

Cross-District Coordination and Party System Fragmentation

– Evidence from Polish Municipal Council Elections

by

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Thesis submitted in partial fulfillment of
the requirements for the degree of Master of Arts
in the Department of
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ABSTRACT

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Abstract

The conventional wisdom in electoral studies links proportional representation to multi-party systems and plurality rules to bipartism. Although this prediction fits the dynamics of political competition well at the district level, the theoretical mechanisms proposed by the available theory are not directly relevant to the formation of party systems beyond the district level. In a similar vein to the recent literature on party system nationalization, this paper argues that electoral rules influence party systems indirectly by structuring cross-district coordination. This article argues that candidate-centered plurality rules tend to impede cross-district coordination by encouraging independents, whereas proportional representation can encourage such coordination by advantaging larger electoral coalitions. As a result, in the early stage of party system institutionalization, proportional representation can reduce the size of party systems, in contrast to plurality rules that fragment the party system. I test the argument in the setting of Polish municipal council elections. I use a regression discontinuity approach exploiting the fact that the law prescribed a population threshold below which the electoral formula was plurality rules and above which was proportional representation. Results show that councils elected by plurality rules are just as fragmented, if not more than, those elected by PR systems. Further evidence suggests PR systems empower partisans and discourages independents that thrive under plurality rules. These findings

highlight the importance of understanding the complexity of the implications of electoral rules in un-institutionalized party systems.

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1. Introduction

The variation of party systems has long dominated the center of the research agenda of empirical electoral studies. There have been two major schools trying to explain the origins of different party systems. One school, which can be referred to as social determinism, sees party systems as reflections of deeper conflicts among social groups, and argues that the party system of a country is determined by how identities are constructed along the line of these conflicts. In their classic "Cleavage Structures, Party Systems, and Voter Alignments," Rokkan and Lipset argued that "social cleavages," including classes, religions, ethnicities, etc., can predict the form of the party system (Rokkan and Lipset, 1966). Other studies following this line focus on the relationship between the number of parties and ethnic diversity. They treat the size of party system as an increasing function of ethnic diversity (Ordeshook and Shvetsova, 1992; Clark and Golder, 2006), predicting that as the ethnic heterogeneity increases, a country will be more likely to have a fragmented party system.

The other school, which could be named institutionalism, emphasize the role of political institutions in structuring party system. For this school, the number of parties can be explained largely by the electoral rules. The foundational work of this school is Duverger (1954), in which the author predicted a simple relationship between electoral rules and party system: first-past-the-post system will lead to bipartism, and proportional representation rules are more likely to generate multi-party systems. This

prediction is named Duverger's law. There are two mechanisms behind this relationship: first, because of the winner-take-all feature of single-member district, votes for non-front-runners will have no influence on electoral outcomes, and this distortion is known as "mechanical effects." The second mechanism is named "psychological effects," which refers to strategic responses from both voters and candidates to the disproportionality caused by plurality rules. Under plurality rules where smaller competitors are disadvantaged, voters have the incentive to vote strategically for frontrunners to avoid wasting their votes. Plurality rules also prevent excessive candidates from entering the race because they have the expectations about the limited chances to win under such restrictive electoral rules.

Building on the work of Duverger, Cox (1997) proposed a more generalized formula to predict the relationship between electoral rules and party systems. He argues that the upper limit of the number of parties is determined by district magnitude: the maximum of the number of parties is capped by the number of seats plus one, which is known as "M+1 Rule". The consensus of Cox and Duverger is that plurality rules lead to smaller party system as opposed to PR rules.

Although Duverger's Law is often invoked by pundits to explain the two-party party system in the United States¹, its wide applicability has been questioned by

¹ For a recent case, see <https://www.vox.com/polyarchy/2018/9/17/17870478/two-party-system-electoral-reform>. In this article the author states "The simplest explanation for why we don't have a major third party in the United States is that we have an electoral system of single-winner plurality".

exceptions. For example, Canada has long been known for the resilience of the third party, Bloc Québécois, a regional party fighting for the independence of the French-speaking province. The case of India deviates further from the story told by Duverger: although this country uses first-past-the-post rule with single-member-districts, it has a very fragmented party system with more than thirty parties having representatives in the lower house.

For scholars who know the nuts and bolts of the theories on electoral rules, those cases do not actually consist of exceptions of the theories: both “mechanical mechanism” and “psychological mechanism” depict only effects of electoral rules at district level, and neither the “M+1 Rule” nor Duverger’s law is a complete theory accounting for party system at national level, so the coexistence of plurality rules and national multi-party systems does not falsify the prediction of Duverger.

Aware of that Duverger’s Law’s incompleteness to explain national-level party systems, there have been two schools proposing different means to fill the gap. The first school still focuses on the empirical performance of Duverger’s Law. Differed from previous practice, they collect district-level data and use it to study strategic responses from voters and politicians to constraints of electoral rules (Singer & Stephenson, 2009; Singer, 2013). The other school tries to explain the variation of party systems at the national level by looking at institutional arrangements apart from electoral rules that

mediate politicians' incentives to coordinate across the districts (Cox, 1997; Hicken, 2009; Chhibber & Kollman, 2009).

In this article, I admit the insufficiency of Duverger's law to account for party systems at national level. However, I argue that electoral rules sometimes do have impacts on party systems beyond the district level through a channel neglected by previous works. In a similar vein to previous (Cox, 1997, 1999; Hicken, 2009), I argue that party systems are determined by two types of coordination: within-district coordination as well as cross-district coordination, and electoral rules can influence the number of parties by changing the incentive to coordinate across districts.

Of course, electoral rules alone cannot account for all variations of party systems. In most established democracies, parties have sufficient time to build their brands, linkages to voters, and cross-district coordination networks of local politicians. As long as this equilibrium appears, it tends to self-reinforce because the expectation that only a limited number of electoral options are viable induces voters to vote for major parties, and local strongmen will also run elections under the banners of parties to avoid unnecessary competition from partisans. In this case, even if the institutional environment is not in favor of such coordination, we are also likely to see the nationalization of party systems, the shrinking of viable electoral options, and the convergence of local party systems and party systems beyond the local level.

However, a different story can be told for new democracies where national parties have to compete with independent candidates with strong local bases and small regional coalitions. In these countries, electoral outcomes are more volatile, and evaluating ex-ante electoral performances of parties is harder, so electoral rules influence party systems beyond the district level in a way neglected by previous studies: candidate-centered plurality rules will impede coordination across districts since these rules erode parties and empower independent candidates. In contrast, by punishing independent candidates, PR rules encourage cross-district coordination and generate smaller party systems under which more candidates join parties instead of running as independents.

In terms of empirics, the traditional practice is to employ data on national elections to estimate the effects of electoral rules on party systems. Apart from the mismatch between the level of data and theory, this practice also suffers from endogeneity problems, including omitted variable bias and reverse causality. First, it is possible that some other variables, such as social cleavages and redistributive conflicts, shape both electoral rules and party systems, resulting in a spurious correlation between electoral rules and party systems. Also, since electoral institutions are vulnerable to manipulation from incumbent politicians, it is possible that electoral rules themselves are outcomes of party systems rather than vice versa (Rokkan, 1970; Boix, 1999).

Aware of the weakness of cross-national evidence in studying party systems, recent years have seen a growing literature focusing on countries using mixed electoral systems to compare electoral outcomes of districts using different electoral formulas (Moser and Scheiner, 2004; 2012). However, even without mentioning the contamination problem in research designs relying on mixed-member districts (Moser, 1999), this practice is limited in helping us understand how electoral rules shape political dynamics beyond the district level.

This article differs from previous practices by examining a setting where endogeneity problems could be minimized. Instead of using data from national elections, I explore how electoral rules influence Polish municipal council elections. Polish electoral laws prescribed PR for municipalities of more than 20,000 residents and plurality rules for smaller municipalities. Exploiting this institutional feature, I use an RD design to compare election outcomes of municipalities near the population threshold. This design can address endogeneity problems for two reasons. First, since the population criterion is exogenous to local political dynamics, it is hard for local politicians to manipulate electoral rules strategically, so I can claim that the difference between municipalities using different electoral formulas are “caused” by the difference in electoral rules without worrying that the causality is in the opposite direction. Second, because municipalities using PR systems and plurality systems are similar near the resident threshold, biases caused by omitted variables will be minimized.

Evidence from the RD design suggests that municipal councils elected by PR are just as fragmented, if not more than, councils elected by plurality rules. Further evidence shows that electoral rules influence party system fragmentation by exerting impacts on the payoffs of different electoral strategies: PR rules provide advantages to candidates affiliated with parties and encourage cross-district coordination. In contrast, plurality systems impede such coordination by encouraging candidates to run as independents.

This article contributes to the literature in several ways. Empirically, this article speaks to the emerging literature exploiting institutional discontinuities to test theories on implications of electoral rules (Pellicer and Wegner, 2013; Fujiwara, 2011; Cirone & Rivera, 2017). This paper also has theoretical implications for studies on electoral systems. The finding of this article is in line with several recent studies on electoral rules in new democracies that found effects of electoral rules are context-dependent (Ferree et al., 2014; Cirone & Rivera, 2017). However, this article proposes a mechanism through which electoral rules influence party systems neglected by previous studies: electoral rules may shape party systems by changing the payoffs of cross-district coordination.

The remainder of the paper is structured as follows. The next section briefly surveys previous studies on relations between party systems and electoral rules. Next, I develop my theoretical argument on how electoral rules shape the size of the legislature. After that, I provide information on Polish municipal council elections and describe the hypotheses of this article. I show my data and empirical strategies and assess the

hypotheses empirically then. The paper concludes with a short discussion of the limitations of this paper and directions for future research.

2. Cross-District Coordination in Un-institutionalized Party System

The relationship between electoral rules and party systems has long dominated the center of electoral studies' research agenda. The most well-known prediction, proposed by French political scientist Maurice Duverger in *Political Parties: Their Organization and Activity in the modern State*, hypothesized that the first-past-the-post rule tends to generate bipartism, and proportional representation rules are more likely to generate multi-party systems.

Gary Cox (1999) generalized Duverger's Law by proposing a formula on district magnitude and the size of the party system. He argues that the number of parties in any electoral system is capped by the magnitude of electoral district plus one. For example, in single-member-districts where only the candidate winning a plurality of votes gets elected, only two parties will exist in a "Duvergerian equilibrium." In a PR system with a district magnitude of five, the maximum of the number of parties will be six.

Though denying the logic of Duverger's Law is not easy, the empirical implications of the theory are trickier than many people have realized. It won't take one minute to find an article in mass media using Duverger's law to account for two-party systems in Anglosphere countries. For example, Ezra Klein in his article published in Vox stated that the decision of Howard Schultz, former CEO of Starbucks, to run for the presidency in 2020 will be futile and only harm Democratic Party because of the effects

of Duverger's Law¹. Based on a similar intuition, an article published in *The Financial Times* also attributes the stability of the two-party system in Britain to Duverger's Law.²

The simple predicted relationship between electoral rules and party systems is also taken for granted and used as the fundamental assumption for theory-building by works on the economic effects of electoral rules. For example, Iversen and Soskice (2006) said that "as formalized in Duverger's Law, majoritarian systems can only sustain two parties in equilibrium." The same assumption is also made by Persson et al. (2007), whose model assumes a two-party system under plurality rules and a four-party system under PR.

Other scholars estimated the correlation between the number of parties and electoral rules at the national level to study how electoral rules influence party systems. For instance, Ordeshook and Shvetsova (1987) employed nation and party level evidence to confirm the relationship between the size of the party system and electoral rules, and the same strategy was also practiced by Mozaffar & Galaich (2003).

However, as a theory proposing clear causal mechanisms behind observable correlation, Duverger's Law is not a theory accounting for the formation of national party systems because both "mechanical effects" and "psychological effects" refer to the

¹ <https://www.vox.com/policy-and-politics/2019/2/12/18219607/howard-schultz-presidential-campaign-cnn-independent-third-party-2020-starbucks>

² <https://www.ft.com/content/38975d14-3607-11e9-9be1-7dc6e2dfa65e>

political logics at district level, and their implications for national level party systems are conditioned by the extent to which candidates coordinate across districts.

To illustrate this point, I use an imaginary scenario similar to the one from Cox (1997). Assume there is one polity A with four electoral districts, denoted as 1, 2, 3, 4, and all of them use single-member-district. We then assume that all preconditions ensuring the success of within-district coordination are fulfilled, which includes complete information, short-term instrumental rationality of voters, etc. In this case, we are supposed to observe the appearance of Duvergerian equilibrium at the district level: there will be two parties in every single district.

However, local Duvergerian equilibria reveal little about national party-systems. Without assuming contenders in different districts running elections under the same party brands, in the most extreme case when no party runs in more than one district, we will have an eight-party system at the national level, which is not informative at all for anyone interested in party system beyond the district level. To account for party system size beyond the district level, we need a theory more than Duverger's Law and M+1 Rule.

Realizing the mismatch between level the theories apply to, and the level of evidence used to test the theories, scholars have proposed different approaches to fill the gap. The first practice is to estimate the effect of plurality rules on voters at the district level (Singer & Stephenson, 2009; Singer, 2013). Those scholars argue that if we are

aware that national level is not the appropriate level to test theories on the relation between electoral rules and party systems, we should only use district level data to do it.

However, this solution is not very useful for people who care about more than district level party systems. Admittedly, it is of importance to estimate the impact of electoral rules more precisely, but instead of abandoning our curiosity about political dynamics beyond the district level, we should try to build theories to account for party system size beyond the district level.

Recognizing the incompleteness of Duverger's law as a theory for the national level party system, Cox made complementary arguments about the nationalization of party systems. He distinguished two types of coordination: within-district coordination and cross-district coordination. The former refers to the extent to which voters and politicians in a single district coordinate to enter and vote strategically. When they succeed, Duverger equilibrium will appear at the district level in which the number of parties will be capped by district magnitude. However, national party systems are not only determined by Duverger equilibria at the district level but also influenced by cross-district coordination among local politicians. Local party system and national party system converge only when the institutional context creates sufficient incentives for local politicians to run under brands of cross-district organizations, namely, parties.

Cox argued that cross-district coordination is more likely to succeed when doing so has an economy of scale for pursuing other political benefits. He listed several

institutional factors helpful for cross-district coordination, such as the centralization of power in national government, the proximity of executive elections and legislative elections, and the largest party's advantage in forming a cabinet.

Based on a similar intuition as Cox, Hicken (2009) developed a theory for party system nationalization in developing countries. Without considering the effect of electoral rules, he argues that the incentive for politicians to coordinate across the country is determined by the spoils the largest party can reap. With the institutions assigning more power to the largest party, local politicians will be more likely to form large coalitions to compete for the spoil. He predicts that among developing countries where party systems are un-institutionalized, unitary states with unicameral legislatures and parliamentary systems are more likely to have smaller and more nationalized party systems. In contrast, federal presidential states with bicameral legislatures will have more fragmented and localized party systems³.

This article appreciates the insight of Hicken and Cox that cross-district coordination is of importance to explain party system beyond the district level. However, it differs from them in its appreciation of the role electoral rules play in cross-district coordination. This article agrees with Singer (2013) and other recent studies that electoral rules have direct impacts on party systems at the district level, but what I'm focusing on is the indirect impact of electoral rules on party systems beyond the district

³ Also see in Chhibber & Kollman (2009)

level: as opposed to party-centered PR rules, plurality rules will impede cross-district coordination by empowering independent candidates, and this effect results in more fragmented party systems.

3. How Electoral Rules Shape Cross-District Coordination

My argument departs from Chhibber & Kollman (2004) and Hicken (2009) by highlighting the role electoral rules play in cross-district coordination. It has been known that district magnitude influences candidates' decisions on whether to enter a race. However, district magnitude is only one of the many dimensions of electoral rules. Electoral rules decide not only whether a candidate will enter a race, but also affect his (her) strategy about how to compete in the race. For the purpose of this article, the key decision to make is whether to join large cross-district coalitions, namely, parties or join small local coalitions or run as independents. When electoral rules generate enough incentives for candidates to coordinate across districts and run elections under a very limited number of party brands, viable options for voters will shrink, and the party system will be less fragmented. In contrast, when a large proportion of candidates are running as independents or joining small local coalitions, the number of parties will inflate, and we are more likely to observe fragmented party systems.

Reformers in developing democracies have long known that certain electoral rules can reduce the strength of independent candidates and induce them to form parties. For example, to strengthen parties and dismantle the dominance of dynastic politicians in legislative elections, France introduced a reform shifting the electoral system from a two-round system with the single-member district to the multi-member

district with open lists (Cirone and Rivera, 2017). In a more recent case, Peru also passed similar reforms to bolster parties and discourage local independent candidates (Levitsky and Zavaleta, 2016).

Researchers also have noticed that electoral rules can be categorized as “party-centered” or “candidate-centered” (Shugart and Carey, 1995). Under party-centered electoral rules, campaigning on party brands will be more effective because whether a candidate can win a seat is not solely determined by the number of votes he (she) wins, but also influenced by the electoral performances of his (her) allies. The fewer parties have control over the candidate nominating process and candidates’ electoral prospects, the more “candidate-centered” an electoral system is.

The most relevant comparison for this article is the one between plurality rules, under which voters vote for individual candidates and whoever wins the plurality of votes will get the seat(s), and PR rules which require candidates to compete in lists, and candidates are also influenced by performances of other candidates in the same lists with them. Compared to PR, three features of plurality rules reduce the payoff of joining parties. First, other things equal, independent candidates who campaign on their personal reputations are likely to get elected with support from voters concentrating in one district under plurality rules. However, under PR systems with larger districts, in terms of both population and magnitude, candidates must speak to more geographically

dispersed voters. In this case, personal reputation will be less informative compared to party brands that deliver platforms and policy orientations.

Plurality rules encourage independent candidates also because candidates can internalize benefits from their campaign activities without contributing to their cohorts only by campaigning on their personal reputations under such rules. Under PR rules, votes of candidates in the same list will be pooled in the process of translating votes into seats. As a result, campaigning on personal reputations will be a less efficient strategy for both individual candidates and parties: candidates are unable to reap all benefits from their campaigns, and contradictory information from campaign activities of different candidates may cause a loss to the overall performance of the party that could have been avoided if candidates campaign on party brands.

Finally, PR systems empower parties also because of the essence of such rules: candidates under PR rules have to compete as blocks with a minimum of members of district magnitude. It not only excludes the possibility to run elections as individuals but also disadvantages candidates with local bases brought by their personal reputations but unable to recruit capable allies.

However, the influences electoral rules exert on candidates are uneven. We can distinguish two types of candidates according to their personal political resources, and electoral rules have different impacts on the choice of strategies of them. I use “resource-abundant candidates” to refer to candidates who have sufficient resources, including

reputations, networks, wealth and manpower to help them win elections under candidate-centered rules without the endorsement from parties. In contrast, resource-poor candidates rely on resources and supports from existent electoral coalitions because of their lack of prestige that resource-abundant candidates have. The optimal electoral strategy for resource-poor candidates is constant: they will always present themselves as agents of an existent political coalition. However, electoral rules do influence the strategic calculation of resource-abundant candidates: although they may win a race under party-centered electoral rules by themselves, it pays off for them to join parties under party-centered rules because they need candidate pools and brands provided by parties.

The choice of electoral strategies of candidates' have direct implications for party system size. When the electoral system provides candidates enough incentives to join parties, viable electoral options of voters will shrink, which leads to a smaller party system. In contrast, when the electoral system fails to do so, the party system will be fragmented by independents and small coalitions.

Of course, electoral rules alone are insufficient to explain the variation of party systems. As pointed out by several studies, the concentration of institutional power in the central government also shape the form of the party system and the extent to which the party system institutionalizes (Cox, 1999; Chhibber & Kollman, 2009; Hicken, 2007). History also matters. The longer democratic history a country has, the more likely

parties penetrate the society and build close linkages to voters. Also, in former hegemonic party regimes, such as Taiwan and Mexico, successors of previous hegemonic parties and opposition parties surviving repression can provide basic elements for party system institutionalization. My argument does not exclude the possibility that party systems can institutionalize despite candidate-centered electoral rules. The point here is that other things equal, in new democracies, candidate-centered electoral rules, such as plurality with the single-member district, will fragment party systems as opposed to proportional representation, and this effect is quite different from our understanding of those rules in established democracies.

Based on these reasons, I predict that plurality rules will erode the incentive to join parties for candidates in un-institutionalized party systems, impede cross-district coordination among candidates, and fragment the party system beyond the district level. The next section will depict the institutional details of the setting in which I test my argument: Polish municipal council elections.

4. Electoral Systems of Polish Municipal Councils

Poland has a long history of local self-governance since the 11th century. However, the highly centralized communist regime imposed by the Soviet Union after World War II deprived of local territorial units almost all autonomous power. Following the democratic transition, decentralizing reforms were implemented in 1990, which generated three tiers of local governments and transferred substantial power from the national government to local governments. Among the three tiers of local governments, including province (voivodeship), county (powiat) and municipality (gminas), municipalities play the most important role in public goods provision. In Poland, one-third of public expenditure was spent by 2479 municipal governments, which consisted of 15% of GDP according to the data in 2014 (Levitas, 2017).

Municipal councils are local legislatures elected every four years. According to the electoral law passed in 1990, based on a population threshold, Polish municipalities were assigned to use two different electoral rules: municipalities with more than 40,000 inhabitants used proportional representation systems, and smaller municipalities used FPTP (first-past-the-post) system with the single-member district (SMD). In 1998, an electoral reform broadened the reach of PR from the level of 40,000 inhabitants to the level of 20,000 inhabitants. This electoral formula had been in use since then until an electoral reform changed the rule again in 2011.

According to the old rules used in 2010 local elections that are studied by this article, municipalities with a population fewer than 20,000 elected 15 municipal councilors through plurality rules. Plurality rules are used for most constituencies in small municipalities, and most districts are single-member districts, though a minority of those municipalities merged some small districts due to geographical reasons and used plurality-at-large voting for those merged districts. This is the reason why the average number of constituencies is less than 15, the number of councilors for small municipalities.

Table 1: Statistics of Constituencies

	Number of Municipalities	Average Number of Constituencies	Average Councilors	Average District Magnitude
Small municipalities	2152	9.460967	15	1.7973596
Large municipalities	326	3.717791	22.1135	6.081255

Data source: Electoral Commission of Poland

Larger municipalities used open list PR with 5% threshold and d'Hondt method for allocating seats. The number of councilors in larger municipalities varies from 21 to 43 according to the population.

Just as in many other East European democracies, parties have a relatively weak existence in Polish local politics. After the democratic transition, none of the national parties has penetrated in localities successfully, which can be attributed to several factors. First, the totalitarian communist regime strictly constrained civil society and

political activities so that few organizations could survive the repression under the regime. The most influential dissident movement, Solidarity, maintained its organizational features as a political movement without transferring itself into a cohesive political party (Grabowski, 1996). As a result, with the only exception of Democratic-Left-Alliance, the successor of the Communist Party, all parties had to build their grassroots organizations from scratch. This process turned out to be slow and unsuccessful. According to the European Social Survey, Poland is among the countries with the lowest proportion of the population identifying with parties in Europe. Only 30.2% of respondents “feel closer to a particular party than all other parties.” Voters distrust parties especially in local political competition because they consider local political competition more about valence issues instead of ideological confrontation. According to one Polish report cited by Gendźwiłł and Żółtak (2104), a majority of respondents state that candidates’ personal characteristics, instead of party labels, are the main factor they mainly decide on.

In such a context, although candidates still rely on parties for competing in national elections, parties are not indispensable in local politics. According to the data provided Egner et al. (2013), among 16 surveyed European democracies, Poland has the lowest percent of municipal councilors declaring their partisanships. In the 2010 Polish municipal elections, which is the focus of this article, only 28% councilors were nominated by party lists.

Table 2: Electoral Performance of National Parties

Committee	Seats	% of seats	% of seats under plurality rules	% of seats under PR
Local committees	28,480	71.5%	77%	51%
Polish People's Party (PSL)	4,381	11%	13%	3.0%
Law and Justice (PiS)	2,782	7%	5%	15.1%
Civic Platform (PO)	2,719	6.82%	3%	22.9%
Democratic Left Alliance (SLD)	1,466	3.68%	2%	7.9%

Data source: Electoral Commission of Poland

Local electoral committees are playing more important roles in local political competition than national parties. According to the electoral laws, anybody who can collect enough signatures from supporters can register an electoral committee after paying a negligible fee, and this procedure has become even easier after an electoral reform releasing the requirement of signatures in small municipalities. Politicians often register local electoral committees without connection to parties, and most of those committees run elections only in one municipality. Thanks to the easiness of registering electoral committees, some politicians with local support bases even register their own committees nominating only themselves.

What is the relationship between electoral rules and legislative fragmentation in this setting? I argue that electoral rules influence the performance of different types of electoral committees. Compared with local electoral committees, parties are larger cross-district coalitions not only in the sense that they are involved in local politics across the

country but also in the sense they have much larger candidate pools in municipalities where they choose to compete.

Table 3: Average Number of Candidates in Lists

	Number	Average Number of candidates
Party Electoral Commission	4,671	13.96018
Local Electoral Commission	13633	8.704761
Total	18304	10.04589

Data comes from the electoral commission of Poland.

From Table 3, party electoral committees tend to nominate candidates fifty percent more than local electoral commissions. Still, there are variations in the size of local electoral committees. Some of those committees are political vehicles for one or two candidates, and some of them, especially those backed by mayors, can be large local coalitions. The point here is that compared to party committees, local electoral committees are smaller in their sizes on average.

Based on intuition from the last section, I predict that partisans under PR will be advantaged because such rules encourage cross-district coordination. In contrast, plurality rules will erode parties by encouraging local independents.

I will test three hypotheses based on the intuition stated in the last section. First, electoral rules in an un-institutionalized party system have impacts on cross-district coordination. More specifically, plurality rules will impede cross-district coordination as opposed to PR rules, which will lead to more fragmented party systems at the municipal level.

H1: Municipal councils elected by PR systems will be less fragmented than those elected by plurality rules.

This article will not only test the relation between party system fragmentation and electoral rules but also check whether electoral rules influence electoral outcomes through the channel depicted by this article. I argue that the reason why plurality rules impede cross-district coordination is that this system will disadvantage parties, which tend to be large cross-district coalitions.

H2: Municipalities using PR tend to elect more members of national parties in councils than municipalities using plurality formulas.

5. Data and Research Design

This section shows the main data sources and empirical strategies of this article.

5.1 Data

Data used in this paper comes from the online dataset of the National Electoral Commission of Poland, which records information of local elections from 2002 to 2018, including formulas used, electoral outcomes, electoral committees, and candidates. I collected data on 2010 municipal council elections manually from the website.

I use two measures for legislative fragmentation. The first measurement is “the number of lists,” which indicates how many lists are included in the municipal council. The second measure is the number of effective parties. I calculate this variable by the following formula created by Laakso and Taagepera (1979):

$$N = \frac{1}{\sum_{i=1}^n p_i^2}$$

In this formula, n is the number of lists with at least one seat and p_i^2 indicates the square of the proportion of seats.

This article also explores the channel through which electoral rules impact legislative fragmentation. I hypothesize that electoral rules influence the performances of national parties and local electoral committees. There are four national parties competing in 2010 local elections: the centrist Civic Platform, central-right Polish

People’s Party, conservative Law and Justice Party, and moderate-left Democratic Left Alliance. Other candidates were nominated by local electoral committees, and most of those committees only nominate candidates in one municipality.

Table 4: Descriptive Statistics

	Mean	Standard Deviation	Minimum	Maximum
Resident	14607.85	35546.5	1305	704277
Number of Lists in Councils	4.426494	1.517523	0	12
Effective Party Number	2.882617	1.099574	1	8.333333
Proportion of Female Councilors	0.2568378	0.1323722	0	0.733333
Proportion of Councilors with Tertiary Education	0.3384306	.2067425	0	1
Proportion of Seats obtained by National Party	0.263729	0.266485	0	1
Proportion of Seats obtained by Independents	0.045521	0.072565	0	0.533333

The number of observations: 2478, with 2152 above the population criterion and 326 above the population criterion.

5.2 Empirical Setting

To identify the causal effect of electoral rules on distributive and political outcomes, this article employs an RD design, exploiting the discontinuity of the electoral system at the particular population threshold. I define my sample as municipalities close to the population threshold and regress the dependent variable on the population (running variable), treatment variable (PR), and the interaction of them. I also use different orders of the running variable and add provincial fixed effects to control for unobservable heterogeneity.

I use the following equation to estimate the effects of electoral rules on the dependent variables.

$$y_i^j = \beta_0 + f(p_i) + \gamma T_i + \beta_1 T_i p_i + \varepsilon_i$$

$$T_i = \begin{cases} 0, & p_i < 0 \\ 1, & p_i \geq 0 \end{cases}$$

In this equation, y_i^j indicates the value of the dependent variable j for the municipality i , $f(p_i)$ is some possibly nonlinear but continuous functions of the population. T_i is an indicator showing whether the observation accepts the treatment, which is determined purely by the population threshold, and $\hat{\tau}$ is the causal effect of the treatment on the dependent variables.

The key assumption of RD design is that observations located on two sides of the cutoff differ only in whether they are treated. However, in two scenarios this assumption will be violated: 1. municipalities on two sides of the cutoff differ in aspects apart from the treatment; 2. local politicians manipulate population data to choose electoral formulas in favor of them strategically.

I use two tests to address these concerns. First, I check the balance of covariates on two sides of the cutoff. It is possible that capable candidates self-select to run under plurality rules. Measuring the capacity of councils directly is not easy, so I use the

proportion of councils with tertiary education as proxy for it. Besides, I also use the proportion of female councilors to do the balance check. The intuition is that if candidates choose the municipalities they compete in the race strategically, female candidates less more likely to compete under plurality rules because they may be disadvantaged under such systems when traditional views on sexual division of labor is pervasive (Salmond, 2006). Besides characteristics of councilors, I also check the distribution of economic indicators, including unemployment rate, proportion of residents accepting assistance, and local government expenditure per capita.

I regress these variables on the treatment, forcing variable and interaction of them to verify if there is a jump on two sides of the cutoff. Outcomes indicate that there is no jump of neither of them under any specification (see outcomes of balance test Appendix A).

Second, to check whether population data is manipulated, I test the jump of the density of the forcing variable on both sides of the cutoff using the method developed by McCrary (2008). The outcome shows that we cannot reject the hypothesis that there is no jump on two sides of the cutoff ($p=.458$).

Another concern over regression discontinuity design is that the treatment only has a placebo effect on dependent variables. The common practice is to run the same regression with placebo cutoffs. I use 22,000 and 18,000 instead of 20,000, the real institutional cutoff, to rerun local linear regressions with the specifications as same as

used in main regression. Outcomes indicate that the placebo has no effect on any dependent variable (see outcomes in Appendix B).

The choice of the bandwidth varies according to model specification. My preferred specification is a linear spline with a bandwidth of 5000, which is a relatively conservative choice. To control potential unobservable inter-provincial heterogeneity, I also use a specification with provincial fixed effects and a linear spline, with a bandwidth of 7000. In addition, to address the concern that the possibility that the dependent variable is some forms of non-linear functions of the forcing variable, I use different polynomial orders with window calculated by MSE-optimal (mserd) method.

6. Empirical Results

6.1 Legislative Fragmentation

The first subsection explores the relationship between electoral rules and party systems at the municipal level. To capture legislative fragmentation, I use the number of effective parties, which is the number of parties weighted by their seats, and unweighted number of parties (lists) as measurements. Model 1 and Model 5 use linear splines with the latter controls for unobservable inter-provincial heterogeneity. Model 2, model 3 and model 4 use mserd method to calculate the optimal bandwidth when different orders of forcing variables are added to regression equations. Against previous literature, the results imply that PR rules do not increase the number of effective parties in councils.

Table 5: Electoral Rules and Legislative Fragmentation

	Model1	Model 2	Model 3	Model 4	Model 5
PR	0.0511 (0.294)	0.0166 (0.286)	0.206 (0.193)	0.0968 (0.310)	0.1816639 (0.243867)
Bandwidth	5000	5523	10201	8353	7000
Polynomial	1	1	2	3	1
Fixed effect	No	No	No	No	Yes
N	275	299	705	518	408

Robust Standard errors in parentheses

*p<0.1 **p<0.05 *** p<0.01

Table 7 shows estimates of the effect of electoral rules on the number of lists in councils, with the same specifications as in Table 6.

Table 6: Electoral Effects of Electoral Rules (Number of Lists)

	Model 1	Model 2	Model 3	Model 4	Model 5
PR	-1.103*** (0.420)	-0.987** (0.396)	-0.802*** (0.306)	-0.969** (0.415)	-0.77672** (0.3364869)
Bandwidth	5000	5562	8615	8691	7000
Polynomial	1	1	2	3	1
Fixed Effects	No	No	No	No	Yes
N	275	301	541	552	408

Robust standard errors in parentheses

*p<0.1 **p<0.05 ***p<0.01

Regression results show that electoral systems have significant impacts on the number of lists in municipal councils. However, the direction of the coefficients is contradictory to the prediction of conventional wisdom: councils elected through PR are less fragmented in the sense that they have councilors from fewer lists. According to the estimated coefficients, legislatures elected through PR have approximately one more list than those through plurality rules. This effect is also substantively significant considering that the mean of this variable is 4.42. Figure 1 shows the discontinuity in lists in councils on two sides of the resident cutoff. The dots show the average lists in councils at an interval of 1000 population windows, and the line corresponds to the four-

degree polynomial fit with no spline. It shows a clear negative jump for the lists in councils.

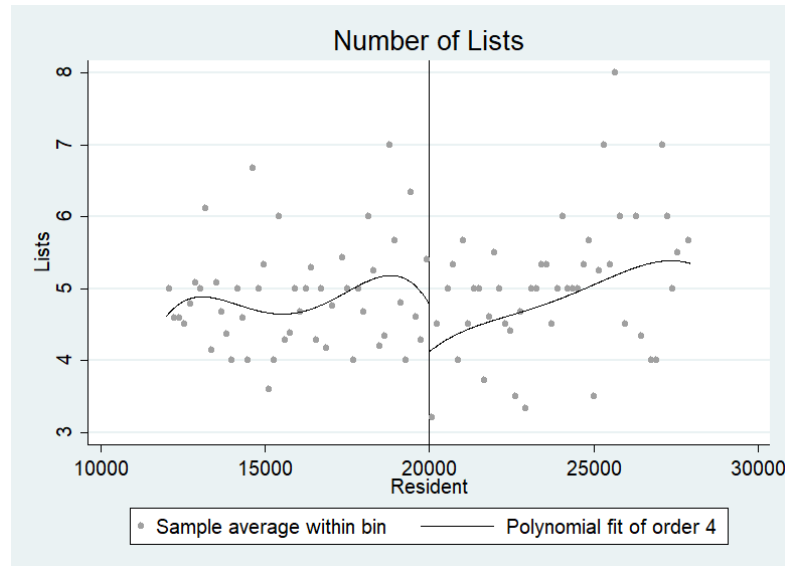


Figure 1: Discontinuity in Lists in Councils

6.2 Cross-District Coordination

I attribute different performances of parties and local electoral committees under different electoral rules to their different effects on cross-district coordination. Table 8 provides the estimates of the effect of electoral rules on the proportion of seats obtained by members of national parties. Estimates are consistently significant under different model specifications: national parties in municipalities using PR obtain 14% more seats than in municipalities using plurality systems.

Table 7: Impacts of PR on Performances of Parties

	Model1	Model 2	Model 3	Model 4	Model5
PR	0.141**	0.143**	0.135**	0.146**	0.155**
	(0.0570)	(0.0570)	(0.0543)	(0.0594)	(0.0488)
Bandwidth	5000	5022	6051	8334	7000
Polynomial	1	1	2	3	1
Fixed effects	No	No	No	No	Yes
N	275	276	335	514	408

Robust Standard errors in parentheses

* $p < 0.1$ ** $p < 0.05$ *** $p < 0.01$

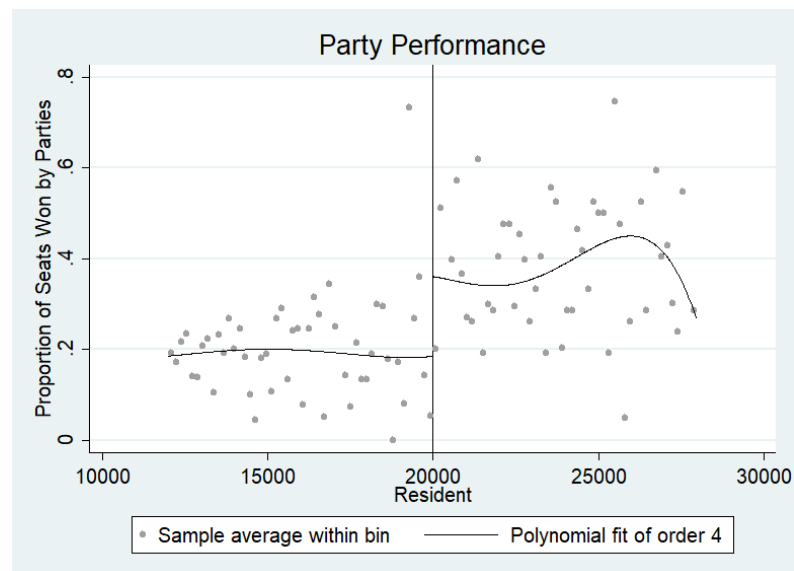


Figure 2: The Proportion of Seats Won by Partisans

7. Conclusion and Discussion

Although previous studies on party system have generated theoretical insights on the relationship between electoral rules and district-level party systems, however, existent studies only have limited successful records when it comes to the relation between electoral rules and party system beyond the district level. This paper argues that in an un-institutionalized party system, PR rules may encourage cross-district coordination by encouraging partisans to form larger coalitions, and this effect can reduce the size of the highly fragmented party system.

This article takes advantages of a natural experiment in Polish municipal council elections. Employing a regression discontinuity design, this article shows that PR rules reduce rather than increase fragmentation of municipal councils. Further evidence shows that this phenomenon is caused by the advantage PR gives to national parties.

This project has several limitations. First, the limited sample size (from 200 to 600) constraints my ability to produce more precise estimates, so we need to be cautious in interpreting the regression results. Second, this project has not explored the political dynamics at the district level, which is the main concern of previous literature.

I'm working on collecting data of electoral outcomes at the district level for the next stage of this project. By doing this, I will be able to explore how within-district coordination interact with cross-district coordination more precisely.

This paper has two main implications for future research agendas in the study of electoral rules. First, this paper tries to explain the party system beyond the district level, a topic has not attracted enough attention from the field of electoral studies. Most of our understandings of party systems are shaped by theoretical and empirical works on the district-level phenomenon, partly because of the easiness of formal theoretical building in studying effects of electoral rules at the district level. However, our understanding of the convergence of district level party systems and party system beyond the district level is limited to studies of several cases (Hicken, 2007; Chhibber & Kollman, 2009). By studying how the effect of electoral rules in an un-institutionalized party system, this article sheds light on institutionalization and nationalization of party systems in new democracies. It is important for future works to use within country data to study institutionalization and nationalization of national party systems. Second, in line with several studies on new democracies finding that the way electoral rules influence party systems in developing democracies is different from their effects in established democracies (Moser, 1999; Cirone and Rivera, 2017), this article suggests that electoral rules' effects on party systems are conditioned by cross-district coordination. Our understandings of the development of party systems will benefit from studying the effects of electoral rules in new democracies, where the assumptions of our theoretical models accounting for political competition in established democracies may not hold.

Appendix A. Balance Check

Table 8: Balance Check

Outcome	Effect Estimates			
	(1)	(2)	(3)	(4)
Female Councilors	-0.013782 (0.032754)	-0.003038 (0.031507)	-0.022046 (0.0243713)	-0.013103 (0.0316868)
Councilor Education	-0.06186 (0.0397761)	-0.048426 (0.0389505)	-0.0427546 (0.037888)	-0.0475991 (0.040438)
Expenditure per capita	47.71215 (161.1712)	47.76903 (220.0206)	-60.695 (156.0607)	78.48375 (212.9027)
Assisted Residents	0.0060004 (0.0081617)	0.0071505 (0.0069653)	0.0031917 (0.0060226)	0.0082233 (0.0084788)
Employment Rate	0.7059214 (1.050753)	0.7851696 (0.9727272)	0.8313532 (0.6992216)	0.9165944 (0.9856843)
Polynomial order	1	1	2	3
Bandwidth	5000	mserd	mserd	mserd

Robust standard errors in parentheses

*p<0.1 **p<0.05 ***p<0.01

Appendix B. Placebo Test

Table 9: Placebo Test 1 (with a cutoff of 22,000)

Dependent Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Number of Lists	0.123 (0.377)	-0.215 (0.342)	0.0188 (0.365)	-0.250 (0.379)	-0.160 (0.328)
Effective List Number	-0.160 (0.328)	-0.433 (0.325)	0.0520 (0.233)	-0.276 (0.273)	-0.0145 (0.239)
National Parties	0.00262 (0.0592)	0.0752 (0.0563)	0.0548 (0.0569)	0.0275 (0.0646)	0.0850* (0.0499)
Polynomial order	1	1	2	3	1
Bandwidth	5000	mserd	mserd	mserd	7000
Fixed Effect	No	No	No	No	Yes

Robust standard errors in parentheses

*p<0.1 **p<0.05 ***p<0.01

Table 10: Placebo Test 2 (with a cutoff of 18,000)

Dependent Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Number of Lists	0.114 (0.243)	-0.0492 (0.308)	0.0499 (0.225)	0.213 (0.262)	0.00164 (0.203)
Effective List Number	-0.160 (0.328)	-0.433 (0.325)	0.0520 (0.233)	-0.276 (0.273)	-0.0145 (0.239)
National Parties	-0.000218 (0.0486)	-0.00188 (0.0537)	0.00577 (0.0455)	-0.00629 (0.0557)	0.00317 (0.0405)
Polynomial order	1	1	2	3	1
Bandwidth	5000	mserd	mserd	mserd	7000
Fixed Effect	No	No	No	No	Yes

Robust standard errors in parentheses

*p<0.1 **p<0.05 ***p<0.01

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