

Ticket-splitting in mixed-member systems: on the importance of seat linkage between electoral tiers

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ABSTRACT

In mixed-member electoral systems, voters usually have two votes: a nominal and a list vote. According to some studies, voters are increasingly using them to cast a split-ticket vote. However, very little is known about whether the type of mixed-member system, and in particular whether the allocation of seats across tiers is linked or not, creates different sets of incentives for this behaviour. This article provides new insights into the topic by analysing survey data from seven countries and 18 elections since 1990. It is found that the proportion of split-ticket votes is greater in mixed-member proportional than in mixed-member majoritarian systems. The results suggest that voters understand the operation of the electoral system and its consequences for the distribution of seats among parties, and adapt their behaviour accordingly.

KEYWORDS Mixed-member systems; electoral systems; split-ticket voting; voting behaviour; strategic voting

Although mixed-member systems were extremely rare before 1990, many democracies around the world now use these systems to elect national representatives (Bormann and Golder 2013). Under this set of rules, voters typically have two votes: a nominal vote (usually in a single-member district [SMD] with plurality rule) and a list vote (always in a proportional representation [PR] multi-member district).¹ Some voters use these two votes to support different parties. This is typically referred to as a split-ticket vote (Gschwend 2007). Previous studies have found that a substantial proportion of voters cast split-ticket votes: around 20% in Germany in 1998 (Pappi and Thurner 2002), 25% in Japan in 2000 (Burden 2009) and 39% in New Zealand in 2002 (Vowles 2005). Understanding split-ticket voting is, thus, crucial to make sense out of voting behaviour in mixed-member systems.

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Split-ticket voting has attracted a lot of scholarly attention in the last decades. The end of cleavage politics (Franklin *et al.* 1992), the declining importance of party identification (Holmberg 2007) and the increasing frequency of split-ticket voting (Dalton *et al.* 2002) have fuelled academic interest in this behaviour. Split-ticket voting has usually been considered as a form of strategic voting (Bawn 1999; Herrmann and Pappi 2008; Gschwend 2007; Karp *et al.* 2002; Moser and Scheiner 2009; Reed 1999). Strategic voting refers to the decision of some citizens to vote for a party that is not their most preferred one as a way to maximise the probability that their vote will affect the electoral outcome (Cox 1997). Likewise, strategic split-ticket voting is said to occur when voters understand that the logic of seat allocation is different in the SMD and PR tiers of the mixed-member system (in particular, that it is much harder for a small party to be elected in the SMD than in the PR tier) and adapt their behaviour accordingly. Hence, it typically concerns supporters of small parties who cast a split-ticket vote when they consider that their favourite party has little chance of winning in the SMD tier (so they give their nominal vote to a larger party) but have a reasonable chance of obtaining at least one seat in the PR tier (so they stick to their favourite party for the list vote).

In this article, we propose a theory that distinguishes between the two main types of mixed-member systems: mixed-member proportional systems (MMP), for which the two electoral tiers are linked, and mixed-member majoritarian systems (MMM), for which they are not (following the typology of Shugart and Wattenberg 2001, see below). If we assume that voters primarily care about the partisan composition of parliament, they have a stronger incentive to cast both votes for their preferred party when there is no seat linkage between the two electoral tiers than when there is one. As a consequence, we should observe a larger proportion of split-ticket votes in MMP systems. We show empirical evidence supporting this theory using survey data from seven countries and 18 elections held under mixed-member rules since 1990.

We believe that this article makes two important contributions to the voting behaviour and electoral systems literature. First, although there have been numerous case studies of how voters behave under mixed-member rules (Bawn 1999; Gschwend 2007; Gschwend *et al.* 2003; Herrmann and Pappi 2008; Jesse 1988; Karp *et al.* 2002; Pappi and Thurner 2002; Reed 1999; Schoen 1999), there have been fewer comparative works on this topic (see Kostadinova 2002; Moser and Scheiner 2005; 2009; Plescia 2016 for exceptions). By focusing on one country, most of the literature has neglected a crucial feature of these electoral systems: whether the allocation of seats in the SMD tier depends on the allocation of seats in the PR tier. This paper, thus, contributes to our understanding of electoral behaviour under mixed-member rules.

Second, the article highlights the need for researchers to consider electoral rules in their full complexity. We find that a feature that might have been considered as anecdotal by some authors, i.e. whether the two tiers are linked or not,

creates different sets of incentives for voters. Therefore, a careful analysis of the details of the electoral systems is crucial to make sense out of voting behaviour.

Ticket-splitting in mixed-member systems

Mixed-member systems have attracted much scholarly attention these last 25 years. From a normative point of view, mixed-member systems are sometimes considered superior as they bring ‘the best of both worlds’ in terms of electoral representation (Shugart and Wattenberg 2001): the personal representation of citizens is ensured by the candidates elected in the SMD tier whereas the PR tier guarantees that the seat share of each party is proportional to its vote share. The literature on mixed-member systems has been particularly focused on explaining split-ticket voting mostly by resorting to voters’ strategic motivations. The observation that the difference in parties’ vote shares across the tiers increases as the race at the SMD level gets closer suggests that supporters of small parties perceive the importance of their nominal vote when the SMD contest is tight and cast, as a result, a split-ticket vote: they vote for their preferred party in the PR tier, but choose one of the two top contenders in the SMD tier in order to increase the chances of this party being elected (Bawn 1999; Moser and Scheiner 2005, 2009).

Along these lines, Gschwend *et al.* (2003) demonstrate that the two largest German parties – the Christian Democrats (CDU/CSU) and the Social Democrats (SPD) – are the main beneficiaries of split-ticket voting in the SMD tier due to the support of voters of smaller parties of the same ideological bloc (the Free Democratic Party [FDP] and the Green Party, respectively) who act strategically. In the same vein, Gschwend and Pappi (2004) argue that the clarity of the ideological blocs and the coalition alternatives have significantly increased the share of split-ticket votes in that country over time. Finally, Herrmann and Pappi (2008), Gschwend (2007), Karp *et al.* (2002) and Pappi and Thurner (2002) show that many split-ticket voters in mixed-member systems can be labelled as strategic as they desert the candidate of their preferred party in the SMD tier if this candidate has little chance of winning.

Yet strategic split-ticket voting in elections conducted under mixed-member rules can also benefit small parties (Shikano *et al.* 2009). Meffert and Gschwend (2011) argue that in coalition government systems supporters of large parties sometimes adopt a ‘threshold insurance’ strategy, and vote for the potentially junior partner of their preferred party to ensure that it passes the representation threshold and obtains some parliamentary seats. In doing so, they increase the probability that their preferred coalition government – i.e. the one led by their preferred party – is formed. In Germany, for example, the supporters of the CDU-CSU sometimes vote for its junior coalition partner (FDP) in the PR tier if they suspect this small party might not receive enough votes to pass the 5% national threshold.² In doing so, they also express a preference for a particular

government coalition (Jesse 1988; Pappi and Thurner 2002). Although, in reality, parties do sometimes invite voters to cast threshold insurance votes (Roberts 1988), empirical results about the existence of this behaviour are at best mixed: whereas some studies find evidence for it (e.g. Gschwend 2007), others do not (e.g. Pappi and Thurner 2002).

Several scholars argue that an important portion of split-ticket votes might just be random and provoked by voters' incomprehension of the electoral system. Jesse (1988) and Schoen (1999) claim that a substantial number of split-ticket votes in Germany do not fulfil basic criteria of rationality and cannot be characterised as strategic. In fact, they show that there are between 13% and 21% of 'strategically wrong' split-ticket voters who cast a ballot for a large and a small party in the PR and the SMD tier, respectively. However, these studies do not take into consideration that voters have preferences for individual candidates. As Plescia (2016) notes, many voters have a strong allegiance to one of the candidates competing in the SMD tier. When this candidate does not belong to their preferred party, they will have a high likelihood of voting for different parties across the electoral tiers. In doing so, they will cast a 'sincere' split-ticket vote.

The effect of the type of mixed-member system

In textbooks, the main line of division within the family of mixed-member systems is whether there is seat linkage between the SMD and the PR tiers. When such a linkage exists, mixed-member systems are called proportional, and when it does not, we call them majoritarian (Shugart and Wattenberg 2001). MMM systems operate as if there were two simultaneous elections conducted under two different rules: one election held under plurality/majority usually in SMDs (the nominal tier) and one election held under PR (the list tier). In MMP systems, the PR tier is meant to compensate potential deviations from the principle of proportionality between parties' votes and seats shares created by the SMD tier. There is a first allocation of seats in the SMD tier, and then the remaining seats are given to parties so that the partisan composition of the overall parliament corresponds to their vote share in the PR tier.³ In Sartori's (1997: 73) words, the 'proportion' prevails over the 'disproportion' under MMP rules.

Both MMM and MMP have normative advantages. As Carey and Hix (2011) argue, the main goal of electoral systems is to achieve accurate representation of voters' preferences while preserving highly accountable governments. According to them, mixed-member systems, among other kinds of electoral rules, are able to achieve this 'electoral sweet spot'. However, there are differences between the two types of mixed-member systems in this regard. Because of its proportional nature, MMP rules generate, for example, assemblies that better reproduce the pluralism of opinions in society. By contrast, the likelihood of forming stable single-party governments is in principle higher under MMM

rules. Moreover, MMM systems have the advantage of being much simpler, and thus easier for voters to understand. Despite these differences with regard to their effects, the literature on electoral reform finds that the factors that led to the adoption of the two types of mixed-member systems are very similar: in most instances, they emerged out of a compromise between those seeking to avoid an extremely majoritarian system and those advocating less proportional rules (Shugart and Wattenberg 2001).⁴

In this article, we argue that the presence or absence of seat linkage between tiers should be associated with the proportion of split-ticket votes. We assume that vote choice is a function of voters' preferences (over parties and candidates) and expectations regarding electoral results. As a general rule, a citizen votes for her favourite party/candidate because she wants this party/candidate to be elected. However, when she anticipates that her favourite party/candidate has little chance of winning, she deserts it and votes for the party she likes the most among those that have better electoral prospects. In doing so, she maximises the chances that her vote has an effect on the electoral outcome.

As mentioned above, the literature documents two main types of split-ticket votes in mixed-member systems. These types are valid for both MMP and MMM. First, there are strategic split-ticket votes that are usually cast by supporters of small parties. The seat allocation in the SMD tier favours large parties, and small parties have little chance of winning a seat there. Therefore, supporters of small parties have incentives to desert their favourite candidate in the SMD. By contrast, as most parties have a good chance of winning at least one seat in the PR tier, small parties' supporters do not have any incentive to desert their favourite party at the PR level. As a result of these different incentives across tiers, they cast a split-ticket vote.

Second, some split-ticket votes are sincere (Plescia 2016; Riera 2009). This happens when voters have diverging preferences over parties and candidates across tiers. Some voters have a strong preference for a candidate competing in the SMD tier that is not from their favourite party. Then, even if their favourite candidate and party have good chances of winning seats in both tiers, they will be likely to cast a split-ticket vote as well: they will vote for their favourite candidate even if she belongs to a different party at the SMD tier, and they will vote for their favourite party at the PR tier.

These two types of split-ticket votes should be found under both MMM and MMP rules. However, and this is the core of our argument, voters have more incentives to desert their favourite party in the SMD tier of MMP systems, even if this party has a good chance of winning the race, because this behaviour will not usually have consequences for the allocation of seats between parties. At the end of the day, results in the SMD tier do not in principle affect the partisan composition of the parliament under MMP rules.⁵ Hence, the seat share of a voter's favourite party would not decrease if they do not vote for it in the SMD race when the tiers are linked. In MMP systems, parties' seat shares only

depend on vote shares in the PR tier. Thus, voters should feel freer to desert their favourite party in the SMD tier of MMP systems and, as a result, split-tickets votes should be more likely.

In sum, in both MMM and MMP systems, vote choice in the PR tier is a function of voters' preferences over candidates and parties, and expectations regarding the electoral results. Under MMM, vote choice in the SMD tier is a function of the three same factors. However, under MMP, vote choice in the SMD tier is only a function of voters' preferences over candidates and expectations regarding the electoral results. The vote in the SMD tier does not have any effect on parties' seat shares. Therefore, voters' preferences over parties should not directly affect vote choice in the SMD tier under MMP rules.⁶ The implication of this theory is that the proportion of split-ticket votes should be larger in MMPs than in MMMs.⁷

Data and method

In order to give some empirical evidence to our general intuition, we use the four waves of the Comparative Study of Electoral Systems (CSES) dataset. The CSES is a collaborative programme that gathers data from post-election surveys in almost 50 countries.⁸ The first wave of the CSES includes elections that took place between 1996 and 2001, the second wave includes elections between 2001 and 2006, the third wave includes elections between 2006 and 2011, and the fourth wave includes elections from 2011 onwards.

Despite the availability of around 150 elections in all four CSES waves, we restrict our analysis to 11 parliamentary elections held under mixed-member rules for which voters had two votes. Mexico, for instance, uses a mixed-member system in which voters have only one vote (see above). Mexican elections are thus excluded from the analysis. We also exclude Albania 2005, Hungary 2002, Taiwan 2012 and Thailand 2007 and 2011 because the voters' district identifier is missing. Finally, we exclude South Korea in 2004 and 2008 because some relevant independent variables are missing.

In order to increase the number of elections, we add seven additional post-election surveys to the CSES data. These are Italy 2001 (Italian National Election Study), New Zealand 1999 and 2005 (New Zealand Election Studies), Scotland 1999 (Scottish Social Attitudes) and Wales 1999, 2003 (Welsh Social Attitudes) and 2007 (Welsh Assembly Election Studies). All these elections were held under mixed-member electoral rules.

The dependent variable in our analysis (i.e. split-ticket voting) is coded 1 if the respondent voted for two different parties in the two electoral tiers, and 0 otherwise. As for the typology of mixed-member systems, we rely on Shugart and Wattenberg's (2001) distinction between MMP and MMM systems. Specifically, MMP systems include Germany (five elections, 1998–2013), New Zealand (six elections, 1996–2011), Scotland (one election, 1999) and Wales

(three elections, 1999–2007). For MMM systems, we have data from Hungary (one election, 1998), Italy (one election, 2001) and Japan (one election, 1996).

We add three types of control variables. At the individual level, we control for gender, age, education (from no education to university degree), partisanship (thinking of yourself as a supporter of/feeling close to a party or not) and distance from contention in the SMD tier. This last variable is calculated taking the difference in vote shares between the preferred party and the second top contender in the SMD tier. We bound it to 0 for respondents whose preferred party is one of the top two contenders in the district. The preferred party is identified using party-loving scales. In each survey, respondents were asked how much they like each party on a scale from 0 to 10. The preferred party is the party to which the respondent gives the highest score. In case of ties (e.g. a respondent giving a score of 10 to two parties), we consider that the party the respondent voted for in the PR tier is her preferred party. As mentioned above, literature on mixed-member systems usually assumes that voters cast a list vote in favour of their preferred party.

At the district level, we control for marginality in the nominal tier. This is calculated as the difference in vote shares between the two top contenders. We interact district marginality with a dichotomous variable that takes the value 1 if the respondent prefers one of the two top candidates at the district level, and 0 otherwise. We expect the relationship between district marginality and the likelihood of split-ticket voting to be different for supporters of one of the two top candidates (positive effect) and supporters of other parties (negative effect). These three variables together with distance from contention are meant to control for strategic ticket-splitting. Finally, at the country-level, we control for the effective number of electoral parties, the number of years since the inaugural elections held under the mixed-member system, and the fact of not being a democratic country right after the Second World War.⁹

We decide to opt for a relatively parsimonious strategy with few controls. In a cross-sectional study aiming to explain variation in electoral behaviour, the inclusion of many and interrelated covariates in the models tends to only incur in endogeneity and post-treatment biases. Also, it is important to note that we do not have any variable measuring preferences for candidates in the SMD in our dataset. As mentioned above, preferences over candidates explain an important portion of split-ticket voting in mixed-member systems. We thus acknowledge that our results might be imprecise due to the omission of this important control variable.

In terms of method, we use three-level hierarchical linear probability models with random intercepts by election and district. This modelling strategy allows us to simultaneously estimate the effect of macro-level and micro-level covariates. Hierarchical models control for the fact that individuals are nested in interrelated clusters (i.e. elections and districts) and allow us to obtain correct



standard errors and associated levels of statistical significance for our macro-level explanatory factor (Hox 2010).

Analysis

First, we describe our data. Table 1 reports the proportion of split-ticket votes in each of the elections covered in our analysis. We see that this proportion varies from 5.72% (Italy, 2001) to 38.48% (New Zealand, 1996). These proportions are in line with case studies of ticket-splitting in the literature (see above). Moreover, the average proportion of split-ticket votes is about 14 percentage points higher in MMP systems than in MMM systems (30.63% compared to 16.53%). This is in line with our general intuition.

Table 2 extends the previous analysis into a multivariate setup incorporating the individual-level, district-level and country-level controls. As shown in Model 1, the type of mixed-member system (MMP or MMM) has a statistically significant effect ($p \leq 0.01$) on the dependent variable. In particular, the likelihood of casting a split-ticket vote is about 11 percentage points higher under MMP rules. This is a remarkable magnitude given that the electoral system's type is a macro-level variable. The results are practically the same in terms of magnitude (in all cases above 11%) and statistical significance (that is, $p \leq 0.01$) when we include district-level (Model 2), individual-level (Model 3), or country-level (Model 4) controls. Overall, the results in Table 2 validate

Table 1. Proportion of split-ticket votes per election.

Country	Elections	Split-ticket (%)	N
MMP (mean = 30.63 [27.83])			
Germany	1998	25.38	1631
	2002	26.29	2613
	2005	29.84	1766
	2009	29.17	1508
	2013	20.04	1467
New Zealand	1996	38.48	3778
	1999	35.21	5355
	2002	38.3	1360
	2005	29.89	3432
	2008	26.6	1045
	2011	29.73	1204
Scotland	1999	19.42	1014
Wales	1999	23.41	363
	2003	19.77	450
	2007	26.05	380
MMM (mean = 16.53 [16.87])			
Hungary	1998	14.67	981
Italy	2001	5.72	2219
Japan	1996	30.24	916

Note: The first mean corresponds to the overall mean of cases for each type of mixed-member system, whereas the second one is the grand mean.

Sources: CSES (4 waves), 2001 Italian National Election Study, 1999 and 2005 New Zealand Election Studies, 1999 Scottish Social Attitudes, 1999 and 2003 Welsh Assembly Election Studies, and 2007 Welsh Social Attitudes.

Table 2. Hierarchical linear probability models explaining split-ticket voting.

	Model 1	Model 2	Model 3	Model 4
Mixed-member proportional	0.11*** (0.04)	0.11*** (0.04)	0.11*** (0.04)	0.13*** (0.04)
Distance from contention		0.01*** (0.0002)	0.01*** (0.0002)	0.005*** (0.0002)
District marginality		0.003*** (0.0004)	0.003*** (0.0004)	0.003*** (0.0004)
Like top local candidate		-0.07*** (0.01)	-0.06*** (0.01)	-0.06*** (0.01)
Like top local candidate*		-0.003*** (0.0004)	-0.002*** (0.0004)	-0.002*** (0.0004)
District marginality				
Age			-0.001*** (0.0001)	-0.001*** (0.0001)
Female			-0.01 (0.01)	-0.01 (0.01)
Education			0.11*** (0.01)	0.11*** (0.01)
Party identification			-0.08*** (0.01)	-0.08*** (0.01)
Effective number of electoral parties				0.004 (0.02)
Electoral system age				-0.001** (0.0005)
New democracy				-0.02 (0.06)
Constant	0.17*** (0.04)	0.16*** (0.03)	0.23*** (0.04)	0.22** (0.10)
Election variance	0.004 (0.001)	0.002 (0.001)	0.002 (0.001)	0.002 (0.0008)
District variance	0.005 (0.0005)	0.004 (0.0005)	0.004 (0.0005)	0.004 (0.0005)
Individual variance	0.189 (0.001)	0.181 (0.001)	0.178 (0.001)	0.178 (0.001)
N elections	18	18	18	18
N individuals	31,482	28,706	27,385	27,385
Log likelihood	-18,867.637	-16,535.302	-15,499.281	-15,496.851
AIC	37,745.27	33,088.60	31,024.56	31,025.70
BIC	37,787.06	33,162.99	31,131.39	31,157.19

Note: The dependent variable takes the value 1 if the respondent votes for two different parties across electoral tiers, and 0 otherwise. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$ (two-tailed tests). The specifications are three-level hierarchical linear probability models with random intercepts by election and district. Standard errors are displayed in parentheses.

our theory. All the coefficients for the MMP variable reach conventional levels of statistical significance, and all of them have a positive coefficient and a non-negligible magnitude.

In terms of controls, Table 2 shows that voters' age, party identification and the duration of the mixed-member system are systematically associated with lower levels of split-ticket voting. In contrast, voters' gender, education, party system fragmentation at the electoral level and the fact of being a new democracy never affect the probability of casting a split-ticket vote. The introduction of party identification as an individual-level control variable could explain the lack of statistical significance of the latter: partisanship is arguably weaker in

new democracies and voters as a result are more likely to cast a split-ticket vote there. Either way, the introduction of just one new democracy in our analysis (i.e. Hungary, 1998) makes us cautious about the possible generalisation of these findings.

Preferring a party that is far from obtaining the SMD seat in a voter's district has a positive statistically significant effect on her likelihood of voting for different parties across tiers. The effect of district marginality (and its interaction with the variable 'liking a viable party at the district level') is somewhat unexpected. Although preferring one of the two top candidates at the local level decreases the likelihood of casting a split-ticket vote, this effect is counter-intuitively reinforced by the lack of competitiveness at the district level. Moreover, the effect of district marginality is the opposite (i.e. positive and statistically significant) for those that do not prefer one of the viable candidates at the district level. These somewhat odd results might come from a measurement problem: we have calculated marginality using actual electoral results although voters might have different anticipations of each party's chances of winning in the SMD.

We finally subject our results to several additional tests, all of which assess the extent to which the previous findings are robust to the selected cases and the employed method. According to Tables A2 and A3 in the Online Appendix, the results remain almost identical when we weigh the observations according to the sample size for each election or use a random subsample from each of them that contains the same number of observations. Table A4 presents another robustness check in which the reported coefficients do not significantly change when two- rather than three-level hierarchical models are specified. Table A5 provides a final set of tests in which we show the robustness of the findings when we confine our analysis to the CSES data.¹⁰

Conclusions

The distinction between MMP and MMM systems originally formulated by Shugart and Wattenberg (2001) has proved to be a useful framework for the analysis of the effects of mixed-member electoral rules on party systems. In this article, we scrutinised a crucial yet neglected behavioural implication of this distinction: voter's propensity to cast a split-ticket vote. We find that, in accordance with our theory, the proportion of split-ticket votes is larger under MMP, where the nominal vote usually lacks implications for the partisan composition of the parliament, than under MMM, where it always has. This association persists even when we control for classic explanations of ticket-splitting related to strategic voting.

Bearing this in mind, we acknowledge that our analysis has several limitations. First, we have only examined one feature of the electoral system (i.e. the presence or absence of seat linkage between the SMD and PR tiers) without considering other country-level sources of heterogeneity and, above all,

the different types of split-ticket voting that exist (i.e. switching from the preferred party to either a larger or a smaller party). Second, our relatively small- N comparative approach suggests that we should pay more careful attention to potential outliers that could exaggerate the magnitude of the hypothesised relationships. Third, our analysis does not include crucial measures to elucidate voters' motivations such as electoral expectations or preferences on the candidates. For all these reasons, we acknowledge that our evidence is more tentative than definitive.

In spite of these shortcomings, we believe our article makes two important contributions to the literature on voting behaviour and electoral systems. First, we give new insights into the study of elections under mixed-member rules. As mentioned above, most of the literature on the subject has explained split-ticket voting by resorting to voters' strategic motivations. The results of this paper suggest that these strategic motivations are not the sole determinants of split-ticket voting. In MMP systems in particular, voters are not constrained by their partisan preferences in their nominal vote. As a consequence, they are more likely to cast a split-ticket vote.

Second, our results confirm that it is really important for scholars interested in the effects of electoral systems on voting behaviour to consider the full complexity of the rules. We find that an element that might have been considered as anecdotal by many authors could have important consequences for voting behaviour. We therefore urge scholars to go beyond the mere classification of electoral systems in broad families depending on the electoral formula, and to also pay attention to more precise aspects of the institutional framework of elections.

Notes

1. There is more variety in mixed-member electoral systems than is described here. In some mixed-member systems (e.g. Mexico), voters are allowed to cast only one vote. Also, some countries use a majority runoff (e.g. Lithuania) or a single non-transferable vote system (e.g. Venezuela) at the nominal tier. In this article, nominal, majoritarian and single-member districts on the one hand, and list, proportional and multi-member districts on the other, are used interchangeably to refer to the two tiers of a mixed-member electoral system.
2. With 4.7% of the national vote in the PR tier, the FDP did not reach the 5% representation threshold in the 2013 German federal election and hence the party failed to obtain any seat in the national parliament for the first time in its history.
3. Sometimes in MMP systems, a party wins more SMD races than seats it is entitled to obtain given its vote share in the PR tier. Overhang seats are those seats that a party is not entitled to achieve according to its vote share in the PR tier but it is awarded for having won additional SMD electorates. In spite of these overhang seats, most MMP systems produce electoral outcomes that are very close to pure proportional representation.

4. Although we find no evidence for this in the literature, it is important to note that the differences in terms of voting behaviour that we observe between MMM and MMP might have existed prior to the implementation of these systems. In that case, the legislators might have adapted the electoral systems to these pre-existing behaviours. For this reason, we need to be cautious when we interpret the results. The association we observe might not be causal.
5. The only exception to this rule is the situation mentioned in footnote 3 in which there are not enough PR seats to fully compensate for the deviations brought about by SMD seats. However, this situation only happens under rare circumstances, and its overall effect on the partisan composition of the parliament is usually marginal.
6. It is important to note that preferences over parties might still have an indirect effect on vote choice in the SMD tier under MMP rules. In particular, a voter might like a candidate because she likes the candidate's party.
7. If this line of reasoning is right, and the likelihood of casting a split-ticket vote depends on the type of mixed-member system, understanding the exact operation of the rules would emerge as a crucial mechanism in the explanation of this pattern. Results of preliminary analysis in this regard displayed in Tables A6 and A7 and Figures A2 and A3 of the Online Appendix seem to suggest that this is the case.
8. <http://www.cses.org/about.htm> (accessed 30 August 2015).
9. Table A.1 in the Online Appendix displays the descriptive statistics of the employed variables.
10. The exact form of the lack of seat linkage varies and this may emerge as a potential problem because it could be argued that some elections drive the effect we identify. In order to test whether the existence of influential cases drives the found relationship upwards, we conduct an analysis in which we exclude each election consecutively. Figure A1 in the Online Appendix plots the estimated coefficients and corresponding 95% confidence intervals of MMP on the probability of split-ticket vote resulting from this exercise. As can be seen, the effect subsists in all cases but one (Italy, 2001), where the estimate falls slightly below the 5% level of statistical confidence.

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