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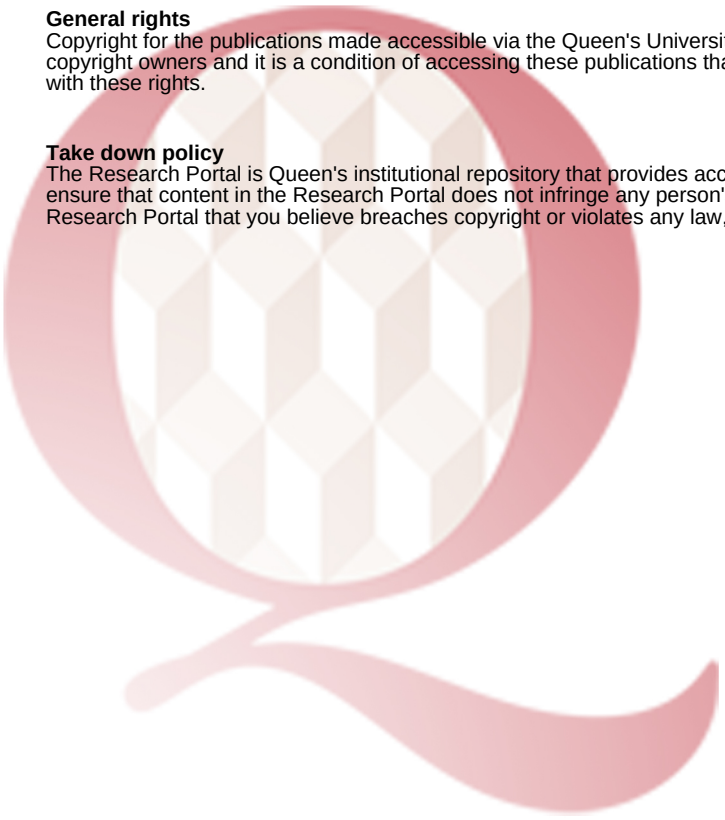

The effects of district magnitude and social diversity on party system fragmentation in majoritarian systems

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Abstract

Cross-national models of party system fragmentation hold that social diversity and district magnitude interact: higher levels of district magnitude allow for greater expression of social diversity that leads to higher levels of party system fragmentation. Most models, however, ignore differences between majoritarian and proportional electoral rules, which may significantly alter the impact of district magnitude, as well as the way in which district magnitude impacts the translation of social cleavages into party system fragmentation. Examining the case of Singapore suggests majoritarian multimember districts limit party system fragmentation, particularly by reducing the degree to which ethnic and religious diversity are translated into political parties. Applying these insights to a standard cross-national model of party system fragmentation, the results suggest that majoritarian multimember districts produce lower levels of party system fragmentation than proportional multimember districts.

Key Words: district magnitude; party systems; ethnic diversity; religious diversity

Cross-national models of party system fragmentation hold that social diversity and district magnitude interact: higher levels of district magnitude allow for greater expression of social diversity that leads to higher levels of party system fragmentation. Most models, however, ignore differences between majoritarian and proportional electoral rules, which may significantly alter the impact of district magnitude, as well as the way in which district magnitude impacts the translation of social cleavages into party system fragmentation. Examining the case of Singapore suggests majoritarian multimember districts limit party system fragmentation, particularly by reducing the degree to which ethnic and religious diversity are translated into political parties. Applying these insights to a standard cross-national model of party system fragmentation, the results suggest that majoritarian multimember districts produce lower levels of party system fragmentation than proportional multimember districts.[1]

Previous research shows that the fragmentation of the party system – both in terms of the number of parties and the degree to which votes are distributed across these parties – is determined in large part by the diversity of countries' social cleavage structures and the electoral system(s) in which elections are conducted. This literature argues that higher levels of social diversity lead to more fragmented party systems, particularly in proportional representation (PR) electoral systems with high levels of district magnitude (the number of seats awarded per district). Using measures of ethnic diversity as proxies for social diversity more generally, these expectations have been borne out in previous studies showing that party systems become more fragmented as district magnitude increases (e.g. Taagepera and Shugart, 1989; Ordeshook and Shvetsova, 1994; Amorim Neto and Cox, 1997; Clark and Golder, 2006; Singer and Stephenson, 2009).

That being said, these models do not account for differences between those higher-magnitude electoral systems awarding seats using proportional rules versus those employing majoritarian rules. While there may be a positive relationship between district magnitude and party system fragmentation in countries using proportional rules, this conclusion may not be supported in countries using majoritarian rules. In majoritarian systems, it may be that higher

levels of district magnitude make party competition more, not less, difficult (see, e.g., Taagepera and Shugart, 1989: 265; Taagepera, 2007: 177-182). Moreover, the positive relationship between social diversity and party system fragmentation seen in previous research may be similarly confined to PR systems, with higher levels of district magnitude in majoritarian systems limiting the impact of social diversity (or even leading to lower levels of party system fragmentation).

To illustrate how this may be the case, I examine the experience of majoritarian multimember districts in Singapore. The use of multimember districts in Singapore since 1988 suggests district magnitude in majoritarian systems is not necessarily associated with more fragmented party systems, as is the case in countries using PR systems. If anything, the case of Singapore suggests higher levels of district magnitude may *reduce* the degree to which ethnic and religious diversity are translated into higher levels of party system fragmentation. Incorporating these insights into cross-national models of party system fragmentation suggests the experience of Singapore is not unique: accounting for differences between PR and majoritarian systems shows that higher levels of district magnitude in majoritarian systems do not lead to significantly more fragmented party systems – and in some cases, such systems are associated with less fragmented party systems.

In the next section, I discuss the explanations that have been used in previous research to account for variation in party system fragmentation. Using the example of Singapore, but aiming towards generalization, I then turn to explore how majoritarian multimember districts put downward pressure on party system fragmentation by constraining the effects of social diversity. Following that, I conduct an empirical analysis demonstrating that incorporating these insights into a standard model used to explain party system fragmentation cross-nationally improves our understanding of how electoral systems and social cleavages interact to determine the size of the

party system. A final section concludes with a discussion of the implications these findings have for future research.

Previous Research

The logic underpinning studies of party system fragmentation derives from two principal literatures. One is rooted in the social cleavage tradition. Derived in large part from the work by Lipset and Rokkan (1967; see also Lipset, 1960; Bartolini and Mair, 1990), this literature argues that social diversity provides incentives for parties to form and represent particular social groups and the values associated with belonging to these groups (while voters, in turn, have incentives to support the party representing their social group). As a result, this literature predicts that higher levels of social diversity will be associated with higher levels of party system fragmentation.

The other major literature is rooted primarily in the work of Duverger (1963), who argued that the fragmentation of party systems can be understood as the product of two processes: electoral systems and the social structures potentially giving rise to the formation of parties. Regarding the impact of electoral systems, Duverger is best known for his 'law' stating that the number of parties in electoral districts electing only one representative on the basis of who wins the most votes (even if such a number only constitutes a plurality) will not exceed two in equilibrium. This is due to the phenomenon of tactical voting, whereby voters desert third-party candidates that choose to run (whether these candidates defy the incentives provided by the electoral system knowingly or not) in favour of one of the top-two candidates in their district because their preferred parties have no chance of winning the seat (McKelvey and Ordeshook, 1972; Cox, 1997). Though party system fragmentation in practice often exceeds two-party

predictions (e.g. Singer, 2013), the fact remains that single-member district plurality systems put downward pressure on the formation and success of third parties (Rae, 1967; Lijphart, 1990; Clark and Golder, 2006; Singer and Stephenson, 2009).

By the same logic, Duverger's hypothesis predicts that PR systems will be associated with multiparty systems. The primary marker of electoral system proportionality is district magnitude (herein abbreviated as *M*): districts electing more than one representative and awarding seats on the basis of proportionality to one's vote share give third parties a better chance of winning seats, which in turn provides voters with incentives to vote for third parties. As *M* increases, party system fragmentation increases – provided that the social structure creates sufficient pressures for the formation of parties.

Building on these insights, previous research has developed a model explaining how electoral systems and social structures interact and determine party system fragmentation, with social diversity producing higher levels of party system fragmentation (per Lipset and Rokkan), particularly in large-*M* electoral systems awarding seats based on the principle of proportionality (per Duverger's hypothesis). Previous literature applying this model across a broad range of countries and elections concludes that social diversity is positively associated with party system fragmentation, particularly in PR systems electing large numbers of representatives per district (Ordeshook and Shvetsova, 1994; Amorim Neto and Cox, 1997; Geys, 2006; Clark and Golder, 2006; Singer and Stephenson, 2009). Even though other research – responding to the problems of using ethnicity as the sole marker of social diversity as most previous research has done (Stoll, 2008) – shows that religious diversity puts downward pressure on party system fragmentation (Raymond, 2016), the relationship between religious diversity and party system fragmentation becomes positive at higher levels of *M*.

Despite the considerable body of evidence suggesting higher values of *M* allow for greater fragmentation of the party system, there is reason to question the conclusion that higher levels of *M* lead to higher levels of party system fragmentation in all cases. This is because most research fails to distinguish between multimember districts awarding seats according to proportional rules versus those using majoritarian rules. This distinction is potentially important, as the prediction of a positive association between *M* and party system fragmentation is predicated on the use of PR. As previous research has noted (Lakeman, 1970; Taagepera and Shugart, 1989: 265; Taagepera, 2007: 177-182), higher levels of *M* in majoritarian systems make competition more difficult for smaller parties in ways that should reduce, not increase, party system fragmentation. Additionally, although *M* in majoritarian systems may put downward pressure on the number of viable parties, it could be that the most important effect of *M* in majoritarian systems is the impact of *M* on the ways in which social cleavages shape party system fragmentation. Though higher levels of social diversity translate into greater party system fragmentation at higher levels of *M* in PR systems, higher values of *M* in majoritarian systems may weaken the effect of ethnic and religious diversity, perhaps even leading to lower levels of party system fragmentation.

This debate regarding the difference in the effects of *M* and social diversity between majoritarian and PR systems may have important consequences for managing conflict in diverse societies. One perspective, drawing from consociational theory (Lijphart, 1977; 2007), argues that the best way to manage conflicts in socially diverse contexts is to employ PR systems that give parliamentary representation to parties representing each group separately. By securing representation for all relevant groups, consociational theory maintains that the resulting fragmentation of the party system will prevent any one group from dominating policymaking,

which in turn will compel parties to cooperate and share power peacefully. Others, however, contend that cooperation across social group lines cannot be guaranteed under such segmented representation and fear that excessive fragmentation will only lead to political gridlock that leads to conflict (Horowitz, 1985; 2014; Reilly, 2012). Instead of promoting party system fragmentation, centripetalist scholars argue that peace is best achieved by employing majoritarian electoral systems in order to compel social groups to cooperate in support of the same parties. If one is concerned with excessive party system fragmentation in diverse societies, then the discussion above suggests constitutional designers may want to use *higher*, not lower, values of *M* with majoritarian seat allocation rules in order to constrain party system fragmentation. This, however, assumes that majoritarian systems constrain the effects of social diversity on party system fragmentation. The next section explores how this may be the case.

District Magnitude, Social Diversity, and Party System Fragmentation in Singapore

One case that illustrates the impact of majoritarian multimember districts on the degree to which social diversity is translated into party system fragmentation is Singapore. Though elections are conducted freely and without much corruption, Singapore is a one-party dominant state that has been ruled by the People's Action Party (PAP) since independence (Ganesan, 1998). The PAP has always garnered more than 60 percent of the vote, while opposition parties have been weak and divided. As a result, party system fragmentation has been limited despite Singapore's moderate levels of ethnic diversity, high levels of religious diversity, and the adoption of multimember districts for elections from 1988 on. The lack of party system fragmentation can be seen in Figure 1, which presents the effective number of electoral parties (or *ENEP*: see Laakso and Taagepera, 1979), a measure that calculates party system

fragmentation by counting each party and weighting it by its share of the total vote.[2] Since independence, party system fragmentation has fluctuated between 1.31 and 2.51 effective parties, with an average of 2.0 effective parties.

Figure 1 about here

Part of the reason for the lack of viable challengers was due to the use of a single-member district plurality electoral system, which Singapore inherited from Britain and used until 1984. From 1988, however, Singapore has used a mix of single-member and group representation constituencies with as many as six members elected per district. Despite the adoption of multimember districts, there has been little appreciable change in party system fragmentation. This can be seen in Figure 1, which shows that – despite the increase in *M* in 1988 – *ENEP* has not increased appreciably since Singapore began using multimember districts in 1988. In fact, one of the biggest election-to-election increases in party system fragmentation occurred *prior to* the adoption of multimember districts. This shows that multimember districts have not produced the increases in party system fragmentation one would expect based on models assuming that higher levels of *M* lead to more fragmented party systems.

Instead of promoting party system fragmentation, multimember districts were introduced as an attempt to increase the representation of ethnic minorities and promote a sense of national solidarity. Specifically, the government feared ethnic minorities – namely, the Malay, but also the Indian community – would lose a sense of identification with the state if they remained underrepresented in Parliament. Through group representation constituencies, which require that ethnic minority candidates are placed on the ballot as part of each party's team of candidates in the constituency, the government sought to reduce ethnic tensions by increasing *M*.

This decision had partisan consequences. Namely, it strengthened the position of PAP

and reduced the viability of smaller parties. Seats in group representation constituencies are awarded on a majoritarian basis: the party that wins a plurality elects all its candidates. As a result, parties have to gather as many candidates as there are seats in order to run in group representation constituencies. In most cases, only the PAP has the resources and appeal to attract sufficient numbers of candidates to run across ethnic group lines in constituencies electing six seats. Even without the requirement of ethnically balanced candidate slates, higher *M* limits the effect of ethnic diversity on party system fragmentation because ethnically exclusive parties are not viable in majoritarian multimember districts: owing to their size, ethnic groups constituting a small share of the population are unable to propel ethnically exclusive parties to victory, and thus must cooperate with other ethnic groups in order to form parties with sufficient support to elect candidates.

We can see evidence of the degree to which majoritarian multimember districts constrain the effects of ethnic diversity on party system fragmentation when looking at the breakdown of the vote going to the PAP versus all opposition parties among the major ethnic groups in Singapore. Table 1 presents this information using data from the sixth wave of the World Values Survey (2015). Despite moderate levels of ethnic diversity, each of the major ethnic groups in Singapore votes overwhelmingly for the PAP. This stands in contrast to the expectations drawn from previous models of party system fragmentation assuming that higher levels of *M* lead to higher levels of party system fragmentation as different ethnic groups support different parties. Instead, the data in Table 1 show that voters are not significantly divided along ethnic group lines.

Table 1 about here

In addition to the impact of majoritarian rules on the relationship between ethnic diversity

and party system fragmentation in multimember districts, there is also reason to believe majoritarian rules may have similar consequences for the effects of religious diversity. While previous research suggests the relationship between religious diversity and party system fragmentation shifts from negative to positive as *M* increases (Raymond, 2016), the impact of *M* on this relationship may differ significantly between countries awarding seats according to majoritarian and proportional rules. In PR systems, higher *M* increases the chance that religious groups may be able to form and elect their own parties, and thus one would expect to see a positive relationship between religious diversity and party system fragmentation in PR systems. In majoritarian multimember districts, however, winning seats is not only more difficult when compared to PR systems, but the consequences of losing any one multimember district are amplified relative to elections in single-member districts. Given that the pressures created by religiously diversity for religious groups to cooperate in support of a winning party that can promote their values (see Raymond, 2016, pp. 367-368), the extra-majoritarian conditions created by majoritarian multimember districts should exaggerate the effects of religious diversity. As a result, one would expect the negative association between religious diversity and party system fragmentation to intensify as *M* increases in majoritarian electoral systems.

There is certainly reason to believe that if religious diversity puts downward pressure on party system fragmentation, and if this effect is intensified by the use of majoritarian multimember districts, then Singapore's high levels of religious diversity may also help to explain its one-party dominant system. Singapore is one of the most religiously diverse countries in the world (even more so than it is ethnically diverse). Rather than competing against one another, however, (as most interpretations of Lipset and Rokkan would suggest), religious groups cooperate well with one another in support of the largest party, the PAP. This can be seen

in Table 2, which presents the percentages of each religious group voting for the PAP versus all opposition parties using data from the sixth wave of the World Values Survey (2015). The data show that overwhelming majorities of each religious group express support for the PAP. While this level of support for the PAP varies across religious groups – ranging from 82.9 percent of Jews supporting the PAP to only 66.7 percent among Taoists – the fact remains that the overwhelming majority of voters in each religious group support the PAP. Similar to the (non-) effect of ethnic diversity, the data in Table 2 stand in contrast to the expectations of previous literature: rather than dividing more clearly along religious group lines as *M* increases, the data in Table 2 show that the overwhelming majority of each religious group's members support the PAP.

Table 2 about here

While the data in Table 2 cannot demonstrate that the use of majoritarian multimember districts intensifies the negative effect of religious diversity, the evidence is consistent with this interpretation. The fact that the overwhelming majority of each religious group supports PAP – instead of some groups dividing in support of PAP and others dividing in support of the largest opposition party – suggests the extra-majoritarian conditions created by the use of majoritarian multimember districts compel religious groups to cohere politically more than might otherwise be expected under other, less majoritarian electoral rules. In keeping with the lack of division observed among Singapore's ethnic groups, the lack of division among religious groups suggests the use of majoritarian multimember districts does not lead to greater party system fragmentation, and instead leads to reduced levels of fragmentation.

Although Singapore's low levels of party system fragmentation are likely due in part to the fact the government has compelled parties to run candidates across ethnic group lines, the

impact of majoritarian multimember districts seen here may be generalizable to other countries that do not mandate such cross-community cooperation. In keeping with previous research showing that *M* puts downward pressure on party system fragmentation (Lakeman, 1970; Taagepera and Shugart, 1989; Taagepera, 2007), the example of Singapore suggests that we should observe a negative relationship between *M* and party system fragmentation in majoritarian systems. Moreover, because Singapore's use of group representation constituencies was explicitly designed to reduce the divisive impact of social diversity on party support (independently of the legal requirement to field multi-ethnic candidate lists), there is additional reason to believe that higher levels of *M* in other majoritarian countries may reduce party system size by weakening the impact of ethnic and religious diversity on the fragmentation of the party system. The next section examines whether this is the case.

Data Analysis

To test whether the insights from the case study of Singapore have broader cross-national implications, I incorporated the effects of majoritarian multimember districts into a standard model of party system fragmentation discussed above (see Ordeshook and Shvetsova, 1994; Amorim Neto and Cox, 1997; Clark and Golder, 2006). The dependent variable is party system fragmentation, which is measured using the *ENEP* measure described above.[3] Ethnic and religious diversity are similarly measured as the effective number of ethnic groups (*Ethnic*) and the effective number of religious groups (*Religious*). Following the practice of Clark and Golder (2006), I use data from Fearon (2003) to measure ethnic diversity. The measure of religious diversity uses data from Pew (2011, 2014). This measure captures the percentages who are Christian religions (which are broken down into Protestant, Catholic, Orthodox, and other),

Muslim, Jewish, Hindu, Sikh, Buddhist, not affiliated with religion, and all others. To account for possible curvilinear relationships between ethnic diversity and religious diversity on the one hand and party system fragmentation on the other (Raymond, 2015), I take the natural logarithm of both ethnic diversity (*LogEthnic*) and religious diversity (*LogReligious*).

In addition to ethnic diversity, the model includes several other predictors of party system fragmentation:

LogM: the (logged) mean *M*; as *M* increases, party system fragmentation increases.

LogEthnic x *LogM*: the interaction between *LogEthnic* and *LogM*; the effect of *LogM* is assumed to be conditional on *LogEthnic*, leading to increases in party system fragmentation only in ethnically diverse contexts.

LogReligious x *LogM*: the interaction between *LogReligious* and *LogM*.

Upper Tier: the percentage of representatives elected in a proportional upper tier; the higher the percentage, the greater party system fragmentation will be.[4]

ENPRES: the effective number of candidates in presidential elections (this variable takes a value of zero in parliamentary systems); more fragmented presidential party systems lead to more fragmented legislative party systems.

Proximity: the time elapsed between legislative and presidential elections, scaled to range

between zero – legislative and presidential elections are held as far apart from one another as possible, or no presidential elections are held – and one – when both elections are held simultaneously (see Amorim Neto and Cox, 1997).

ENPRES x *Proximity*: the interaction between *ENPRES* and *Proximity*; the impact of *ENPRES* may be stronger in legislative elections held closer in time to the presidential election.

I also include a variable measuring the differences between the effects of *M* in majoritarian and PR systems. This variable is coded one for PR systems and zero for majoritarian systems. Elections are deemed to be majoritarian if they were held under one of the following electoral systems: two round, alternative vote, block vote, limited vote, single non-transferable vote, and single-member district plurality systems. I then create interactions between this variable and *LogM*, *LogEthnic*, *LogReligious*, and the interactions among these variables (resulting in two three-way interactions: *Non-Majoritarian Systems* × *LogM* × *LogEthnic* and *Non-Majoritarian Systems* × *LogM* × *LogReligious*). This leaves majoritarian systems as the baseline, which in turn allows one to interpret the effects of ethnic/religious diversity and multimember districts in majoritarian systems more easily when looking at the coefficients.

The specific data set used here was compiled by Bormann and Golder (2013). This data set consists of elections to the lower houses of legislatures in countries around the world between 1946 and 2011.[5] Countries are included if they meet a minimum threshold of democracy, defined by Alvarez et al. (1996), which treats countries as democratic only if there has been a peaceful turnover in power after an election. Though this measure is strongly correlated with other measures of democracy (Munck and Verkuilen, 2002; Norris, 2008), this criterion – and, thus,

this data set – omits countries with unbroken elections that not only meet standards of free and fair conduct, but also meet other definitions of democracy. This includes Singapore, which is omitted from the data set due to the lack of party turnover in the country's electoral history – despite the fact Singapore's democracy rating on other measures surpasses some of those countries included in the Bormann and Golder data set. Though the results presented here omit Singapore, re-estimating the models after including Singaporean elections produces results similar to those presented here (see the supplemental file).

Table 3 presents parameter estimates for the model outlined above. To estimate this model, I use ordinary least squares linear regression. Because the Bormann and Golder data set includes multiple elections for some countries, which means standard errors may be underestimated due to the correlation among observations within the same country, I follow the practice of Clark and Golder (2006) and cluster standard errors by country.[6]

Table 3 about here

The coefficients indicate some initial support for the expectations. Although the partial effect of *LogM* is positive (indicating that higher levels of *M* lead to greater party system fragmentation in majoritarian systems – as is the case in PR systems), this effect is reduced as ethnic and religious diversity increase (as implied by the negative coefficients for the interactions with *LogEthnic* and *LogReligious*). Moreover, as indicated by the negative coefficients for the interactions with *LogM*), the effects of ethnic and religious diversity similarly weaken as *LogM* increases.

Due to the difficulty of interpreting interaction effects from examining coefficients alone (Brambor, Clark, and Golder, 2006), I also generate several graphs illustrating the marginal effects of *LogEthnic*, *LogReligious*, and *LogM*. Figure 2 presents the average marginal effects

due to a one-unit increase in *LogEthnic* and *LogReligious* (corresponding to increases from one to effectively 2.72 ethnic/religious groups), conditional on *LogM*. All other variables are held to their (majoritarian sample-specific) median values. I restrict each graph to the majoritarian sample-specific range of *LogM*.

Figure 2 about here

Beginning with the effects of ethnic diversity, we see that while the effect of ethnic diversity in PR systems is positive (but not statistically significant) in low-*M* systems, this effect intensifies and becomes statistically significant at higher values of *M* – in keeping with previous literature. In majoritarian systems, the opposite pattern appears: while the effect of ethnic diversity is positive and statistically significant in low-*M* systems, this effect becomes negative (though fails to reach statistical significance) as *LogM* increases. Similar findings emerge when looking at the effect of religious diversity. In keeping with Raymond (2016), though the effect of *LogReligious* in PR systems is negative at low levels of *LogM*, this effect becomes positive at higher levels of *LogM*. In majoritarian systems, however, the effect of *LogReligious* is negative across the entire range of *LogM*. While the confidence intervals are wide at higher levels of *LogM*, Figure 2 suggests the negative relationship between religious diversity and party system fragmentation intensifies in majoritarian systems as *M* increases.

These results suggest that differences between majoritarian and PR systems have important consequences for the translation of social cleavages into party system fragmentation. In keeping with the experience of Singapore detailed above, the results in Figure 2 suggest that majoritarian systems limit the impact of both ethnic and religious diversity on party system fragmentation. While increases in both measures of diversity lead to greater levels of party system fragmentation in PR systems – particularly as *LogM* increases – ethnic and religious

diversity do not necessarily lead to higher levels of party system fragmentation in countries employing majoritarian electoral systems – again, especially as *LogM* increases. In fact, *LogM* may actually lead to lower levels of fragmentation by limiting the effects of ethnic/religious diversity.

Turning to the estimated effects of *LogM*, Figure 3 presents the average marginal effects due to an increase in *LogM* from 0 to 1 (corresponding to an increase from $M = 0$ to $M = 2.72$), conditional first on ethnic, then religious diversity, in both PR and majoritarian systems. As above, all other variables are held to their median values. Each graph is restricted to the majoritarian sample-specific ranges of *LogEthnic* and *LogReligious*.

Figure 3 about here

The estimated effects of *LogM* seen in Figure 3 show that, as predicted by previous research, higher values of *LogM* lead to more positive effects on *ENEP* in PR systems, particularly in ethnically and/or religiously diverse contexts. In contrast, what are positive effects of *LogM* at lower levels of ethnic/religious diversity in majoritarian systems weaken to the point that the effects of *LogM* become negative at higher levels of ethnic and religious diversity. While the estimated effects of *LogM* in PR systems remain positive – and statistically significant in more religiously diverse contexts – the negative effects of *LogM* in majoritarian systems do not reach statistical significance. The fact the effects of *LogM* do not reach statistical significance whilst the effects of *LogEthnic* and *LogReligious* do suggests that while majoritarian multimember districts intensify the majoritarian quality of elections that produces negative relationships between ethnic/religious diversity and party system fragmentation, *M* itself does not directly reduce party system fragmentation in majoritarian systems. Instead, majoritarian multimember districts reduce party system fragmentation by constraining the effects of social

diversity.

To see the implications of these effects for the overall levels of party system fragmentation observed in majoritarian systems, I present several predicted values of party system fragmentation at different levels of *LogEthnic*, *LogReligious*, and *LogM*. Specifically, I estimate three sets of predicted values assuming different levels of *LogEthnic* and *LogReligious*: one assuming moderate levels of both ethnic and religious diversity (holding both variables to their majoritarian-specific medians), another assuming high levels of ethnic and low levels of religious diversity (holding ethnic diversity at the upper quartile and religious diversity at the lower quartile), and a third assuming low levels of ethnic and high levels of religious diversity (holding ethnic diversity at the lower quartile and religious diversity at the upper quartile). For each of these contexts, I estimate three predicted values assuming differences in the electoral system to illustrate how social diversity interacts with the electoral system: one assuming *LogM* = 0 in majoritarian systems, a second assuming *LogM* = 1 in majoritarian systems and a third assuming *LogM* = 1 in PR systems. All other variables are held at their median values.

Figure 4 about here

The predicted values in Figure 4 suggest that while multimember districts increase party system fragmentation in PR systems, multimember districts in majoritarian systems may help to limit fragmentation. In all three contexts of social diversity, the use of majoritarian multimember districts is associated with lower levels of party system fragmentation than both multimember districts in PR systems and majoritarian single-member district systems. This is particularly the case for countries with high levels of religious diversity and low levels of ethnic diversity, where the use of majoritarian multimember districts intensifies the impact of religious diversity to the point that it reduces party system fragmentation to levels that may be too low for comfort for

some constitutional designers. Consistent with the finding that majoritarian multimember districts reduce the impact of ethnic diversity on party system fragmentation (as seen in Figure 2), Figure 4 suggests that majoritarian multimember districts also limit party system fragmentation in countries with higher levels of ethnic diversity. Thus, for constitutional designers looking to limit excessive party system fragmentation along ethnic/religious group lines, majoritarian multimember districts may help to constrain such fragmentation (certainly relative to PR systems).

Taken together, the results presented above help us to understand differences in party system fragmentation between majoritarian and PR systems and the impact of social diversity and *M*. As seen with both ethnic and religious diversity, increases in social diversity in majoritarian systems do not lead to the same degrees of party system fragmentation as seen in PR systems. This leads to the conclusion that the effects of social diversity leading to greater party system fragmentation are constrained in majoritarian systems. While the results suggest *M* is not as directly responsible for the low levels of party system fragmentation observed in majoritarian systems like Singapore, the results show that higher levels of *M* do have a significant conditional effect that constrains the impact of social diversity into party system fragmentation – and, at times, reducing party system fragmentation – as *M* increases.

Conclusion

A large body of previous research examining the determinants of party system fragmentation assumes an interaction between *M* and social cleavages, arguing that higher levels of *M* intensify the effect of social cleavages, leading to higher levels of party system fragmentation. However, most research does not distinguish between majoritarian and PR

systems, and as a result most models assume the effects of *M* under the two types of electoral systems are equivalent. Given differences in the likelihood of winning seats between the two types of electoral systems, the impact of *M* may differ significantly in majoritarian electoral systems versus PR systems.

To explore the consequences of the differences between majoritarian and PR systems for the effects of social diversity and *M* on party system fragmentation, this paper conducted a case study of Singapore, whose one-party dominant electoral system persists despite moderate levels of ethnic diversity and *M*. This case study suggested that multimember districts in majoritarian electoral systems may reduce, not increase, the impact of ethnic diversity on party system fragmentation – whilst intensifying the already negative relationship between religious diversity and party system fragmentation. Despite ethnic diversity, the overwhelming majority of each ethnic group in Singapore supports the PAP, which is promoted by the majoritarian nature of Singapore's multimember districts. Similarly, Singapore's high level of religious diversity also fails to produce party system fragmentation, with the overwhelming majority of each religious group in Singapore siding with the PAP.

Applying these insights to party systems cross-nationally, the results presented in this paper illustrate two key findings. First, they suggest that while ethnic and religious diversity are translated into higher levels of party system fragmentation as *M* increases in PR systems, the same cannot be said of majoritarian systems. Instead, these results suggest that multimember districts in countries using majoritarian electoral rules limit the degree to which ethnic and religious diversity are translated into greater party system fragmentation. Similar to the experience of Singapore, majoritarian multimember districts attenuate the effect of ethnic diversity on party system fragmentation. Moreover, in the case of religious diversity, the results

show that the negative relationship between religious diversity and party system fragmentation becomes intensified in majoritarian multimember districts, leading to even lower levels of party system fragmentation.

Second, the results presented here help us to understand how multimember districts work to reduce party system fragmentation in majoritarian systems. The results presented here suggest the reason why *M* is negatively associated with party system fragmentation in majoritarian systems is because *M* conditions the effects of ethnic and religious diversity, which become negatively associated with party system fragmentation at higher levels of *M*. While the effect of *M* in majoritarian systems becomes negatively associated with party system fragmentation as ethnic and religious diversity increase, the fact the effects of *M* do not reach statistical significance – while the effects of ethnic and religious diversity do across many values of *M* – suggests the low levels of party system fragmentation in majoritarian multimember districts are due more directly to the impact of the social structure than to the effects of *M*.

The results presented here have two principal implications for future literature. First, given the differences observed between the effects of social diversity and *M* in PR systems versus those in majoritarian systems, the results suggest future research should distinguish between PR and majoritarian systems when modelling the effects of social diversity and *M* on party system fragmentation. Specifically, the literature needs to account for the possibility that while the effects of social diversity may lead to increases in party system fragmentation in PR systems, the results presented here suggest these effects are at least constrained in majoritarian systems (if not negatively associated with party system fragmentation). By the same token, the results presented here suggest that future research should also take into account the constraining effect of *M* – particularly as it pertains to the impact of *M* on the relationship between social

diversity and party system fragmentation – in majoritarian systems so as not to misspecify the effects of *M* under majoritarian rules or underestimate the effects of *M* in PR systems.

Secondly, and as a result of the first implication, these results also have important ramifications for the literature on constitutional design in ethnically/religiously diverse societies. Of interest to centripetalist scholars, the results presented here show that higher values of *M* in majoritarian systems limit the degree to which social diversity is translated into party system fragmentation, and that majoritarian systems can limit party system fragmentation relative to PR systems. These results suggest that constitutional designers fearing excessive party system fragmentation in diverse societies can employ majoritarian multimember districts to limit the degree to which social diversity impacts party politics. Whether or not limiting the impact of social diversity on party system fragmentation promotes peaceful cooperation across ethnic/religious group lines (as is the case in Singapore) or not remains an open question; what the results presented here do demonstrate, however, is that the effects of social diversity on party system fragmentation in diverse societies can be constrained.

Table 1: Ethnicity and Party Preferences in Singapore in 2012

		Party	
Ethnic Group	Share	PAP	Other
Chinese	73.7%	73.4%	26.6%
Malay	14.8%	77.0%	23.0%
South Asian	10.4%	77.1%	22.9%
Other	1.2%	56.3%	43.8%

Entries are the percentages within each denomination (row) voting for each of the four largest parties. Row totals may not sum to 100 percent due to rounding error. PAP = People's Action Party. "Share" refers to the share of the sample falling into each ethnic group category. Data from the 6th wave of the World Values Survey.

Table 2: Religion and Party Preferences in Singapore in 2012

		Party	
Denomination	Share	PAP	Other
Buddhist	30.7%	77.2%	22.8%
Taoist	9.3%	66.7%	33.3%
Hindu	7.3%	77.6%	22.5%
Muslim	17.0%	77.0%	23.0%
Jewish	0.3%	82.9%	17.1%
Protestant	10.5%	71.9%	28.1%
Catholic	6.4%	66.8%	33.2%
None/Other	18.6%	72.4%	27.6%

Entries are the percentages within each denomination (row) voting for each of the four largest parties. Row totals may not sum to 100 percent due to rounding error. PAP = People's Action Party. "Share" refers to the share of the sample falling into each religious denomination. Data from the 6th wave of the World Values Survey.

Table 3: Parameter Estimates of Models Predicting Party System Fragmentation

Variables	Coefficients	(S.E.)
LogEthnic	0.71*	(0.32)
LogReligious	-1.03*	(0.45)
LogM	3.89*	(1.95)
LogEthnic × *LogM*	-2.34	(1.56)
LogReligious × *LogM*	-4.37+	(2.50)
Non-Majoritarian Systems	0.70	(0.82)
Non-Majoritarian × *LogEthnic*	-0.14	(0.95)
Non-Majoritarian × *LogReligious*	0.28	(0.76)
Non-Majoritarian × *LogM*	-4.28*	(1.97)
Non-Majoritarian × *LogM* × *LogEthnic*	2.78+	(1.64)
Non-Majoritarian × *LogM* × *LogReligious*	5.02*	(2.49)
Upper Tier	0.01	(0.01)
ENPRES	0.17	(0.12)
Proximity	-3.26**	(0.45)
ENPRES × *Proximity*	0.83**	(0.19)
Constant	3.56**	(0.43)
R^2	0.37	
n	741	

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, two-tailed tests (robust standard errors clustered by country).

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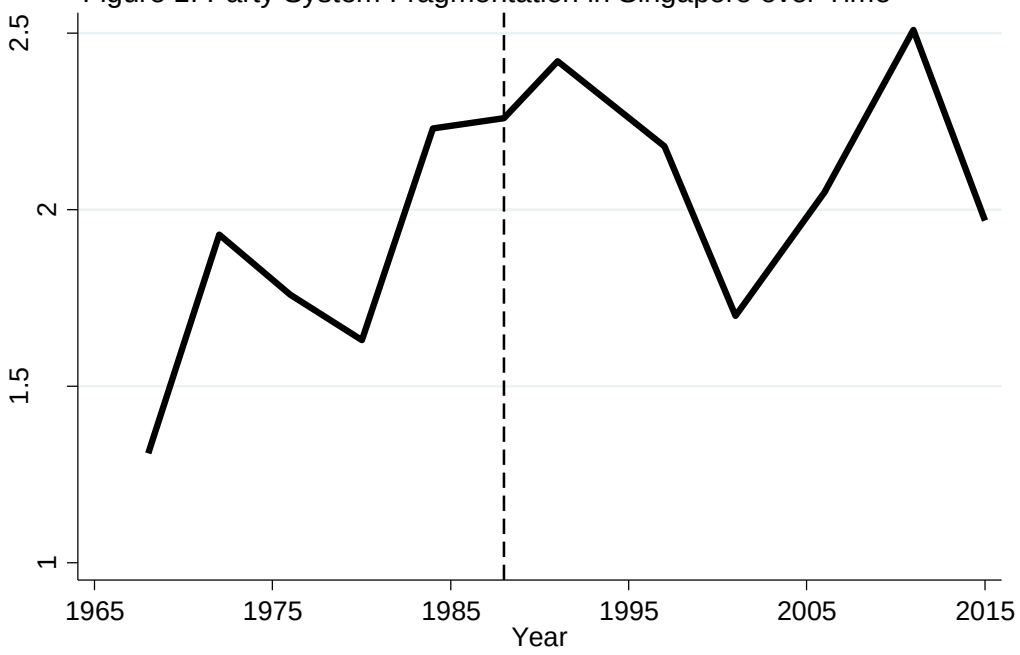
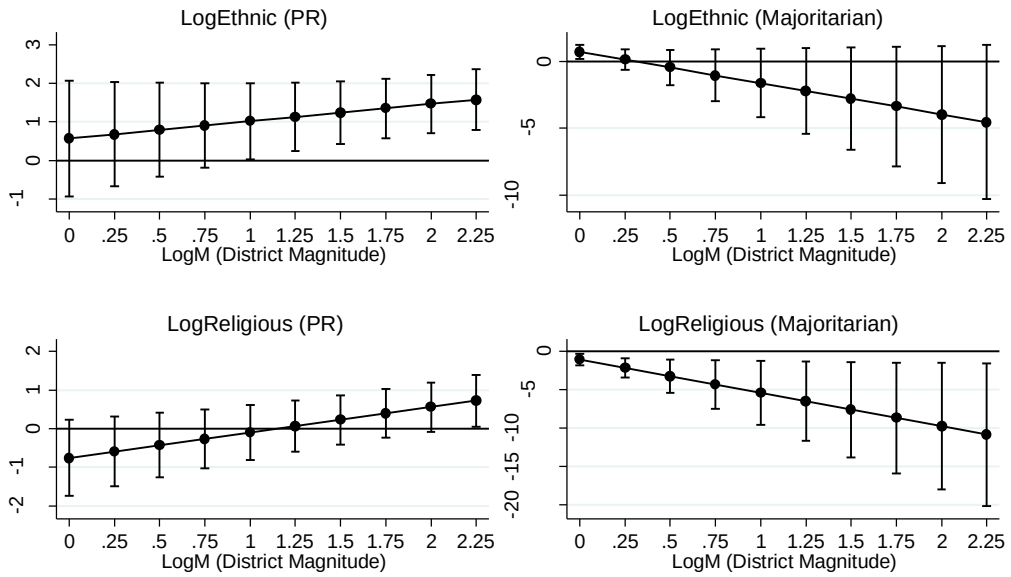
Figure 1: Party System Fragmentation in Singapore over Time



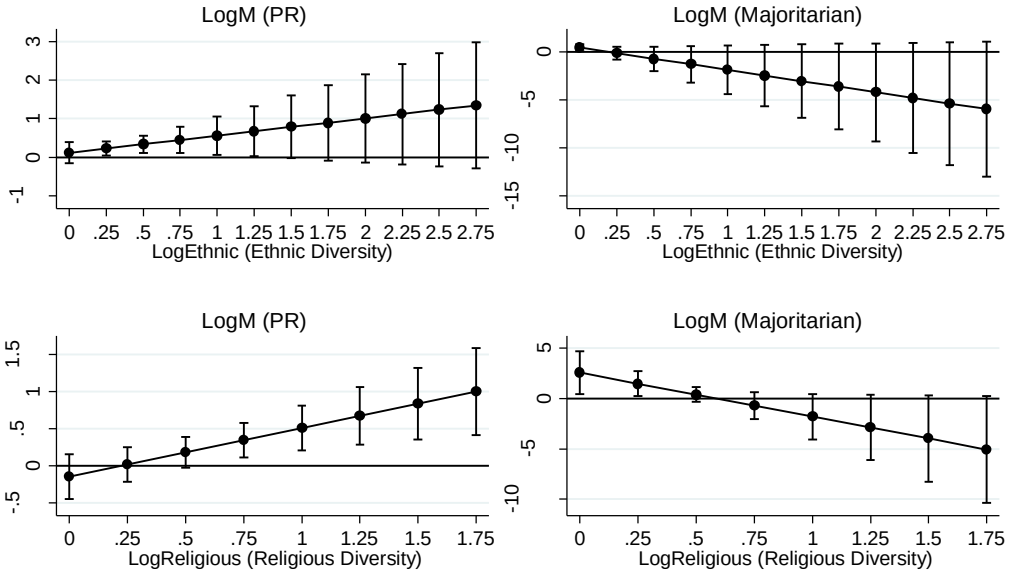
Note: reference line denotes the year group representation constituencies were adopted.

Figure 2: The Estimated Effects of Ethnic and Religious Diversity on ENEP, Conditional on the Electoral System (District Magnitude, PR vs. Majoritarian)



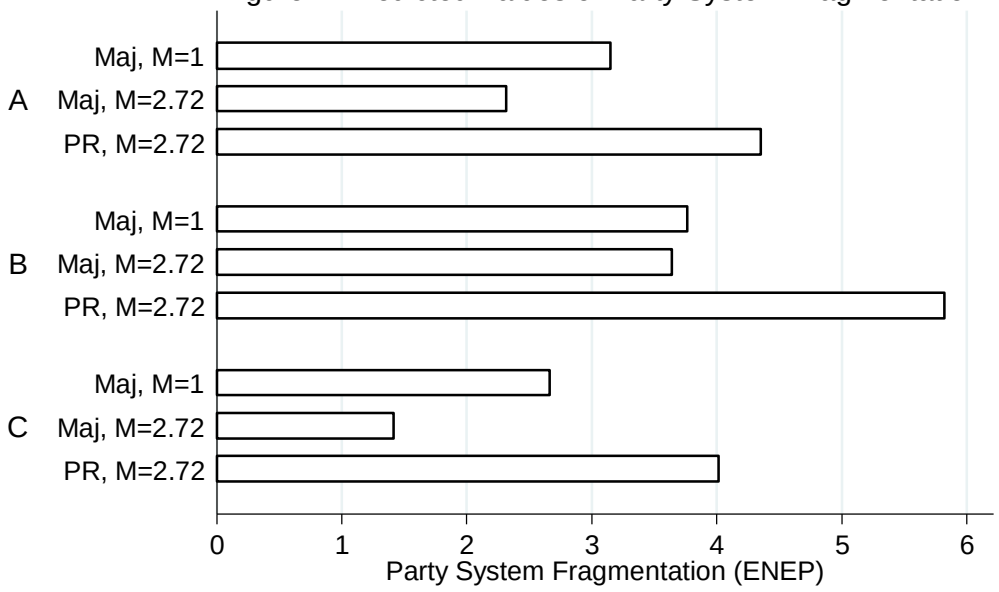
Notes: Entries are the average marginal effects of a one-unit change in each variable with 90% confidence intervals.

Figure 3: The Estimated Effects of District Magnitude Conditional on Ethnic/Religious Diversity and Electoral System Type (PR vs. Majoritarian)



Notes: Entries are the average marginal effects of a one-unit change in each variable with 90% confidence intervals.

Figure 4: Predicted Values of Party System Fragmentation



Notes: entries are the predicted values of ENEP.
A = LogEthnic, LogReligious at medians.
B = LogEthnic at upper quartile, LogReligious at lower quartile.
C = LogEthnic at lower quartile, LogReligious at upper quartile.

This supplemental file presents the results of several additional model specifications in order to determine the robustness of the findings from the model estimated in the main text. First, in order to determine the potential consequences to the results after addressing autocorrelation, as well as the impact of including data from Singapore, I estimate three models to determine the robustness of the findings for the model in Table 3 in the main text. Second, given previous research designed to explain the relationship between district magnitude and party system fragmentation under majoritarian electoral rules (e.g. Taagepera, 2007: 177-182), I also examine models incorporating these insights and applied to majoritarian systems in order to demonstrate the robustness of the findings relative to this alternative framework.

Robustness Tests of Model 1 in Table 3

To determine the robustness of the findings presented in the main text, I re-estimated the model in Table 3 in three ways. First, I re-estimated the model after including data from Singaporean elections and including a dummy variable to measure these elections. If the low levels of party system fragmentation observed in Singapore are due to the use of majoritarian multimember districts (rather than the ethnic quotas employed), then we should see that this dummy variable is not statistically significant. Moreover, we should also see that the effects of *LogEthnic*, *LogReligious,* and *LogM* should remain relatively similar to those observed in the main text. The results of this model appear in model S.1 in Table S.1 below.

Additionally, I also estimated models designed to account for serial correlation. Because model 1 in Table 1 in the main text examines multiple elections over time, there is a concern the error terms at one point in time may be correlated with those in earlier time periods. While the use of time-series methods is problematic with country-year units of analysis that are not evenly

spaced (i.e. the difference between each election often differs between and/or within countries), it is important to determine whether accounting for possible serial correlation affects the results by producing under-estimated standard errors for the variables of interest. I estimate two models accounting for serial correlation. One uses panel-corrected standard errors adjusting for AR(1) serial correlation; these results appear in model S.2 in Table S.1. The other re-estimates model 1 by adding a lagged dependent variable; the results of this model appear in model S.3. This latter approach is problematic for two reasons. One is because this approach includes a lagged dependent variable without theoretical expectations. The second is because including a lagged dependent variable can distort the estimated effects of the other variables in the model due to the correlation between these other variables and the lagged dependent variable (a problem that is exacerbated in this instance by the fact that the variables of theoretical interest – *LogEthnic* and *LogReligious* – are fixed across the time series). That being said, if the results continue to show that the effects of *LogEthnic* and *LogReligious* in majoritarian systems differ from those in PR systems, this would provide evidence supporting the results in Table 1.

The results of these robustness tests are presented in Table S.1 alongside the coefficients from model 1 in the main text. Because the interaction terms make direct comparison of each coefficient difficult, I include linear combinations of estimates (namely, examining the predicted effects of *LogEthnic* and *LogReligious* when holding *LogM* at one) in order to show how the effects of *LogEthnic* and *LogReligious* change due to the impact of *LogM*. Comparing these with the coefficients for *LogEthnic* and *LogReligious* show how *LogM* conditions the effect of each variable.

See Table S.1 below

As with model 1 in Table 3 in the main text, the results seen in Table S.1 show that while

higher levels of ethnic diversity lead to higher levels of party system fragmentation, the linear combinations seen in models S.1 and S.2 show that the effects of ethnic diversity are reduced at higher levels of district magnitude. While the effect of ethnic diversity becomes stronger in model S.3 as district magnitude increases, this effect remains statistically insignificant. Keeping in mind the potential shortcomings associated with including a lagged dependent variable in this instance, this finding does not directly contradict the results in the main text, as the insignificant effect of ethnic diversity affirms the conclusion reached in the main text showing that ethnic diversity does not produce significantly greater levels of party system fragmentation in majoritarian electoral systems.

Similar to the effects of ethnic diversity, the results in Table S.1 suggest the effects of religious diversity seen in Table 3 in the main text are robust to the alternative model specifications estimated here. In all three alternative specifications, the negative effects of religious diversity intensify as *LogM* increase. Thus, the results confirm the findings regarding the effect of religious diversity seen in the main text: higher levels of district magnitude produce even stronger negative effects of religious diversity on party system fragmentation in majoritarian systems.

To visualise these effects more clearly, Figure S.1 presents the predicted effects of ethnic diversity – conditional on *LogM* – in majoritarian systems for all four models seen in Table S.1, while Figure S.2 presents the predicted effects of religious diversity. In all but model S.3, the results show that the effect of ethnic diversity weakens as district magnitude increases, with this effect becoming negative in models 1 and S.2 (and statistically significant in model S.2) at higher levels of district magnitude. While the effects of ethnic diversity remain positive in models S.1 and S.3, neither effect is statistically significant. Thus, while the estimated effect of

ethnic diversity differs somewhat sizeably from model to model, each model shows that the effect of ethnic diversity is weakened as district magnitude increases in majoritarian systems. Collectively, these results lead to the conclusion that the effects of ethnic diversity are reduced and insignificant in majoritarian systems.

See Figures S.1 and S.2 below

Turning to the effects of religious diversity, the results in Figure S.2 show that the negative effects of religious diversity intensify as district magnitude increases. In model S.2, as with model 1, this effect is statistically significant across the entire range of district magnitude; the effects of religious diversity nearly reach statistical significance across the range of district magnitude in model S.1. Although the impact of district magnitude on the effect of religious diversity is comparatively weaker (given the problems noted above with including a lagged dependent variable), the fact the negative effect of religious diversity intensifies as district magnitude increases in model S.3 provides additional evidence suggesting the results in model 1 are robust. Taken together, the results presented here suggest that the effects of religious diversity in majoritarian systems are negative and do not become positive as district magnitude increases.

In addition to examining the effects of ethnic and religious diversity, I also present the effects of *LogM* in majoritarian systems from each model, conditional on ethnic diversity (Figure S.3) and religious diversity (Figure S.4). As with the results seen in Figure 3 in the main text, the results in Figure S.3 suggest the effects of district magnitude become negative as ethnic diversity increases, while the results in Figure S.4 suggest the effects of district magnitude become negative as religious diversity increases (with the exception of the effect of district magnitude – conditional on ethnic diversity – in model S.3). With the exception of the effect of district

magnitude – conditional on ethnic diversity – in model S.2, the effects of district magnitude at higher levels of social diversity do not reach statistical significance – as was the case in model 1 in Table 3. These findings reassert the conclusion reached in the main text that the impact of district magnitude on party system fragmentation is indirect: rather than directly reducing party system fragmentation, the results in each model (apart from model S.3) suggest higher levels of district magnitude in majoritarian systems reduce party system fragmentation indirectly by constraining the effects of ethnic and religious diversity.

See Figures S.3 and S.4 below

Taken together, the results presented here provide evidence suggesting the effects of district magnitude, ethnic and religious diversity are robust to alternative specifications. As with Figure 2 in the main text, the effects of ethnic and religious diversity are reduced, becoming negative, as district magnitude increases in majoritarian systems (with the exception of the effect of ethnic diversity in model S.3, which may be problematic given the use of a lagged dependent variable without clear theoretical justification). Moreover, the effects of district magnitude in majoritarian systems in all four models become weaker – eventually negative – as ethnic and religious diversity increase. The results seen here confirm the ultimate conclusion reached in Figure 3 in the main text regarding the effect of district magnitude in majoritarian systems. Rather than district magnitude *per se* producing decreases in party system fragmentation, the results presented above and in the main text collectively suggest that social diversity (particularly religious diversity) limits party system fragmentation in majoritarian systems; district magnitude, then, impacts party system fragmentation indirectly by constraining the translation of social diversity into party system fragmentation.

Restricting the Analysis to Majoritarian Systems

Before concluding that district magnitude limits the impact of social diversity on party system fragmentation in majoritarian systems, it is important to address one argument designed specifically to explain party system fragmentation in majoritarian systems. Noting the higher levels of disproportionality between seat and vote shares as district magnitude increases in majoritarian systems (see especially Taagepera and Shugart, 1989: 265; see also Lakeman, 1970), Taagepera (2007: 177-182) derives a model predicting that party system fragmentation increases as the probability that any one party can win a seat in the legislature – measured as (the number of seats in the legislature/mean district magnitude)$^{1/6}$ – increases.

To determine whether the results presented in the main text are robust when focusing solely on majoritarian systems, I estimate two models. These results appear in Table S.2. Each model restricts the sample to majoritarian systems and elections with complete information for both ethnic and religious diversity. One model (S.4) includes only the seat-magnitude ratio, while another model (S.5) includes interactions between the seat-magnitude ratio and ethnic/religious diversity. Examining the model including the seat-magnitude ratio alone allows us to compare this model with the more saturated interaction model and determine whether electoral system properties alone are able to explain the levels of party system fragmentation observed in majoritarian electoral systems, or whether one needs to account for ethnic and religious diversity in order to understand why district magnitude is negatively associated with party system fragmentation in majoritarian systems.

See Table S.2 below

The results for these two models are presented in Table S.2. The first thing to note is that the seat-magnitude ratio variable is not a statistically significant predictor in the model including

this variable alone (model S.4). Additionally, and relative to the more saturated model (model S.5), model S.4 fails to explain much variance in party system fragmentation. While most of the coefficients in model S.5 are not statistically significant, including the two measures of social diversity and the interactions with the seat-magnitude ratio significantly improve on the institutions-only model, as indicated by the model comparison test comparing the log likelihood of model S.5 to S.4. Thus, the saturated model is preferred: in order to understand why district magnitude is negatively associated with party system fragmentation in majoritarian electoral systems, one needs to take into account the interactions between electoral system permissiveness and ethnic/religious diversity.

The fact the results in model S.5 mirror the results in model 1 in Table 3 in the main text suggests the effects of the seat-magnitude ratio are similar to those seen in the main text. This can be seen more clearly in Figure S.5, which presents the marginal effects of ethnic and religious diversity, conditional on the seat-magnitude ratio, as well as the marginal effects of the seat-magnitude ratio, conditional on ethnic, then religious, diversity. Here, we see that while there are positive relationships between ethnic and religious diversity on the one hand and party system fragmentation on the other at low levels of the seat-magnitude ratio – as predicted, and as seen with the results in model 1 in the main text – the effects of ethnic/religious diversity become negative at higher levels of the seat-magnitude ratio. This is exactly in line with the findings in Figure 2 in the main text showing that the effects of ethnic and religious diversity become negatively associated with party system fragmentation at higher levels of district magnitude.

See Figure S.5 below

Additionally, we see that the marginal effects of the seat-magnitude ratio on party system fragmentation – as predicted – are positive at low levels of ethnic and religious diversity.

However, as with the effects of ethnic and religious diversity, the effect of the seat-magnitude ratio becomes negative as diversity increases. Although higher levels of the seat-magnitude ratio increase the probability that parties may win a seat in the legislature, the fact that the seat-magnitude ratio is negatively associated with party system fragmentation at higher levels of ethnic/religious diversity is in keeping with the findings in Figure 3 showing that majoritarian multimember districts constrain party system fragmentation.

Conclusions

Taken together, the results of these robustness tests reaffirm the conclusions reached in the main text. As with the results in Figure 2 in the main text, the results in Figure S.1 suggest that ethnic diversity does not lead to higher levels of party system fragmentation in majoritarian systems – unlike in PR systems, where the results in Figure 2 suggest ethnic diversity produces higher levels of party system fragmentation. Additionally, the results presented in Figure S.2 reaffirm the finding in Figure 3 suggesting that religious diversity leads to lower levels of party system fragmentation in majoritarian electoral systems. In both cases, the effects of social diversity are constrained to a greater degree by higher levels of district magnitude – leading to significantly lower levels of party system fragmentation, especially in the case of the seat-magnitude ratio.

The results presented here also reaffirm the conclusion that the low levels of party system fragmentation in majoritarian systems are due less to the effects of electoral institutions than the impact of social diversity. In the figures presented here, district magnitude and the seat-magnitude ratio do not directly produce significantly lower levels of party system fragmentation. Instead, and as seen in Figures 2 and 3 in the main text, the results in Figures S.3-S.5 suggest that

electoral institutions do place significant constraints on the effects of ethnic and religious diversity. Unlike in PR systems, higher levels of district magnitude do not result in significantly higher levels of party system fragmentation; rather, district magnitude impacts party system fragmentation by constraining the effects of social diversity. In sum, the results presented in these robustness tests largely confirm the conclusions reached in the main text.

Table S.1: Parameter Estimates of Models Predicting Party System Fragmentation

	Models			
Variables	1	S.1	S.2	S.3
Lagged *ENEP*	-	-	-	0.68**
LogEthnic	0.71*	0.69*	0.53**	0.28
LogReligious	-1.03*	-1.14*	-1.19**	-0.18
LogM	3.89	1.36	2.33*	-0.18
LogEthnic × *LogM*	-2.34	-0.10	-2.26**	0.45
LogReligious × *LogM*	-4.37+	-0.95	-2.18	-0.32
Non-Majoritarian Systems	0.70	0.61	0.14	0.73
Non-Majoritarian × *LogEthnic*	-0.14	-0.12	-0.10	-0.30
Non-Majoritarian × *LogReligious*	0.28	0.39	0.65	-0.28
Non-Majoritarian × *LogM*	-4.28*	-1.76+	-2.63**	-0.82
Non-Majoritarian × *LogM* × *LogEthnic*	2.78+	0.55	2.58**	-0.21
Non-Majoritarian × *LogM* × *LogReligious*	5.02*	1.61	2.78*	0.72
Upper Tier	0.01	0.01	0.01**	0.00
ENPRES	0.17	0.17	0.24**	0.08
Proximity	-3.26**	-3.24**	-1.18**	-1.08**
ENPRES × *Proximity*	0.83**	0.83**	0.27*	0.27+
Singapore	-	0.21	-	-
Constant	3.56**	3.65**	3.71**	0.93**
Linear Combinations				
LogEthnic × (*LogM* × 1)	-1.63	0.59	-1.73*	0.85
LogReligious × (*LogM* × 1)	-5.40*	-2.09+	-3.37*	-0.50
R^2	0.37	0.38	0.32	0.68
n	741	753	741	644

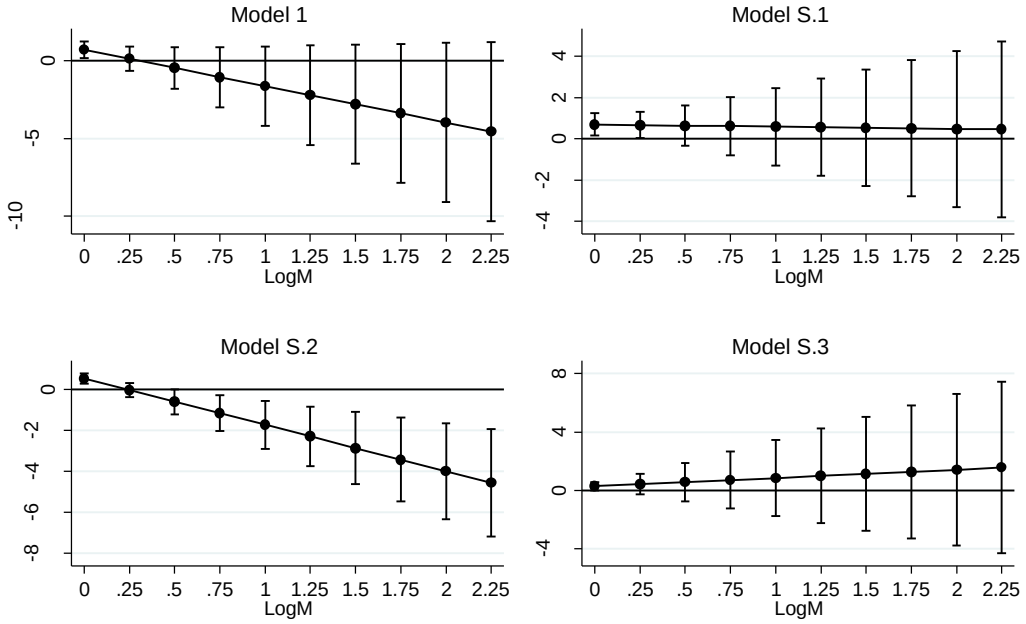
+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, two-tailed tests. Entries are linear regression coefficients. Models 1, S.1, and S.3 use linear regression with standard errors clustered by country. Model S.2 uses panel-corrected standard errors assuming AR(1) serial correlation.

Table S.2: Parameter Estimates of Models Predicting Party System Fragmentation in Majoritarian Systems

	Models	
Variables	S.4	S.5
$(Seats/M)^{1/6}$	0.57	3.55
LogEthnic	-	1.74
LogReligious	-	4.95
$(Seats/M)^{1/6} \times LogEthnic$	-	-0.67
$(Seats/M)^{1/6} \times LogReligious$	-	-2.85
Constant	1.80	-3.77
Linear Combinations		
$LogEthnic \times ((Seats/M)^{1/6} \times 1)$	-	1.07
$LogReligious \times ((Seats/M)^{1/6} \times 1)$	-	2.11
Model Comparison	-	58.53**
R^2	0.02	0.25
n	249	249

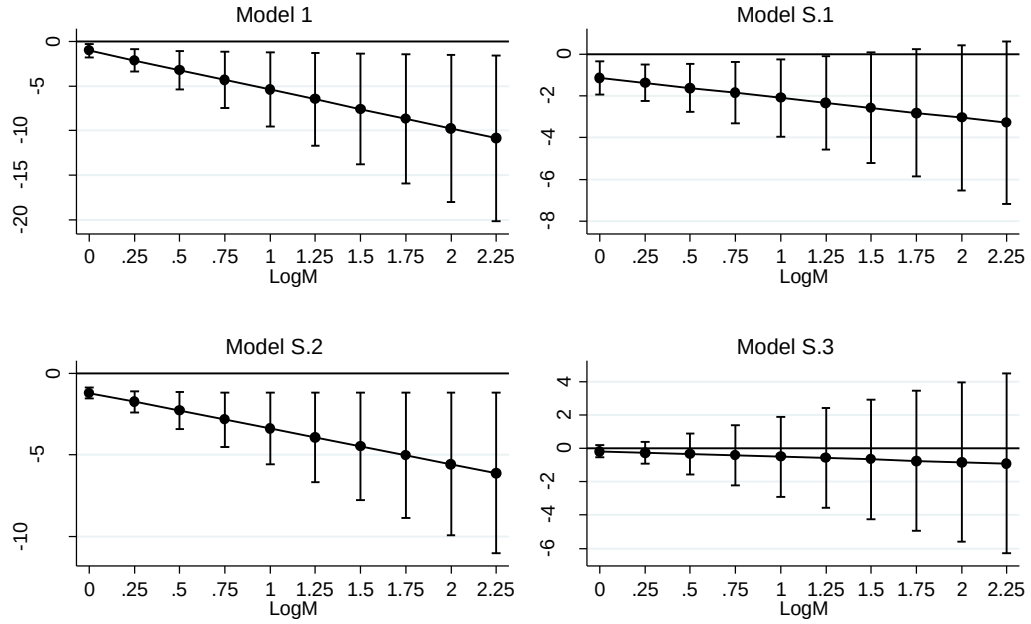
* $p < 0.05$, ** $p < 0.01$, two-tailed tests (using robust standard errors clustered by country). Entries in the top half of the table are linear regression coefficients. 'Model Comparison' refers to the results of likelihood ratio test comparing the log likelihood of the saturated model (S.5) with the institutions-only model (S.4).

Figure S.1: Marginal Effects of Ethnic Diversity



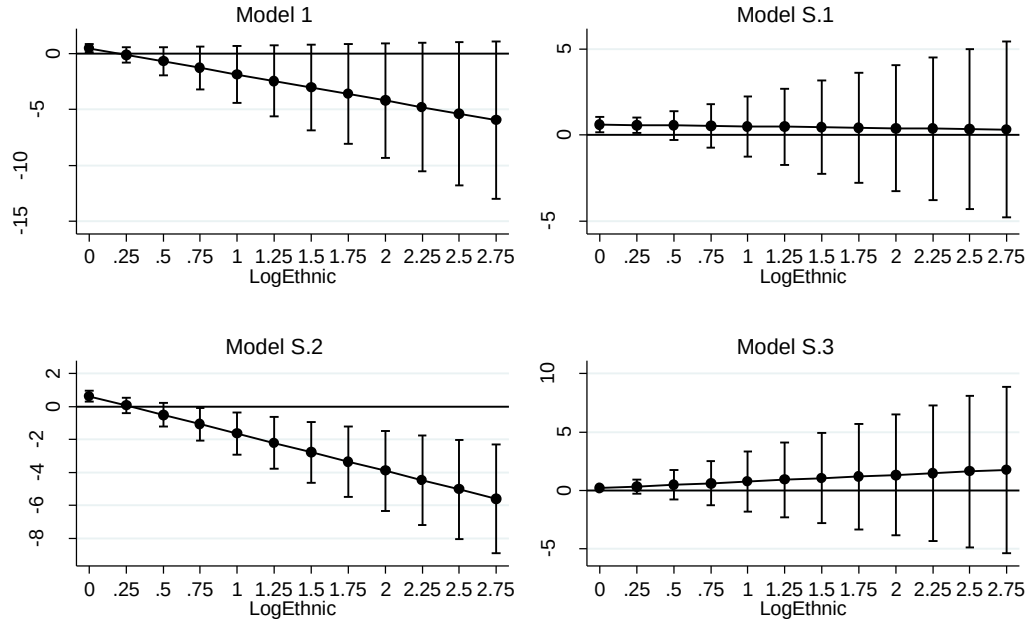
Notes: entries are average marginal effects with 90% confidence intervals.

Figure S.2: Marginal Effects of Religious Diversity



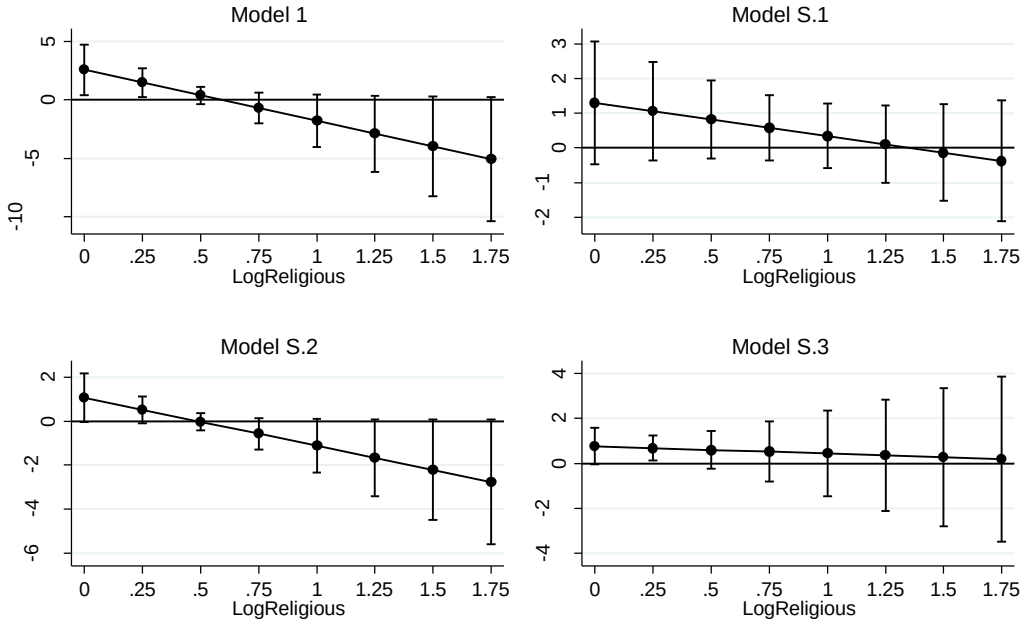
Notes: entries are average marginal effects with 90% confidence intervals.

Figure S.3: Marginal Effects of LogM (Conditional on LogEthnic)



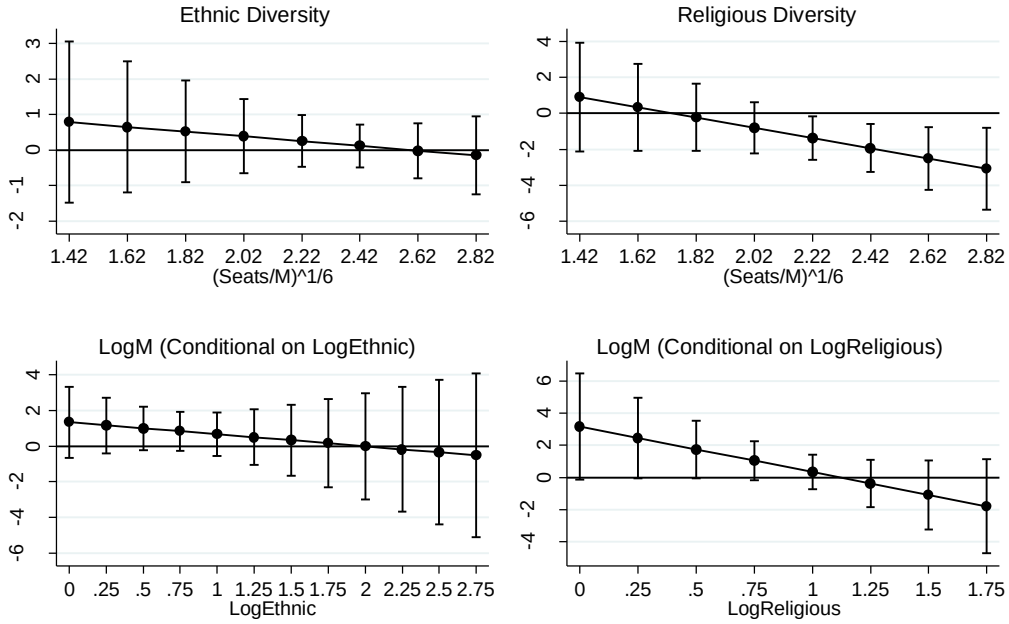
Note: entries are average marginal effects with 90% confidence intervals.

Figure S.4: Marginal Effects of LogM (Conditional on LogReligious)



Note: entries are average marginal effects with 90% confidence intervals.

Figure S.5: Marginal Effects (from Model S.5)



Note: entries are average marginal effects with 90% confidence intervals.

[1] Replication materials for this paper will be made available at the author's personal webpage.

[2] Specifically, the effective number of parties is calculated as

$$ENEP = 1/\sum_{i=1}^{n} p_i^2,$$

where p_i is the share of the vote won by party *i*.

[3] To account for the lack of information for some parties whose specific vote shares are lost when several smaller parties' vote shares are reported as one combined 'other' party vote share, I also ran models applying Taagepera's (1997) correction. The results using this alternative measure confirm those presented here.

[4] I omit interactions between each measure of diversity and *Upper Tier* because these coefficients do not reach statistical significance – as other recent research (Li and Shugart, 2016) has found.

[5] One concern with analysing a broad range of countries is that the results may not address the predictions of the relationship between *M* and party system fragmentation in majoritarian systems seen in Taagepera (2007). Restricting the analysis to majoritarian elections and accounting for the specific argument made by Taagepera produces conclusions similar to those presented here (see the supplemental file).

[6] I also estimated models designed to account for possible serial correlation in order to determine the robustness of the findings presented here. The results of these robustness tests (which can be seen in the supplemental file) generally confirm those presented here.