Chapter 7 - Online Appendix

What is a "minority" group?

We should note that when we refer to "minority" groups, we mean groups that make up only a small share of the population *within the district under investigation*. In this way, "minority" might also refer to a group that is in the majority in the country as a whole – and in most of the country is represented by a majority party – but, in the district being examined, is actually in the minority. In many cases, national majority groups may see little in common with (especially ethnic) minority parties, and, thus, be unwilling to cast a strategic ballot for an ethnic (or other national minority) party candidate, even if the national majority party is too small in the district to be competitive.

Challenges to the linear perspective: Increasing diversity may not always lead to more parties

[Portions of this section were included in the actual chapter.]

One point typically left unstated in work on the relationship between diversity and the number of parties is that the notion of a linear relationship between social diversity and the number of parties is built on the assumption that each different group (or, at least, nearly every group) will have its own distinct party to represent it. Recognizing this assumption is important, particularly since recent analysis challenges the linear model, in part on the grounds that each distinct group in society may not have its own distinct party.

Perhaps the most prominent recent challenge to the conventional wisdom is Shaheen Mozaffar, James R. Scarritt, and Glen Galaich's (2003) study of African party systems, which argues that: (1) increases in the effective number of ethnic groups *constrains* rather than increases the number of electoral and legislative parties (385); and (2) district magnitude has no independent effect on the number of electoral parties – in fact, under certain conditions, higher district magnitudes actually reduce the number of parties (387). However, Mozaffar et al.'s analysis does not hold up under close scrutiny. Most notably, Thomas Brambor, Clark, and Golder (2007) demonstrate convincingly that Mozaffar et al.'s counter-intuitive findings are due to their incorrect use of interaction terms in their quantitative models. When they correct the model, Brambor et al. show that African party systems have the expected positive correlation between ethnic fragmentation and the effective number of parties.

Nevertheless, other work makes a convincing case that the relationship between diversity and the number of parties is non-linear. Heather Stoll's (ND) analysis on this point is most comprehensive. Stoll argues that as one moves from relatively homogeneous environments to contexts with greater diversity, there ought to be an uptick in the number of parties because each group would be large enough to play a meaningful governing role – if not as a majority party, perhaps as the head of a minority government or part of a coalition government.[1] However, further increases in diversity – where there are larger numbers of (especially small) groups – actually decrease the likelihood that any of the groups will play a meaningful governing role. Under these circumstances, political entrepreneurs have an incentive to create parties (or promote candidates) that can reach out beyond a single group, which in turn leads to a consolidation of the party system around a smaller number of parties. Looking at nationally aggregated data for a substantial number of countries, Stoll provides compelling evidence for the

[1] Stoll's analysis typically focuses more on contexts in which social diversity changes over time, in particular increasing from previous lower levels. Our discussion is more general, simply focusing on the differences, all else being equal, between districts with different levels of social diversity.

existence of this non-linear relationship between social diversity and the number of parties.[2] Indeed, Moser's (2001b) district-level analysis of the relationship between ethnic diversity and the number of parties in postcommunist countries demonstrates the upside-down U-shape that Stoll describes and that we illustrate in Figure 7.2(b).

Raul Madrid's (2005a) analysis of Latin American ethnic groups and the number parties focuses on the size of individual groups, and offers a logic similar to Stoll's for why the relationship between diversity and the number of parties may be non-linear.[3] Madrid (2005a) argues that increases in the size of the indigenous population (as a share of the total population) in Latin America tends to promote party system fragmentation *in the absence of ethnic parties* because minority voters tend to spread their votes across a wide number of smaller parties when major parties fail to appeal to the minority and there is no ethnic party to capture this constituency. However, when an ethnic party draws most of its support from the indigenous population and very little from other segments of society, the pattern representing the relationship between the size of the minority population and the number of parties will be an upside-down U-shaped curve (Madrid 2005a: 698-700, especially Table 2) because of the following dynamic: (1) If the minority group is relatively small, additional members tend to

[2] Stoll also extends her analysis to include the logic laid out by Dickson and Scheve (2010). Dickson and Scheve argue that shifts from extreme homogeneity to mild heterogeneity can actually lead to a decline in the number of parties. When combined with the rest of Stoll's theory, this leads to the prediction of an 'S' curve in the relationship between diversity and the number of parties: Initial increases in social heterogeneity lead to fewer parties. Further increases in heterogeneity lead to more parties, but, after a certain threshold, greater heterogeneity leads either to no additional parties or even fewer parties. We ultimately choose not to highlight this analysis here, as we believe it adds substantial complexity to our already complex discussion. Also, in running additional models intended to consider the possibility of this complexity, we find no evidence of such a relationship.

[3] Madrid finds little in the way of statistically significant relationships between ethnic diversity and the number of parties in the Latin American cases he studies (2005a: 699, Table 2). The reason for this, he argues, is that it is not diversity per se that shapes the number of parties, but rather the size of specific ethnic groups and whether these groups have their own distinct parties. However, his finding may be consistent with Stoll's analysis of an upside down U-shaped relationship between overall diversity and the number of parties in socially diverse societies. Although Madrid probes the possibility of the curvilinear (upside-down U-shape) relationship between group size and the number of parties, he does not do so for overall ethnic diversity. Had he done so, he might have found a statistically significant relationship, possibly even one consistent with Stoll's analysis.

concentrate votes on the *small* ethnic party, thereby making the party more competitive and, hence, increasing the total effective number of parties. But, (2) when the minority constitutes a relatively large share of the population, increases in its size lead to a *large* number of votes going to a now *large* ethnic party, leading to substantially fewer votes going to other parties and a decrease in the effective number of parties (Madrid 2005a: 694).

Many possible reasons for an upside-down U-shaped relationship between diversity and parties

In short, there is reason to think that diversity will not always have a positive, linear relationship with the number of parties. Indeed, using logic similar to that of both Madrid (2005a) and Stoll (ND), we argue that there are, in fact, numerous ways of arriving at the upside-down U-shaped curvilinear relationship between diversity and the number of parties, provided that the party system does not perfectly match up with the cleavages in society.

Both Madrid and Stoll make arguments that are similar to one another, but they do not present precisely the same causal story. Stoll's focus is on the party system level, or, more specifically, how differences in social diversity lead political entrepreneurs to make different choices in establishing parties: When there are a small number of moderately large groups, it is more likely that each will have its own party (or candidate) to represent it, but, with larger numbers of small groups, political entrepreneurs will be more likely to create parties (or promote candidates) that can attract voters beyond a single narrow group. In this way, higher levels of social diversity may actually lead to fewer parties. Madrid, on the other hand, emphasizes social (ethnic) *groups* and how their size and party preferences shape the number of parties. Indeed, including Madrid's focus on the voting behavior of specific groups allows us to extend Stoll's analysis to scenarios beyond the type that she discusses.

Stoll's analysis implies that the curvilinear (upside-down U-shaped) pattern will occur when there are more groups than parties. To offer a simplified version of Stoll's analysis, imagine a world with three groups (Groups 1, 2, and 3) and two parties (Parties 1 and 2). In this scenario, the leaders of Party 1 see that they can best achieve majority support by reaching out to both Groups 1 and 3, and therefore appeal to both groups. The result therefore is that Groups 1 and 3 support Party 1, and Group 2 supports Party 2. Under this scenario, if Group 1 makes up the entire population, there will, of course, be one group and one party (Party 1). As Group 2 enters the population and grows larger, there will be both an increase in the number of groups and the number of parties, since Party 2 will therefore also grow larger. Once Groups 1 and 2 are of equal size, there will be two groups and two parties. If Group 3 then enters the population and grows larger, there will be more groups, but fewer effective parties: Group 3's votes for Party 1 lead to a concentration of votes for that party and lead to a relative decline in Party 2's share of the vote.

The implication here is that this upside-down U-shaped pattern is a result of the fact that there are more groups than parties, but, in fact, it can occur when there are more parties than groups as well. The real key, as Stoll points out, is the set of parties that political entrepreneurs present to voters. Political entrepreneurs may often develop parties that do not align with social cleavages that exist in society. In this way (and as suggested by Madrid's analysis), groups may divide their votes for different parties in a variety of different ways – in some cases, concentrating their votes on a single party and, in other cases, dispersing their votes among a number of different parties. In many cases, the combination of groups concentrating and/or dispersing their votes can lead to the upside-down U-shaped relationship between diversity and the number of parties, even where there are more parties than groups.[4]

In many cases, it is easy to imagine political entrepreneurs developing political parties that do not perfectly match divisions within society, and, therefore, leading to a situation in which the relationship between social diversity and party fragmentation has a non-linear shape. The main point here is not about precisely when there will be curvilinearity, but rather that *there are many conditions under which there will not be a linear relationship between social diversity and the number of parties*. Indeed, as this discussion suggests, there are numerous scenarios – typically founded on social cleavages not being perfectly translated into the party system – in which the relationship between social diversity and party fragmentation would have a curvilinear upside-down U-shaped pattern.

Another reason for greater diversity promoting party fragmentation

Chandra (2009: 31) infers particular conditions – most notably, political systems that emphasize gaining patronage from one's representative party – under which ethnic groups might be especially likely to cast strategic ballots. Based on this analysis, Chandra suggests that substantial ethnic heterogeneity may lead to larger numbers of parties at the district level if

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[4] Imagine, for example, a scenario in which there are five distinct groups (1, 2, 3, 4, and 5) and eight parties (1a, 1b, 1c, 1d, 2, 3, 4, and 5). Group 1 divides its vote evenly between Parties 1a, 1b, 1c, and 1d. Meanwhile, Groups 2-5 each divide their votes evenly between the other four parties, Parties 2-5. Under this scenario, at first increases in social diversity are accompanied by increases in the number of parties. If any of the five groups makes up the entire population, the effective number of parties score will of course be four. For example, when only Group 1 is present, there are four parties, each with an equal share of the vote. And, as additional groups enter the society, both social diversity and party fragmentation increase. For example, if Group 2 enters the district and Groups 1and 2 each make up half the population, the effective number of parties score will be eight. However, after we reach the peak of eight in the effective number of parties score, increases in diversity lead to a consolidation of votes in fewer parties. That is, imagine that Group 3 enters the context we just described (i.e., effective number of groups is two and effective number of parties is eight). If Groups 1, 2, and 3 are all of equal size, the effective number of groups will be three. At the same time, a larger share of votes will go to Parties 2, 3, 4, and 5, and a smaller share will go to Parties 1a, 1b, 1c, and 1d. As a result, the effective number of parties will decline from the peak of eight, even while social diversity is increasing.

voters seek to curry favor with powerful parties that may be weak in their particular district but have access to patronage at regional or national levels of government. Interestingly, Chandra may be correct about the importance of patronage in driving the voting behavior of ethnic groups in some societies, but our analysis suggests that patronage politics is not at all necessary for ethnic diversity to lead to district-level party proliferation: We find that even in less patronage-oriented societies such as New Zealand ethnic diversity shapes the number of parties within plurality-based single-member districts.

Difference between behavior under SMD and PR balloting

<u>[This section contains some general speculations, and not fully developed ideas.]</u>

Even without survey data, we can use the very close similarities that we see in the relationship between diversity and the number of parties under both PR and SMDs to understand better the reasons that Duvergerian two-party outcomes may not hold in contexts of social diversity working through FPTP rules. Most notably, we can use the similarities in the curves we see under SMD and PR rules to draw inferences about whether large and/or small ethnic groups are particularly likely to engage in strategic behavior under plurality rules. The patterns we find in the SMD and PR tiers of mixed systems suggest the following: *while both majority and minority voters engage in strategic defection away from uncompetitive candidates under FPTP rules to some degree, groups comprising a district-level majority tend to engage in more strategic defection than groups in the minority.* We outline the logic underlying this assertion below.

Do majority and minority groups behave the same as one another?

First, in the SMDs we can see clear signs of strategic behavior, whether by voters transferring their votes from uncompetitive candidates to stronger ones or parties choosing not to run a potentially losing candidate. In every country we examine, except for the poorly institutionalized Ukrainian case, the number of parties is systematically lower in SMDs than in PR. But, second, it is highly unlikely that all supporters of weak candidates in SMDs vote strategically for a more competitive alternative: If all supporters of weak candidates did engage in such strategic defection, we would see little relationship between social diversity and the number of parties under plurality rules. However, in contrast to the Duvergerian outcome illustrated in Figure 7.1(b), the curves in Figure 7.3 demonstrate a clear relationship between diversity and the number of parties under both PR and SMDs.

Third, we can also reject the possibility that *all* groups are behaving equally strategically: The most startling thing about the PR-SMD pairings for each country in Figure 7.3 is that in each case the slope of the curve is nearly identical in both figures. That is, under both PR and SMD rules, within each country each increase in the number of groups is correlated with the same sized shift (whether positive or negative) in the number of parties. This is highlighted further by Figure 7.4, which demonstrates that for each level of diversity there is a nearly identical difference between the number of parties under SMD and PR rules. However, if all groups behaved equally strategically – e.g., fifty percent of voters in *each* ethnic group took their vote away from a likely loser under SMDs and instead gave it to a more competitive option – the curve representing the relationship between diversity and the number of parties in SMDs would be flatter than the curve in PR. Figure 7.5(a) illustrates this idea graphically.[5] If all members of each group behave sincerely (as would be common under a permissive PR system), promoting

[5] Figure 7.5 is simply designed to illustrate the rough outcomes for each of the scenarios that we describe. However, the precise slope and difference between the PR and FPTP curves are likely to vary widely.

and voting for their preferred party/candidate (that specifically represents members of that group),[6] then each increase in the number of groups will lead to a sizeable shift in the number of parties. However, if half of every group votes strategically for one of two competitive alternatives, then increases in the number of groups will not lead to as large shifts in the number of parties: The fifty percent of voters who cast their votes sincerely promote party fragmentation, but those voting strategically introduce a counteracting constraining effect on the number of parties.

[Figure 7.5 about here]

Earlier in this chapter, we suggested that minority groups might be less likely to engage in strategic defection because of an overwhelming preference for their top choice – but, fourth, the findings in this chapter suggest that the patterns we see in this chapter are not the result of overwhelming strategic behavior by a majority group with little strategic defection by minority groups. We illustrate the intuition here in Figure 7.5(b). If only a majority group voted strategically (and a substantial number of its voters did so when they supported an uncompetitive candidate), we would see a small number of parties in districts with only one group. However, if voters from all other groups voted totally sincerely (and had their group's party(s) available to vote for), there would quickly be an increase in the number of parties. Indeed, as the "majority" group takes up a smaller share of the electorate, its impact on the number of parties would decline and the number of parties would nearly match that which we would expect under PR (and its more purely sincere behavior). In this way, compared to purely sincere behavior (which is more likely in PR), if *only* a majority group engaged in strategic defection (under plurality

[6] Note that this does not exclude the possibility of any group dividing its vote among more than one party.

rules) there would be a steeper slope defining the relationship between diversity and the number of parties: In SMDs, after reaching some level of social diversity, each change in the number of groups would lead to a roughly identical change in the number of parties as under PR rules. In this way, at a certain level of diversity, the curve/line representing the relationship between diversity and the number of parties under plurality rules would closely hew to the curve/line under purely sincere behavior (under PR).

Similarly, and fifth, clearly the findings in this chapter are inconsistent with a situation in which the majority group does not engage in strategic defection but minority groups do. Figure 7.5(c) illustrates this scenario. If there is only a single group, and all members of the group vote sincerely irrespective of their preferred candidate's chances of election, there would be no difference in the number of parties under PR and SMD rules. However, as additional groups appear – each of which engages in strategic behavior – the impact of the majority groups' sincere behavior will lessen and the number of parties ought to decline or, at most, not increase very much. For the same reasons, we should also expect a similar outcome if the majority group engages in some strategic defection, but minority groups do so to an even greater degree.

The remaining option within all of this, then, is that all groups engage in strategic defection to some degree, but the majority group does so more than the minority groups. That is, as we see throughout most of Figures 7.3 and 7.4, when there is only a single group there are markedly fewer parties under plurality rules than in PR. This result is undoubtedly because a substantial share of the large group is engaging in strategic behavior (whether candidate exit or strategic defection by voters). With the addition of more groups, the curve under FPTP rules matches the curve in PR, except that the entire curve simply starts at a lower point. As we discussed earlier, *this outcome is not consistent with minority groups that behave strategically to* *the same extent as the majority group, with minority groups not behaving strategically at all, or with minority groups that behave more strategically than the majority group. The only remaining possibility is that minority groups also engage in strategic defection, but do so to a lesser degree than the majority group.*

Interactions between diversity and rules

The most common expectation of the constraining effect of electoral rules is that social diversity would have an effect on the number of parties under permissive electoral rules – such as the high district magnitude PR rules in the country cases that we examine – but not under restrictive rules like FPTP. If this expectation bears out for our cases, the coefficients on ENEG and ENEG2 should be very small (and non-significant), but the interaction terms will have statistically significant coefficients. In addition, if diversity has a positive linear effect on the number of parties under PR, PR*ENEG should have a positive coefficient, but if the relationship is curvilinear (i.e., upside-down U-shaped) PR*ENEG should have a positive coefficient and PR*ENEG2 should have a negative coefficient. In contrast, if diversity has a curvilinear relationship with the number of parties and shapes party fragmentation irrespective of electoral rules, then: ENEG will have a positive coefficient, ENEG2 will have a negative coefficient, and PR*ENEG and PR*ENEG2 will have very small (and possibly non-significant) coefficients.

[Table 7.3 about here]

The results (shown in Table 7.3) support the alternative view – social diversity appears to continue to have a curvilinear relationship with the number of parties and does not appear to have a much different effect in PR than it does in SMDs. For each of the variables used in Table 7.1, the coefficients remain in the same direction and in most cases stay statistically significant. The two principal exceptions are New Zealand, in which PR was no longer significant in the interactive model, and Wales, where none of the variables is significant. This lack of significance may be due in part to collinearity between the PR variable and the interaction terms.[7]

Interestingly, we find almost no evidence of an interaction between electoral rules and social diversity: None of the interaction terms is statistically significant. This result is consistent with our findings for the "simple" models we ran to create the curves/lines in Figure 7.3, where we ran our models separately in each tier in each country: For example, for the Russia illustrations in Figure 7.3, we regressed the effective number of parties in the SMD tier on just ENEG and ENEG2 in Russia, and then ran the same regression for only the PR tier in Russia. In those models, the size of the coefficient on each diversity variable was nearly identical in both the SMD and PR model for each country case. For example, the coefficient on ENEG for the New Zealand SMD model is of nearly the same magnitude as the coefficient on ENEG for the New Zealand PR model. We cannot rule out collinearity as a reason for our lack of findings for our interaction terms, but given our illustrative findings in Figure 7.3 we believe that the results for the interaction terms listed in Table 7.3 are probably relatively accurate.

In short, in the elections in our data set, diversity appears to have the same effect on the number of parties in both tiers. We find no constraining effect of the SMD tier on the impact of diversity.

Bolivia

[7] The impact of collinearity is particularly likely in Wales given the small number of observations.

We also analyzed data for Bolivia on diversity – including proportions of the population made up by indigenous groups – but did not include it in the analysis because of uncertainty over the likely incentives under the different electoral rules in Bolivia. As we note in Chapter 2, Bolivia uses voting in the PR tier to help elect the national president, thereby altering the incentives for strategic behavior.

Table 7.3: Interactions between Diversity and Electoral Rules

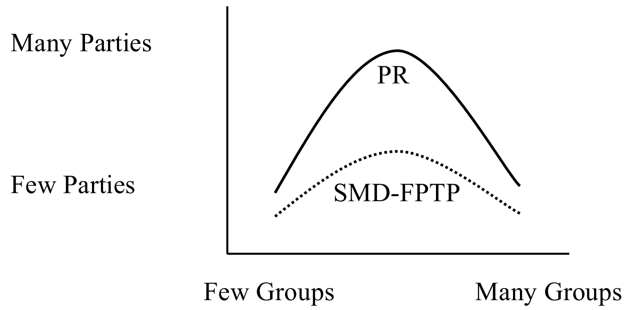
	NZ	Russia	Ukraine	Wales	Japan
PR	0.419***	0.632***	-0.100***	0.219**	0.437***
	(4.23)	(7.39)	(-2.90)	(2.17)	(19.75)
ENEG	1.143***	1.209***	1.018***	0.292*	0.0858***
	(4.12)	(6.96)	(7.65)	(1.70)	(3.79)
ENEG2	-1.093***	-0.606***	-0.790***		
	(-4.85)	(-5.20)	(-6.24)		
PR*ENEG	-0.211	-0.132	0.609***	-0.0311	-0.0215
	(-0.54)	(-0.54)	(3.23)	(-0.13)	(-0.67)
PR*ENEG2	0.0462	-0.0363	-0.430**		
	(0.15)	(-0.22)	(-2.41)		
Constant	0.835***	0.768***	1.403***	0.993***	0.811***
	(11.91)	(12.71)	(57.47)	(13.93)	(51.89)
Adj R-Sq	.646	.295	.102	.274	.772
N	124	792	2072	80	600

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

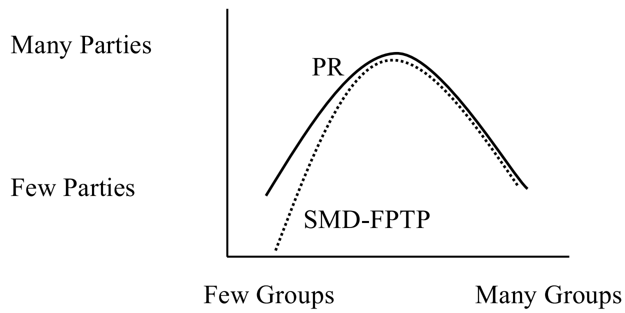
Dependent variable: The effective number of parties
Unit of analysis: Single-member district for New Zealand, Wales, and Japan, raion (county) for Russia and Ukraine

Figure 7.5: Relationship between diversity and number of parties based on amount of strategic defection by different groups under SMD-FPTP (and sincere behavior in PR)

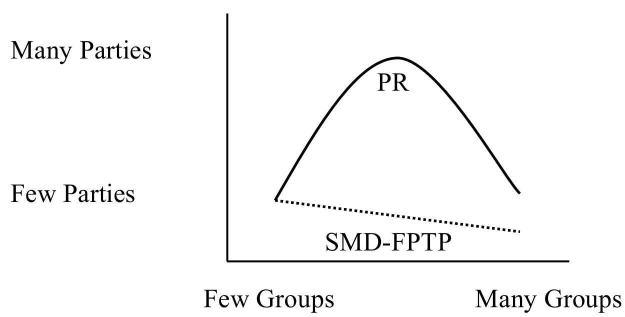
(a) Each group engages in same amount of strategic defection as all other groups in SMD-FPTP



(b) Only majority group engages in strategic defection under SMD-FPTP



(c) Only minority groups engages in strategic defection in SMD-FPTP



(d) What we find – consistent with strategic defection by all in SMD-FPTP, but more by majority groups