension should be approached with some caution. Strictly speaking, Duverger’s (1995) and Cox’s (1997) propositions are primarily limited to the electoral competitions at the district level, and the district-level coordination should be considered as just an intermediate step for the formation of party systems at the national level (Ferree, Powell and Scheiner 2014; Moenius and Kasuya 2004). When it comes to the number of parties at the national level, we have to take into account
another dimension of strategic coordination, namely cross-district coordination (Chhibber and Kollman 1998, 2004, 2009; Hicken 2009). Cross-district coordination is a concern about how actors from different districts coordinate with each other, and it directly affects how party systems in different districts are aggregated into single party systems at the national level. Success or failure of cross-district coordination, therefore, determines how the district-level number of parties is projected into the national level and the extent to which party systems are inflated. Successful cross-district leads to a strong linkage between district and national party systems (low inflation), whereas failure to do so results in a poor linkage between the two (high inflation).

Factors that affect within-district coordination can also affect the level of cross-district coordination. Most obviously, social heterogeneity that affects within-district coordination should also have an impact on the extent to which political actors from different districts coordinate with each other beyond district boundaries (Caramani 2000, 2004; Golosov 2014). The different degrees of social cleavages either facilitate or hinder cross-district coordination and how the district-level party systems are aggregated into the national-level party system. In the similar vein, democratic experience is also important for both within- and cross-district coordination (Moser and Scheiner 2012; also Tavits and Annus 2006). Where parties do not have strong ties to voters due to the lack of democratic experience, it becomes markedly more difficult for elites coming from different locations to find incentives to coordinate beyond their own districts.

In contrast, some factors matter only to cross-district coordination, but not to within-district coordination. Cox (1997), for example, points out the importance of the concurrence between the presidential and legislative elections. When the elections for the two branches coincide, political actors from different districts have greater incentives to work together in order to elect the president whom they most prefer. Second, the extent to which the power of the central government is concentrated also has an important implication for cross-district coordination (Brancati 2006, 2008; Chhibber and Kollman 1998, 2004). Federalism and fiscal
decentralization, by empowering subnational actors, undermine the vertical centralization of power as well as aggregation incentives, which lead to large inflation in party systems. Further, Hicken (2009) contends that it is important to consider the horizontal concentration of power to explain incentives for cross-district coordination. The extent to which power is diffused within the central government through bicameralism, party disunity, and reserved domains, is associated with district elites’ incentives to engage in cross-district coordination. When the power of the central government is horizontally dispersed, inflation in party systems tends to be higher (also see Hicken and Stoll 2011).

When it comes to the inflation of party systems, therefore, it is important to focus not only on within-district coordination, as famously articulated by Duverger (1959) and Cox (1997), but also on cross-district coordination. As discussed above, several studies try to identify factors that affect cross-district coordination. What is missing in these studies is, however, an attention to the role of electoral systems in shaping cross-district coordination among political actors. To the best of our knowledge, little research explores how electoral rules themselves affect the level of cross-district coordination. The inattention to electoral systems may be surprising given the fact that scholars fully acknowledge the role of electoral systems—i.e. district magnitude—in determining electoral coordination within districts. Our aim is to demonstrate that electoral systems also matter to the level of cross-district coordination. To do so, the next section advances a theory about why a certain aspect of electoral systems should affect cross-district coordination and therefore the inflation of party systems at the national level.

The Variance Effect on Party System Inflation

Although it has received little attention, variance in district magnitude is an important aspect of electoral systems with great cross-national variation, and a few studies demonstrate that it has an important political ramification (Kedar, Harsgor and Sheinerman 2016; Monroe...
and Rose 2002). Monroe and Rose (2002) claim that variance in district magnitude accounts for the unequal representation of geographical interests between the urban and rural areas. Since the urban districts tend to have larger district magnitude than the rural districts, the interests of the latter are more easily translated into effective parliamentary representation than the ones of the former. Monroe and Rose (2002) find that because of the variance effect, the rural interests receive greater representation than the urban interests, the rural parties are less fragmented than the urban parties, and therefore the former are systematically advantaged than the latter. Kedar, Harsgor and Sheinerman (2016) also show that large variance in district sizes leads to overrepresentation of right-leaning parties. In the European countries, according to Kedar, Harsgor and Sheinerman (2016), small-magnitude districts are concentrated into the rural, conservative areas, and the larger variance in district magnitude, the more likely is voter support for right-wing parties overconverted into legislative seats. In contrast, more proportional, large-magnitude districts in the urban areas preclude voter support for left-wing parties from being effectively represented in the parliament.

Building on these arguments, we claim that variance in district magnitude is also consequential for cross-district coordination and party system inflation. As Kedar, Harsgor and Sheinerman (2016) and Monroe and Rose (2002) argue, having varying sizes of districts within a country is essentially equivalent to the notion that electoral competitions take place under very different institutional environments. This implies that the permissiveness of electoral rules differs across districts and also that district-level actors’ incentives to engage in within-district coordination vary district by district. In districts with small magnitude, on the one hand, electoral competitions approximate the majoritarian system, and strategic coordination among district elites and voters suppresses the number of parties. On the other hand, in other large-magnitude districts, elites and voters at the district level are faced with less pressures to get involved in strategic coordination, which should amplify the number of parties. As a result, due to the different levels of within-district strategic considerations, electoral systems with varying sizes of districts should generate different party systems at
the district level. In particular, the larger variance in district magnitude, the more are party systems across districts dissimilar with each other.

Once climbing up to the stage of cross-district coordination, the dissimilar party systems generated by large variance make it difficult for elites from different districts to coordinate with each other. At the most basic level, high variation in magnitude leads to the different numbers of parties in different districts. The discrepancy in the number of parties across districts means that the number of local parties that have to take part in cross-district coordination differs in each district. Simply because local elites from different districts do not have similar aggregation incentives, the imbalance in the number of participants coming from different districts makes cross-district negotiation less manageable. Similarly, high variance in district magnitude also facilitates different types of parties to emerge in different districts. That is, electoral systems with large variance allow some parties to emerge only in some permissive, large-magnitude districts, but not in others. Since these parties would not contest were it not for high variance in district magnitude, the aims of and voter support for these parties are often localized.\(^3\) Due to limited aims and support, elites in these parties have little aggregation incentives when it comes to cross-district arrangement.

Therefore, large variance in district magnitude generates different party systems across districts in terms of both the number and types of parties. Because of the dissimilarity in party systems across districts, there are varying incentives in the extent to which elites from different districts are willing to get involved in cross-district coordination. The unequal incentives to coordinate beyond the district boundaries eventually lead to a poor linkage between the district- and national-level party systems and therefore inflation in party systems:

\[H1: \text{Variance in district magnitude is positively associated with party system inflation.}\]

Note that we should observe this effect regardless of whether within-district coordination is

\(^3\)Hence, we should expect that under electoral systems with high variance in district magnitude, regional parties would be more likely to emerge in large-magnitude districts, other things being equal (Brancati 2008).
successful or not. That is, even when the “M + 1” rule perfectly functions in all districts, large variance in district magnitude should make some political parties more likely to deviate from aggregation incentives across districts. The core argument of the variance effect is that the unequal application of strategic coordination within different districts brings about the failure in cross-district coordination.

As discussed in the previous section, whether electoral institutions have a positive effect on the number of parties at the district and national level is contingent on social heterogeneity (Clark and Golder 2006; Lublin 2015; Neto and Cox 1997; Potter 2014; Singer and Stephenson 2009). In conjunction with this argument, we expect that variance in district magnitude affects party system inflation is conditional on the presence of social cleavages in a country. Where the degree of social heterogeneity is high, the difficulty in cross-district coordination induced by the unequal sizes of districts should be more serious than when the degree of social heterogeneity is low. Hence, variance in district magnitude and social cleavages should have an interactive effect on the inflation of party systems:

\[ H2: \text{The marginal effect of variance in district magnitude is greater when social heterogeneity is higher.} \]

Research Design

In order to test our hypothesized relationship between variance in district magnitude and party system inflation, we employ two different strategies: a set of numerical simulations and a cross-national study using observational data.

Numerical simulations are useful in understanding the causal mechanism in two situations: a) when uncertainty in the outcomes derive from sparse data; and, b) causality is hard to assess because the units of interest cannot be manipulated. Simulations are well-suited to assess the effect of our hypotheses because district magnitudes and social cleavages

\[ 4 \text{For example, parties that are allowed to enter only in high-magnitude districts will have weak aggregation incentives if they perceive that in other districts they are not able to compete effectively.} \]
cannot be subject to exogenous manipulation and the sample for analysis is naturally limited by the current number of democratic countries and elections in the world. Moreover, numerical simulations also ensure that all contingencies and combination of parameters are covered in our empirical evaluation, even if they are apparently unlikely situations. For all these reasons, we rely on a set of numerical simulations to generate hundreds of hypothetical countries with varying key features of their electoral systems and their social heterogeneity to see how changing each of these components leads to shifts in the inflation of parties at the national level. This allows us to test our hypothesized relationship in a perfectly controlled environment.

Additionally, we check our basic results from the simulations against a more traditional observational study using data from 36 elections in advanced democracies. This analysis enables us to examine that our findings from the simulated data can be generalized to real-world data. In this, we test whether variance in district magnitude has an effect on the inflation in the number of parties at different levels of ethnic fractionalization after adjusting for relevant confounders.

In this section, we detail our operationalization strategy for our variables of interest and conditioning variables that are common to both the numerical simulation exercise and the actual electoral data analysis. We keep some aspects of our research design that are specific to each strategy to their own sections.

**Dependent Variable**

Party system inflation is measured as the extent to which the number of parties at one level of aggregation (nation) differs from the number of parties at another level of aggregation (district).\(^5\) Three measures are most widely used in the studies on the inflation of parties.

\(^5\)In a related literature, some scholars measure the electoral strength of parties across all districts (e.g., for Gini-based indicators, see Bochsler (2010a) and Jones and Mainwaring (2003)) or the extent to which parties compete in all districts (e.g., for candidate entry indicators, see Lago and Montero (2014)). Notice, however, that we are not necessarily interested in the process whereby parties draw their electoral support equally across districts or candidates entry in all districts, but in the impact it has on the inflation in the
First, Chhibber and Kollman (1998, 2009) offer a simple measure that follows very closely the intuition behind the concept of inflation. In their view, we should measure the inflation in the national party system with respect to the districts as the difference between the effective number of parties at the national level compared to the average of the effective number of parties at the district level. The second and third measures are merely arithmetic extensions to this initial intuitive measure. On the one hand, Cox (1999) extends it by converting it in an index that takes into account the relative increase in the number of parties at one level with regards to the number of parties at a lower level. On the other hand, Moenius and Kasuya (2004) argue that Cox’s Index lacks the properties associated with an inflation index that incorporates the properties of an inflation rate. Thus, they suggest their own Inflation Index. Regardless of the measure, they all capture the same theoretical construct and are empirically highly correlated.\(^6\)

In this paper, we choose to measure party system inflation with Chhibber and Kollman’s measure since it provides the most intuitive understanding. We find it to be the most desirable measure because it is the most straightforward and more readily interpretable than the other two. Moenius and Kasuya’s and Cox’s indices are rescaled by the effective number of parties at the either national or district level, and which makes them somewhat unintuitive. Chhibber and Kollman’s index can simply be understood as a measure of how many more parties are represented on the national stage than are represented in the average district. Besides, since there is a high correlation among the three measures, we do not expect major variations in our findings depending on which was chosen.\(^7\) In the following simulation section, we calculate party system inflation in terms of the number of seats obtained by parties, whereas in the empirical part, we measure party system inflation in terms of the party system at the national level with regards to the party systems at the district level. Therefore, we believe inflation measures best characterize the nature of a country’s party system, which constitutes our outcome of interest.

\(^6\)The three measures are correlated at a Pearson’s correlation of 0.90 or higher.

\(^7\)In the appendix, we check the robustness of our findings in both the results from the simulations and the observational data using the other two measurements. Findings are substantively unaltered by the measure of the dependent variable (see Table A1, A2, A4, and A5).
number of seats as well as vote share.

**Key Independent and Conditional Variables**

Our key independent variable is the within-country variation in district magnitude. To measure it, we calculate variance in the distribution of district magnitudes ($\sigma^2$) as follows:

$$\sigma^2_j = \frac{\sum (M_{ij} - \bar{M}_j)^2}{N_j}$$

where $\sigma^2$ is the variance for country-election $j$; $\bar{M}$ is the magnitude in district $i$ within country-election $j$; $\bar{M}$ is the average district magnitude in country-election $j$; and $N$ is the number of districts in country-election $j$.

The conditional variable in our models is a country’s ethnic fractionalization (Brancati 2006, 2008; Cox 1999; Crisp, Olivella and Potter 2013). Hypothesis 2 expects that the effect of variance in district magnitude within a country will lead to an inflated number of parties only if there is sufficient heterogeneity of preferences within a country to allow for that. To measure a country’s level of social fractionalization, we rely on a traditional measure in the literature on social cleavages and party systems, *ethnic fractionalization*. It measures the degree of ethnic, linguistic, and religious heterogeneity in a country (Alesina et al. 2003). Thus, this measure captures the potential for multiple dimensions of political conflict in a polity. Following Morgenstern, Swindle and Castagnola (2009), both our numerical simulations (see Scenario 3 below) and analysis with observational data incorporate heterogeneity of preferences and examine on the relevance of the fractionalization of voters’ preferences in a country.

In the following sections, we first conduct a set of numerical simulations and show that regardless of different assumptions about the distribution of voters’ preferences, increased variance in district magnitude leads to the inflation in party system. Then, we move to

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8Using a variance effect measure $\tau$ that adjusts for the average district magnitude ($\tau \equiv \sigma(M)/M_{average}$) does not substantively change any of the empirical findings.
our empirical analysis with 36 cases and present that the same relationship holds in the real-world elections.

**Numerical Simulations**

In order to illustrate how variance in district magnitude affects party system nationalization, this section conducts a set of numerical simulations. We generate hundreds of hypothetical electoral systems with different variances in district magnitude and simulate how election results would look like under various scenarios. The advantage of this approach is that it allows us to observe how the inflation in the party system would change if election was held using electoral systems with different levels of variance in district magnitude.\(^9\) Controlling and conditioning for a country’s ethnic fractionalization, our simulations highlight how increases in variance in district magnitude lead to the inflation in party system.

The first step of our simulations is to create hypothetical electoral systems with different variances in district magnitude. To do so, we assume a hypothetical country with 500 legislative seats in 100 districts and (nearly) randomly generate 100 numbers that sum up to 500. Each of these 100 numbers is the number of seats in a district. Then, we repeat the same process for 500 times and obtain 500 different combinations of 100 numbers, which represent 500 different electoral systems. Since the different combinations of numbers lead to different variances, our 500 electoral systems have different levels in variance in district magnitude. In these hypothetical electoral systems, the mean variance in district magnitude is 34.96, the minimum is 0 (every district has 5 seats), and the maximum is 71.52. In generating hypothetical electoral systems, we especially care about creating systems that are consistent with ones in our empirical data in terms of the variance in district magnitude. Hence, the minimum and maximum values of our variances are close to variances in the data we use in the empirical part of this paper (see descriptive statistics for our empirical data in Table A3)

\(^9\)For similar studies that use the simulation approach to electoral rules, see Ziegfeld (2013).
After generating the 500 electoral systems with different variances in district magnitude, the next step is to determine the hypothetical distribution of voters’ preferences in each of the 100 districts. As we describe in more detail in the following sections, we create the distribution of voters’ preferences under three different scenarios and examine how the variance in district magnitude affects the inflation in party system in each of these scenarios. It is important to note that while we simulate hypothetical elections in the three different settings, all of these scenarios have several common features. First, in all the scenarios, we have 500 legislative seats with 100 districts. This means that the mean district magnitude is always held constant to 5. Second, we assume that in all the scenarios, 15 parties compete nominally, although in most cases only some of them effectively compete in the districts. Third, the hypothetical country uses a proportional representation (PR) system, and legislative seats are allocated based on the d'Hondt formula, which is the most commonly used form of seat allocation in PR systems. Finally, for the sake of simplification, we assume that the number of voters is same across all the districts, and they vote sincerely. That is, regardless of district sizes, voters do not engage in strategic coordination in our simulation.

The next three sections describe the different patterns of the distribution of voters’ preferences under different scenarios and present the results of our simulations.

**Scenario 1: Homogeneous Preferences**

The first scenario assumes that the 100 districts in the hypothetical country have the exactly same distribution of voters’ preferences. To put it in another way, the vote share of each

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10 Besides, we make sure that the distribution of variance becomes flat. That is, across different levels of variance in district magnitude, we have a similar number of observations.

11 Since it is well known that the mean district magnitude has a number of implications for the functioning of electoral systems, keeping it constant at a medium-low level allows our numerical example to focus on the role of district magnitude variance alone.

12 Voters’ strategic coordination is certain a major force to determine party systems at the district level in real-world situations, and to ignore this might lead to the overestimation the upper bound of the variance effect on party systems. However, it is not very clear how variance in district magnitude affects the level of strategic coordination among voters.
Table 1: Summary of the Numeric Simulations under Three Scenarios

<table>
<thead>
<tr>
<th>Distribution of Voters’ Preferences</th>
<th>Scenario 1</th>
<th>Scenario 2</th>
<th>Scenario 3</th>
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<tbody>
<tr>
<td>Preferences across Districts</td>
<td>Same</td>
<td>Different</td>
<td>Different</td>
</tr>
<tr>
<td>Fractionalization of Preferences</td>
<td>Same</td>
<td>Same</td>
<td>Different</td>
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<tr>
<td>across Countries</td>
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</tbody>
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| Other Factors held to Constant     |            |            |            |
| Number of Seats                    | 500        | 500        | 500        |
| Number of Districts                | 100        | 100        | 100        |
| Mean District Magnitude            | 5          | 5          | 5          |
| Number of Parties                  | 15         | 15         | 15         |
| Electoral System                   | PR system with the d’Hondt formula | PR system with the d’Hondt formula | PR system with the d’Hondt formula |
| Number of Simulations              | 500 systems × 1 country | 500 systems × 300 countries | 500 systems × 300 countries |

Note: The table summarizes the three scenarios. In the last row, systems mean electoral systems with different variances in district magnitude, and countries mean countries with different distribution of voters’ preferences.

...party is constant across all the districts regardless of the sizes of districts. This means that the distribution of voter support in each district is same with the distribution of voter support at the national level. The first scenario is summarized in the first column in Table 1.

Using these districts with the same preferences and the 500 electoral systems with difference variance in district magnitude, we simulate the number of seats obtained by each party in 500 hypothetical elections. After obtaining the number of seats for each party at the district and national level, we calculate the inflation in party system using the seat share of each party on the basis of the deviation index (Chhibber and Kollman 1998, 2004).

To graphically illustrate the variance effect, the top panel in Figure 1 reports the result of the simulation from the first scenario. Each point represents Chhibber and Kollman’s (1998, 2009) inflation index corresponding to each variance in district magnitude, and the red line...

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13 The vote share of each party for this simulation is the following: Party A, 25%; Party B, 23%; Party C, 18%; Party D, 9%; Party E, 7%; Party F, 4%; Party G, 3%; Party H, 3%; Party I, 2%; Party J, 1.5%; Party K, 1.2%; Party L, 1.1%; Party M, 0.1%; Party N, 0.07%; and Party O, 0.05%.

14 See details in the research design section above. Notice that we use the seat share of each party, instead of vote shares, because in our simulation, we fix the number of voters across districts. In the empirical analysis, we use both the vote shares of parties and the seat shares of parties to calculate our outcome variables.
shows a loess curve. As it suggests, the inflation in party system follows a steadily positive curvilinear shape along shifts in the variance in district magnitude. Hence, the association rate between variance in district magnitude and the inflation in party system is steeper at lower values of variance, and then slightly flattens as variance in district magnitude reaches higher values.\textsuperscript{15} Besides, we also fit a simple OLS regression using Chhibber and Kollman’s (1998, 2009) measurement as a dependent variable and variance in district magnitude as an explanatory variable. The result is reported in Table A1 in the appendix, which again suggests the positive association between variance in district magnitude and the inflation of party system at the statistically significant level.

**Scenario 2: Within-Country Heterogeneous Preferences**

In the second scenario, we allow voters’ preferences to vary across the 100 districts. In order to generate the varying distribution of voters’ preferences, we take two steps. First, we (nearly) randomly assign the vote share of each party in our 100 districts. As a result, each district has a different pattern of party support. In this process, we obtain three types of districts. In the first type, one party gains more than the majority support, and the rest of votes are roughly equally cast to the other 14 parties. In the second type of districts, two to three main parties obtain approximately 30 to 40 percent of votes, and the other 12 to 13 parties split the remaining votes. And in the third type of districts, all the parties are equally competitive, and none of them has a clearly strong position.

In the second step, we “randomize” the order of the 100 districts with different distribution of voters’ preferences. To give an intuitive understanding of this process, suppose that when we generate the 100 districts in the previous step, we essentially create a 100×15 matrix, whose rows are districts and columns are parties. What we mean by randomizing the order of the districts is to randomly change the order of the rows in the matrix. By

\textsuperscript{15}Due to space constraint, we do not present the simulations using the other two measurements. However, the results of simulations are strikingly similar regardless of whether we use the Cox’s Index or Moenius and Kasuya’s Inflation Index.
Figure 1: Simulated Variance Effects Across Scenarios

(a) Scenario 1: Homogeneous Preferences

(b) Scenario 2: Within-Country Heterogeneous Preferences

(c) Scenario 3: Within and Across Country Heterogeneous Preferences
doing this, we do not change the overall vote share of each party at the aggregate level but change the level of support for each party in a given district. Repeating this process for 300 times, we obtain 300 “countries”, across which the distributions of voters’ preferences at the district level vary (yet the overall distributions of party support are all same at the national level). The purpose of this randomization is to assure that in some hypothetical elections, high district magnitude is allocated to more competitive districts, while in other hypothetical elections, high district magnitude is allocated to less competitive districts. The second scenario is summarized in the second column in Table 1.

Using the 300 countries with the different distributions of preferences and the 500 electoral systems, we again simulate the number of seats obtained by each party in 500×300 hypothetical elections. As the middle panel in Figure 1 shows, even after we take into account the different distribution of voters’ preferences across districts, the effect of variance in district magnitude is consistent with the one in the first scenario. Variance in district magnitude increases the inflation in party system.\(^{16}\)

**Scenario 3: Within and Across Country Heterogeneous Preferences**

Similar to the second scenario, we assume in the third scenario that voters’ preferences vary across the districts. However, in this scenario, we further incorporate the assumption that the extent to which the distribution of party support at the aggregate level fractionalizes could vary across different cases. For instance, in some extreme cases, we could expect that all the districts are highly competitive, and therefore party system in every district is highly fractionalized, which leads to the high fractionalization of party support at the national level. On the other hand, in other extreme cases, we could anticipate that all the districts are dominated by a single party, and the level of the overall fractionalization at the aggregate level is quite low.

The third scenario takes into account this point by varying the degree of fractionalization

\(^{16}\)For a simple OLS fit of the simulation, see Tables A1 in the appendix.
of part support across the 100 districts. To do so, recall that there are three types of
districts in the second scenario: one-party dominant districts (type-one), two- or three-party
dominant districts (type-two), and districts with no dominant party (type-three). In this
scenario, we randomize the proportion of each type of district and generate 300 patterns of
the 100 districts with the different distributions of voters’ preferences as well as the different
degrees of vote fractionalization. For example, one extreme case of highly competitive system
should have 100 type-three districts, while another extreme case of single-party dominant
system should have 100 type-one districts. Hence, across these 300 countries, the extent to
which voters’ preferences are fractionalized varies significantly. For the sake of consistency,
our country-level measure of fractionalization in voters’ preferences used here parallels the
measure of ethnic fractionalization provided by Alesina et al. (2003) and used in the analysis
with observational data. The third scenario is summarized in the last column in Table 1.

Using these 300 countries with the different degrees of voter fractionalization and the
500 electoral systems, we simulate the number of seats obtained by each party in 500×300
hypothetical elections. The bottom panel in Figure 1 still suggests that the relationship
between variance in district magnitude and Chhibber and Kollman’s (1998, 2009) inflation
index is positive, even though the effect is not as strong as the ones in the previous two
simulations.\footnote{For a simple OLS fit of the simulation, see Table A2 in the appendix.}

Overall, the numerical simulations confirm our theoretical expectation. We show that
increases in variance in district magnitude result in party system inflation regardless of
the different assumptions about the distribution of voters’ preferences across districts. At
least under PR systems with the d’Hondt formula, the different sizes of districts lead to
the unequal application of within-district coordination, and which causes a wide diversity
in party systems across districts. The diversity in party systems at the district level in turn
inflates the effective number of parties represented at the national level.
Analysis with Observational Data

In our empirical study, we assembled a dataset on district-level vote share and seat share for each party primarily from the Global Elections Database (Brancati 2014), supplemented with additional data gathered from various sources. The unit of analysis of our empirical study is a country-election. Our dataset consists general elections held in 19 primarily OECD countries from between the years 1996 and 2005, for a total of 36 elections. As we will see below, the cases selected have sufficient variation across our dimensions of interest: the nature of their party systems, the variation in their district magnitude, their average district magnitude, and the social heterogeneity in the country. In short, our cases provide us with the widest possible range of district magnitude variance in modern, developed democracies for which all relevant data are available.

Control Variables

Whilst the simulation exercise did not require confounders due to the experimental nature of the data generation process, we do need to control for confounding factors when using observational data. Thus, we provide here the rationale for the inclusion of each of the control variables in our observational analysis, including heterogeneity in the governing party support, federalism and fiscal decentralization, average district magnitude, and democratic experience.

Even though territorial socioeconomic differences are rarely measured in the literature, Crisp, Olivella and Potter (2013) provide a proxy measure for it. The authors use survey data

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20. Mixed electoral system are included by putting together SMD and PR districts in the same count.
from the Comparative Study of Electoral Systems (CSES) to construct a measure of *cross-district constituency similarity* as a composite index of demographic characteristics regularly linked to political preferences: age, income quintiles, education level, employment status, urbanness of the place of residence, and union participation of survey respondents. This captures variation in district preferences in a country’s main cleavage, the socio-economic or the left-right cleavage. Although the measure from Crisp, Olivella and Potter (2013) only refer to the distribution of preferences among the supporters of the party in the government, it is informative about cross-district heterogeneity of preferences within a single country in this economic dimension given that the governing party generally competes in this first dimension. Notice that the prior studies on the inflation in party systems do not typically include this measure in their analysis since they assume that the inflation does not occur when increasing diversity in economic preferences, but when the second dimension issues not absorbed in the left-right scale—subnational identities religious groups—become cleavages for party formation.  

Another important set of controls has to do with the territorial distribution of power within a country. The rationale behind this argument is that decentralization provides stronger incentives for parties and candidates to compete locally as it increases the resources under the control of regional and local governments. Although there is some empirical evidence to support this thesis (Brancati 2008; Harbers 2009), there are also a number of empirical studies that find a null effect (Bochsler 2010b; Hopkin 2009; Lago-Peñas and Lago-Peñas 2011). In any case, and even though the direction of the effect is not clear, we include the measures of federal systems and fiscal decentralization, provided by Treisman (2007) and also used by Crisp, Olivella and Potter (2013).  

Importantly, whilst the major determinant of district-level coordination is the *average of district magnitude* (Cox 1997), it is not obvious whether it also has an effect on cross-

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21 Likewise in a Downsian world, the rationale is that the main parties can successfully capture diversity of preferences along one dimension, which means little impact in the inflation of parties at the national level; yet it becomes more difficult once the number of dimensions increases.
district coordination. In fact, we expect that it is variance in district magnitude but not the mean district magnitude that causes the inflation in party systems. Nevertheless, if anything, we should expect a positive association between the average district magnitude and party system inflation because the permissiveness of electoral institutions should enhance the proliferation of political parties (Clark and Golder 2006; Singer and Stephenson 2009). Therefore, we should expect either no effect or a positive effect of a country’s average district magnitude on the inflation in the number of parties at the national level.

Finally, the amount of time a party system has had to spread their support throughout the country and adjust to the consequences of their electoral institutions should also affect the likelihood of within-district coordination, but also, and more importantly for our paper, cross-district coordination (Caramani 2000, 2004; Mainwaring and Zoco 2007; Morgenstern, Swindle and Castagnola 2009). Therefore, we include a variable, democratic experience, that indicates the number of elections that a country has experienced since its last transition toward democracy. Descriptive statistics are presented in Table A3 in the appendix.

Findings

As a reminder, our argument is that within-country variance in district magnitude will be positively associated with the inflation in party systems at the national level. We have seen that our theoretical expectation aligns with the results from the hypothetical simulations, where the effect of variance in district magnitude is assessed in a controlled manner. Extending the findings from the simulations, this section tests this relationship with empirical cross-national data.

Table 2 displays the results from a set of ordinary least squares. The first model shows the effects of the key independent variable and the control variables on the inflation in party systems, which is measured by Chhibber and Kolleman’s Deviation Index based on the vote shares of parties. Since we expect this effect to become stronger as a country’s social heterogeneity increases, we add an interaction term between variance in district magnitude
and ethnic fractionalization in the second model. Models 3 and 4 repeat the same exercises using the seat shares of parties to measure the Deviation Index, as we did in the simulation section. Since the statistical significance of the relationship and the magnitude of the effects remain unaltered regardless of whether we use parties’ vote shares or seat shares, we focus on the first two models in the following discussion.22

Consistent with our theoretical expectation and simulation-based empirical findings, the effect of within-country variance in district magnitude is positive and strongly significant, both statistically and substantively, in the unconditional model. According to Model 1, all else at their means, a country whose variance in district magnitude is the highest in the sample—Portugal with a variance of 141—has an expected value in the Deviation Index of 0.76, which is substantially greater than the expected value of 0.30 in their Deviation Index for those countries like Canada, the United Kingdom and the United States that show no variation in their district magnitude.23 Thus, while we expect a no-variance country to have a Chhibber and Kollman’s Index of 0.30, a country with an average level of within-country variance would be expected to have a deviation index of 0.53 and the country with the highest variance of 0.76 (see Panel a in Figure 2). In other words, our model predicts that the variance in the district magnitude alone is responsible for an increase of 0.43 in the effective number of parties at the national party system as compared to the average number of parties at the district level, after adjusting for the major determinants of party system inflation such as social cleavages, cross-district preferences, the territorial structure of the state, average district magnitude, and the experience of the country with elections.

In addition to the unconditional effect of variance in district magnitude, we are also interested in the conditional effect of variance given the heterogeneity of preferences in the

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22 Also note that our results are not altered by using Cox’s and Moenius and Kasuya’s inflation index. See Table A4 and Table A5 in the appendix for further details about the results across the different dependent variables.

23 Although we generate the predicted values based on Chhibber and Kollman inflation index because it is the most intuitive measure, the magnitude of changes in the predicted values are similar across the three measures. In addition, the magnitude of the effects are similar whether we use parties’ vote shares and seat shares (see models 3 and 4). Here, we focus on the vote shares’ measure in our interpretation because this is the most widely used in the literature of party system inflation.
Table 2: The Effects of Variance of District Magnitude and Social cleavages on the Inflation of the Party System

<table>
<thead>
<tr>
<th></th>
<th>Parties’ vote share</th>
<th>Parties’ seat share</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td><strong>Key Independent Variable</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variance in District Magnitude (logarithmic scale)</td>
<td>0.096* (0.048)</td>
<td>−0.003 (0.073)</td>
</tr>
<tr>
<td><strong>Control Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethnic Fractionalization</td>
<td>3.148*** (1.123)</td>
<td>2.830** (1.100)</td>
</tr>
<tr>
<td>District Heterogeneity (government party supporters)</td>
<td>3.000** (1.220)</td>
<td>3.580*** (1.223)</td>
</tr>
<tr>
<td>Fiscal Decentralization</td>
<td>−0.003 (0.017)</td>
<td>0.012 (0.019)</td>
</tr>
<tr>
<td>Federal System</td>
<td>0.089 (0.487)</td>
<td>−0.129 (0.486)</td>
</tr>
<tr>
<td>Average District Magnitude</td>
<td>−0.030 (0.045)</td>
<td>−0.044 (0.044)</td>
</tr>
<tr>
<td>Democratic Experience</td>
<td>−0.014* (0.008)</td>
<td>−0.016** (0.008)</td>
</tr>
<tr>
<td>Variance in District Magnitude* Ethnic Fractionalization</td>
<td>0.319* (0.183)</td>
<td>0.298* (0.166)</td>
</tr>
<tr>
<td>Constant</td>
<td>−2.568*** (0.910)</td>
<td>−2.791*** (0.888)</td>
</tr>
</tbody>
</table>

Observations | 36 | 36 | 36 | 36 |
R² | 0.563 | 0.607 | 0.440 | 0.499 |
Adjusted R² | 0.454 | 0.491 | 0.300 | 0.351 |
Residual Std. Error | 0.772 (df = 28) | 0.746 (df = 27) | 0.704 (df = 28) | 0.678 (df = 27) |
F Statistic | 5.151*** (df = 7; 28) | 5.216*** (df = 8; 27) | 3.140** (df = 7; 28) | 3.365*** (df = 8; 27) |

Note: *p<0.1; **p<0.05; ***p<0.01. Dependent variable: Deviation Index refers to Chhibber and Kollman (1998, 2004) inflation index. The dependent variable is converted into logarithmic scale to improve goodness of fit.

Following the existing studies on the effects of electoral institutions and social cleavages on the number of parties, we use ethnic fractionalization as a proxy for a country’s number of cleavages. Model 2 from Table 2 reports the results. To begin with, the coefficient for variance in district magnitude is not significant. However, this only means that when ethnic fractionalization is 0, the effect of district magnitude variance is statistically not discernible from 0. This is not the coefficient we need to consider given that no country in our sample that has ethnic fractionalization of exactly 0. Instead, we need to look at the...
Figure 2: Main Effects of Variance in District Magnitude and Ethnic Fractionalization on the Inflation of Parties from the Districts to the Country

![Graphs showing main effects of variance and ethnic fractionalization.](image)

- **a) Main Effect of Variance**
- **b) Main Effect of Ethnic Fractionalization**

The marginal effect of variance in district magnitude at different values of ethnic fractionalization.

To visualize the estimated effects, Panel a in Figure 3 plots the marginal effect of variance in district magnitude at each value of ethnic fractionalization in conjunction with the distribution of ethnic fractionalization in the histogram (panel A based on model 2). First, we can see that the effect of variance becomes stronger as a country becomes more heterogeneous. The relationship between variance and the Deviation Index becomes significant once a country’s ethnic fractionalization is above 0.30, which involves an important number of countries. Not only is the relationship between variance and the inflation in party systems statistically significant at 95% confidence level, but it is also substantively significant. For instance, when ethnic fractionalization is the highest, the effect is 0.24. In other words, a 10% increase in the value of variance in district magnitude would lead to a 2.4% increase in the expected value of the deviation index.

From another perspective, we could look at the unconditional and the conditional effect of social heterogeneity. The results are rather consistent with with our expectations and prior research on party system inflation. Consistent with previous literature (Brancati 2006, 2008; Cox 1999; Crisp, Olivella and Potter 2013), the unconditional effect of social heterogeneity is significantly positive (Panel b Figure 2). However, when we condition this effect on variance.
in district magnitude, we see that this effect is heterogeneous. To illustrate this, the marginal effect of social heterogeneity is presented in Panel b in Figure 3, which is based on Model 2 in Table 2. It shows that the effect of social heterogeneity on party system inflation significantly strengthens as the variance in district magnitude becomes larger. Therefore, for social heterogeneity to have a significant effect on the inflation in the number of parties, it requires that the electoral systems allows it with some variance in the within-country district magnitudes. It seems that both variance and social heterogeneity need each other to exert an influence on the inflation in party systems at the national level.

Next, we examine the parameter estimates for the control variables. The first control in our models is the district heterogeneity of the governing party’s supporters. This variable is to capture the diversity of preferences along the economic dimension, namely, the left-right ideological scale across districts.\(^{24}\) We can see from the model that the effect of cross-district preferences is positive and statistically significant. Therefore, it appears to be an important confounder in our model due to its strong relationship with the inflation in party systems. Notice that its effect is only slightly less strong than ethnic fractionalization. Therefore,

\(^{24}\)The correlation between ethnic fractionalization and district heterogeneity is rather low (\(r = 0.21\)). This is consistent with the argument that they capture different dimensions of cross-district heterogeneity and, consequently, we decide to keep both variables in the same model since its inclusion does not generate multicollinearity issues.
accounting for cross-district diversity of preferences along the main economic dimension seems to be as important as capturing the diversity of preferences relevant for other social cleavages, such as linguistic, ethnic, or religious fractionalization.

Another important determinant of party system inflation should be the territorial decentralization of power, with the expectation being that more decentralized systems provide incentives for the emergence of non-state-wide parties. However, our estimates do not support this thesis since our measures of decentralization, federal system and fiscal decentralization, are not significantly different from 0. An explanation for their null effects could be that the two measures are too highly correlated.\(^{25}\) Thus, we implement the model removing one of the measures at a time, yet coefficients remain non-significant and, more importantly, all the other coefficients remain unchanged (not shown in the table).

In addition, another control variable for our main model is a country’s average district magnitude. The average magnitude is supposed to affect a country’s party system nationalization. In particular, proportional systems provide incentives for parties to compete everywhere in the country, while majoritarian systems may induce some parties with little chances of getting seats in some districts to focus on other areas of the country (Morgenstern, Swindle and Castagnola 2009). The sign of the coefficient for average district magnitude shows the opposite sign and is not statistically reliable to reject the null hypothesis of no effect.

Finally, we expected a country’s democratic experience to influence the inflation in the number of parties. In particular, we expected that as the number of elections increase, parties would have more time to spread their efforts and supports throughout the country (Caramani 2000, 2004; Mainwaring and Zoco 2007; Morgenstern, Swindle and Castagnola 2009). In addition, experiencing the consequences of electoral institutions should provide parties and candidates with incentives for stronger within- and cross-district coordination (Lago and Martínez i Coma 2012). Consistent with this expectation, the effect of democratic experience is significantly negative. This means that as democracies mature, the party system

\(^{25}\)The correlation between fiscal decentralization and the dummy for a country’s federal system is high (\(r = 0.6\))
at the national level becomes more similar to the party systems at the district level.

**Conclusion**

Variance in district magnitude affects the formation of party systems by shaping political actors’ incentives to engage in cross-district coordination. It is well-know in the literature that at the individual district level, district magnitude determines the necessity of strategic coordination and the district-level number of parties (Cox 1997; Duverger 1959). This implies that if electoral systems allocate different numbers of legislative seats to different districts, there should be substantial variation in district-level elites’ incentives to engage in within-district coordination. Especially when there is a great discrepancy in the sizes of district magnitude, local elites are likely to face with very different coordination environments across districts. As a result, the unevenness in the permissiveness of electoral rules encourages different party systems to emerge across different locations.

Once climbing up to the stage of cross-district coordination, the co-existence of different party systems makes it difficult for party elites to involve in strategic coordination across districts. They observe the different numbers and types of parties across districts, and this heterogeneity sets an obstacle for finding an optimal solution for cross-district coordination. The failure of cross-district coordination triggered by variance in district magnitude, then, makes the inflation of party systems more likely at the national level. In short, our contention is that variance in district magnitude, by generating different party systems across district and undermining incentives for cross-district coordination, brings about the inflation in party system.

We provide a support for this proposition through two distinctive approaches. First, using purely hypothetical elections under a variety of scenarios, we simulate how party systems would change if electoral systems with different variances in district magnitude were used. The results of our simulation suggest that variance in district magnitude does
increase the inflation in party system. The variance effect holds regardless of the several different assumptions about the distribution of voters’ preferences, for example, whether voters’ preferences are different across districts or not or whether voters’ preferences are highly fractionalized across districts or not. Second, our empirical analysis from the 36 countries suggests that within-country variance in district magnitude has a significant and substantive effect on the inflation in party systems beyond the hypothetical simulations. The empirical findings also point out that the effect of variance in district magnitude on party system inflation is contingent on social heterogeneity. That is, the effect of variance in district magnitude becomes positive and significant only when ethnic heterogeneity in a country is beyond a certain threshold, around 0.3. Therefore, while we focus on a different dimension of electoral systems, our findings are consistent with the common wisdom in the literature that the permissiveness of electoral institutions inflate party systems if social cleavages create pressures to do so (Clark and Golder 2006; Lublin 2015; Raymond 2015; Singer and Stephenson 2009).

Despite the fact that scholars acknowledge the importance of electoral institutions in determining within-district coordination (Cox 1997; Duverger 1959), little is know about how electoral systems affect cross-district coordination because the existing studies largely focus on the role of non-electoral institutions (Chhibber and Kollman 1998, 2004; Hicken 2009). Further, with only few exceptions (Kedar, Harsgor and Sheinerman 2016; Monroe and Rose 2002), little research explores the political consequences of having electoral systems with varying sizes of district magnitude. The argument advanced in this paper adds a critical dimension to these two points. We demonstrate that electoral systems matter not only to within-district but also cross-district coordination. However, for the latter, what matters is not necessarily the average district magnitude but variance in district magnitude. Second, we also show that variance in district magnitude has an important consequence for cross-district coordination and the formation of party systems at the national level. How many legislative seats are assigned to each district and how the overall balance of seat allocation is maintained
through the formal electoral rules have significant implications for elites’ strategic behavior and the quality of representation.

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