PERSONAL VOTE-SEEKING IN FLEXIBLE LIST SYSTEMS: HOW ELECTORAL INCENTIVES SHAPE BELGIAN MPS' BILL INITIATION BEHAVIOUR[1]

Thomas Bräuninger[2]
Martin Brunner[3]
Thomas Däubler[4]

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Abstract

It is well known that different types of electoral systems create different incentives to cultivate a personal vote and that there may be variation in intra-party competition within an electoral system. We demonstrate that flexible list systems - where voters can choose to cast a vote for the list as ordered by the party or express preference votes for candidates - create another type of variation in personal vote-seeking incentives *within* the system. This variation arises because the flexibility of party-in-a-district lists results from voters' actual inclination to use preference votes and the formal weight of preference votes in changing the original list order. We test hypotheses linked to this logic for the case of Belgium, where party-in-a-district constituencies vary in their use of preference votes and the electoral reform of 2001 adds interesting institutional variation in the formal impact of preference votes on intra-party seat allocation. Since formal rules grant Belgian MPs considerable leeway in terms of bill initiation, personal vote-seeking strategies are inferred by examining the use of legislative activity as signalling tool in the period between 1999 and 2007. The results establish that personal-vote seeking incentives vary with the extent to which voters use preference votes and that this variable interacts with the weight of preference votes as defined by institutional rules. In addition, we confirm the effect of intra-party competition on personal vote-seeking incentives and illustrate that such incentives can underlie the initiation of private members bills in a European parliamentary system.

Keywords

Electoral system; Belgium; Personal votes; Intra-party competition; Legislative behaviour

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[2] University of Mannheim and Mannheim Center for European Social Research, Thomas.Braeuninger@uni-mannheim.de. Funding from DFG grant BR 1851/3 is gratefully acknowledged.

[3] University of Mannheim and Mannheim Center for European Social Research, Martin.Brunner@uni-mannheim.de.

[4] Trinity College Dublin, daublert@tcd.ie. Funding from Gottlieb Daimler- and Karl-Benz-Foundation (grant number 02-19/06) is gratefully acknowledged.

It is well known that electoral systems influence candidates' incentives to cultivate a personal vote as compared to appealing to the electorate on basis of the party label. One strand of the literature has examined the consequences of different types of electoral systems for MP-constituency relationships across countries (e.g., Bowler & Farrell 1993; Norris 2004). Another strand of work rests on the seminal argument that personal vote-seeking is shaped by the interaction of co-partisan crowdedness (traditionally measured by district magnitude) and the presence/absence of intra-party choice for the voters (Carey & Shugart 1995; Shugart et al 2005; Crisp et al. 2007). The latter approach predicts variation in the pursuit of a personal vote both across systems and across districts within a polity.

Certain types of electoral systems, however, may create intra-system variation in personal vote-seeking incentives that go beyond co-partisan crowdedness. Flexible list PR systems are especially interesting cases. These systems allow the voters to decide if they want to endorse the party list with the candidate ranking as decided by the party or express preference votes for one or several candidates within the list. In practice, this means that voters' inclination to use preference votes and the formal weight of preference votes in changing the original list order decide if the electoral system becomes more similar to a closed or to an unordered (truly open) list system. Variation in preference vote usage across party list constituencies and/or a change in the formal impact of preference votes can therefore create additional differences in personal-vote seeking incentives *within* a system.

We test hypotheses linked to this logic for the case of Belgium. Belgium is especially well suited for examining our arguments since party-in-a-district constituencies vary in their use of preference votes and the electoral reform of 2001 adds interesting institutional variation in the impact of preference votes on intra-party seat allocation. Since formal rules grant Belgian MPs considerable leeway in terms of bill initiation, personal vote-seeking strategies are inferred by examining the use of legislative activity as a signalling tool in the period between 1999 and 2007. More specifically, we use Bayesian count data models to analyse MPs' decisions with regard to how many bills they should introduce, whether or not they should cooperate in doing so, and if yes with whom.

This article makes three main contributions. First, and most important, we believe that our study is the first to establish empirically that there is variation in personal-vote seeking incentives within flexible list systems - due to variation in the flexibility of party-in-a-district lists which arises from voters' choices whether or not to use preference votes. Second, it shows that the measure of intra-party competition that Crisp, Jensen & Shomer (2007) recently suggested on theoretical grounds works well as an empirical predictor of personal-vote-seeking behaviour. Third, the findings demonstrate that the initiation of private members bills in a European parliamentary system may reflect personal vote-seeking considerations.

In what follows we review the literature related to personal vote seeking and bill initiation and introduce the institutional context for the Belgian case. Subsequently, we present our theoretical expectations. After describing our data and the Bayesian modelling approach, we summarise and discuss our findings. The final section concludes and discusses prospects for further research.

Personal vote-seeking incentives and parliamentary behaviour

A large literature revolves around the concept of the personal vote (Cain et al. 1987) and how electoral systems, but also roles and norms, affect politicians' incentives to pursue it (Searing 1994; Tavits 2010; Zittel & Gschwend 2008). In their seminal contribution Carey & Shugart (1995) point out that the main electoral system mechanism at work is the candidates' need to distinguish themselves from their co-partisans. These authors suggest that the ratio of the number of candidates fielded by a party in a district to district magnitude is the key variable capturing this mechanism, but opt for mere district magnitude as a measure since it is 'the fixed and identifiable determinant of the scope of intra-party competition' (Carey & Shugart 1995: 431). The effect of district magnitude should depend on the nature of the party lists with which voters are presented. When lists are closed, higher levels of district magnitude should decrease incentives for personal-vote seeking, since the party label becomes more and more important for influencing voters' choices. With open lists, district magnitude should increase the incentives to seek a personal vote because intra-party competition requires candidates to distinguish themselves from their co-

partisans.[5]

Crisp, Jensen & Shomer (2007) challenge the use of district magnitude as a proxy for personal-vote-seeking incentives. They argue that the number of candidates fielded often varies strongly and independently from district magnitude and should therefore be directly measured. In addition, these authors highlight that intra-party competition should decrease as the number of seats a party is supposed to win increases. Crisp, Jensen & Shomer (2007) therefore propose to use the ratio of the number of candidates fielded to the number of seats a party is likely to win as an adequate measure of intra-party competition. Our study builds on this work and finds that the new measure is a good predictor of personal vote-seeking behaviour. We do not, however, stop there. The classic district magnitude argument posits a conditional effect of this variable on incentives for personal vote-seeking, depending on whether or not lists are closed or open, that is, whether or not parties present a ballot with a fixed list that voters may not 'disturb' (Carey & Shugart 1995: 430-432). A dichotomous distinction between closed and open lists, however, hides that additional features may cause important variation in intra-party competition between different partially open list systems.

Consider so-called preferential list-PR (PLPR) systems that provide voters with party lists, but allow for a choice between individual candidates on the lists in the form of one or several preferential votes (Shugart 2005: 39-41). All PLPR systems have in common that individual candidates' votes are aggregated within lists in order to allocate seats *between* parties. There are, however, two important dimensions along which PLPR systems differ (Shugart 2005: 41-44). First, they may or may not give voters the option to cast a vote for the list as a whole if they do not want to indicate a preference vote for a specific candidate. Second, some PLPR systems have unordered (sometimes called 'truly open') lists, that is, the sequence of candidates on the lists is irrelevant for allocation of seats *within* parties, which is based on the number of preference votes only. Other systems have ordered lists, that is, the original ranking decided upon by the party will decide on intra-party seat allocation unless a sufficient number of voters demand the same

[5] The incentives of candidates arising from intra-party competition should be reinforced by voters' demand for name recognition (Shugart et al. 2005). Under open list systems voters require more information shortcuts to cast a personal vote as the set of candidates to choose from gets larger.

change (Marsh 1985; Katz 1986; Karvonen 2004). Shugart (2005: 41-44) refers to systems with ordered lists where voters can only cast preference votes as *latent list systems*, and to systems with ordered lists where citizens may also endorse the list as a whole as *flexible list systems*. Flexible list systems therefore have lists that fall between closed lists and unordered/truly open lists. The degree to which flexible lists resemble either type - their flexibility - will vary in practice with voters' choice to use preference votes and formal rules specifying the balance between list votes and preference votes in allocating seats to candidates within a list.

The impact of different types of list systems has traditionally been examined by means of cross-national comparisons.[6] Our study is the first to show empirically that differences in list flexibility *within* a system create variation in personal vote-seeking incentives. We find that Belgian MPs react to the extent to which their constituents make use of preference votes.[7] In addition, the results suggest that institutional rules determining the formal impact of preference votes interact with voters' behaviour in creating disincentives for cooperation with colleagues competing on the same party list.

To study personal vote seeking strategies we turn to parliamentary behaviour. MPs may employ different strategies to pursue a personal vote (Shugart 2005: 46-49), and one of these is proposing legislative bills. Literature on the U.S. Congress suggests that bill sponsorship reflects (among other things) electoral motivations of legislators (for example, Schiller 1995; Campbell 1982; Koger 2003; Highton & Rocca 2005). Whether these findings are transferable to other institutional settings has hardly been explored. In a comparative study of Latin American democracies, Crisp et al. (2004) show that bills initiated by individual legislators reflect personal-vote-seeking incentives in terms of their focus on national versus local public goods, the number of cosponsors and their adoption as laws. Work on private members bills in parliamentary democracies, on the

[6] There is some evidence that party-level unity in parliamentary voting is lower in polities using preference voting (Marsh 1985; Katz 1986; Hix 2004; Carey 2007). Some cross-national studies find that parliamentarians have more contact with their voters when elected from systems employing preference votes (Bowler & Farrell 1993; Curtice & Shively 2009) but Norris (2004) does not find this relationship. Bowler & Farrell (2011) report that candidates' campaigns in the 2004 European parliament elections were more personal-vote seeking in countries with flexible/'ordered' than with closed lists and most personal-vote seeking under open list systems.

[7] This is in line with an argument put forward by Norris (2004: 231) who, however, did not test the hypothesis.

other hand, is largely descriptive (Marsh & Read 1988; Mattson 1995; Arter 2006; Brazier & Fox 2010). There is widespread agreement that these bills also serve as tools for signalling and position-taking (Bräuninger & Debus 2009), but there is practically no empirical test of these arguments. A notable exception is the study by Bowler (2010) who shows that the number of private members bills initiated by British MPs is both influenced by electoral marginality from the previous election and positively associated with electoral performance at the subsequent election. Our study extends the analysis of bill initiation as a tool in intra-party competition pioneered by Crisp et al. (2004) to a European context. We propose that the extent of bill initiation (at least in Belgium) is an apt focus to study MPs' personal vote-seeking strategies. The number of proposals initiated also has the advantage that it constitutes a 'hard' measure, which reflects actual behaviour and is directly observable for the population of MPs.

Belgium: The institutional context

Belgium is well suited as a test case for our research questions, since there is not only variation in intra-party competition across district-level-parties, but also in the flexibility of lists, both over parties-in-a-district and over time. In addition, institutional rules leave MPs ample room for individual bill sponsorship. In what follows, we briefly describe the electoral system and the conditions for individual legislative activity in Belgium.

The flexible list electoral system

Based on the terminology introduced above, the Belgian electoral system can be classified as a flexible list system. Belgian voters, who are obliged to turn out, can vote either for a party list (by marking the respective box at the top of list) or they can vote for one or several individual candidates within *one* list (by marking the boxes beside the candidates' names) (Deschouwer 2009: 111).[8] Seat allocation proceeds in two steps. First, the distribution of seats *among* parties

[8] 'L'électeur peut émettre, d'une part pour la Chambre des représentants, et d'autre part pour le Sénat, un suffrage pour un ou plusieurs candidats, titulaires ou suppléants ou titulaires et suppléants, d'une même liste' (Article 1 of Annex II to the Code electoral (as amended on 13 Dec 2002, see Moniteur Belgique 10 Jan 2003, p. 782). The possibility to indicate preferences for several candidates came into effect with the election of 1995. In addition, voters can also support candidates from parallel lists of replacement/successor candidates, from which MPs are

Table 1: Intra-party seat allocation: CD&V, Antwerpen, 2003

Seats allocated to party in first step:	5
Ballots cast for party:	220.127
Droop quota:	⌈220,127 : (5 + 1)⌉= 36,688
Votes for redistribution	33.866

List place	Name	Preference votes	Received votes	Total votes	Rank	Votes left for redistribution	Type
1	Vervotte, Inge	93.030	0	93.030	I	33.866	TLS
2	Verherstraeten, Servais	20.976	15.712	36.688	II	18.154	LVR
3	Lanjri, Nahima	12.303	18.154	30.457	III	0	LVR
4	De Schamphelaere, Mia	14.545	0	14.545			
5	Van Den Heuvel, Koen	13.547	0	13.547			
6	Verhaegen, Mark	15.942	0	15.942			PVD
7	Schryvers, Katrien	9.900	0	9.900	V		
8-23	…	[3,650; 11,136]	0	[3,650; 11,136]			
24	Ansoms, Jos	21.919	0	21.919	IV		PVD

Note: The rightmost column refers to the MP types introduced as control variables:
TLS - top-list-stars, LVR - list-vote-receivers, PVD - preference-vote-dependants

occurs at the district-level, taking into account the total of the number of ballots cast for a list plus the number of ballots expressing one or several candidate preferences. After that, the allocation of seats *within* parties is determined on the basis of preference votes and list votes. We explain how this works using the example of seat allocation within the CD&V in the district of Antwerpen in 2003 (Table 1). The party received five of the 24 seats in the district on basis of a total of 220,127 ballots cast for it (this figure includes ballots cast for the list and ballots expressing preference votes). First of all, all candidates who reached the Droop quota, that is, more votes than the number of a party's total ballots in the constituency divided by the number of seats plus

taken if the elected candidates from the main list do not take up their mandate (Deschouwer 2009: 112-118). Candidates may run both on the main and the successor list for a single party-in-a-district. They are not allowed to run in more than one district.

one, on the basis of preference votes are elected.[9] In the example, Ms Vervotte is the only candidate having reached the Droop quota. Since seats remain for allocation, the list votes are now redistributed to candidates who have not reached the Droop quota, starting at the top of the list.[10] Mr. Verherstraeten is the first to receive votes, more precisely he receives 15,712 in order to reach 36,688 votes. Ms Lanjri is next and obtains the remaining 18,154 votes to be transfered. The remaining two seats are allocated on the basis of the sum of preference and received votes and go to Mr. Ansoms and Mr. Verhaegen.

While the procedure just described has generally remained the same, some specific rules have undergone several changes over time, with a major electoral reform passed in 2001 and first employed in the national elections of 2003 (Pilet 2007). Since we will analyse below how electoral incentives affected legislative behaviour between 1999 and 2007, our description focuses on the two elections immediately before and after the reform (1999 and 2003). Two changes are of special interest.[11] First, the reform altered the size of the districts. In the national elections in 1999, the 150 MPs were elected in 20 districts at the sub-provincial level with magnitudes ranging from two to 22 seats. In 2003, the number of electoral districts was reduced to eleven, almost doubling average district magnitude. Now the electoral districts coincide with the provinces in most cases and have between four and 24 seats. A second change increased the importance of preference votes for the allocation of seats within parties. This crucial alteration concerns the number of list votes that are up for redistribution. Before the reform, all list votes were

[9] Since a single ballot may express several preference votes, it is theoretically possible that the number of candidates having reached the quota could exceed the number of seats.

[10] To be precise, the number of votes to be redistributed to candidates on the main list also comprises those ballots that express preference votes exclusively for candidates on the successor list. For simplicity, we nevertheless refer to list votes in this context.

[11] A third change that we control for in our models refers to the mode of inter-party seat allocation. Before the reform, seat distribution between parties was carried out according to a two-tier system. At the first stage seats were allocated at the (sub-provincial) district level using the Hare Quota. In a quite intricate manner, the second stage allocated the remaining seats initially to parties at the provincial level and then reassigned those seats within parties to first-level districts. This two-tier seat allocation system was in place in all but the three electoral districts that corresponded to provinces already before the reform (Limburg, Luxemburg, and Namur). One feature of this system was that the prospects to re-gain a seat allocated at the second level at the next elections were unclear because they depended on the results in other districts (Pilet 2007). Since 2003 a one-tier seat allocation system based on the d'Hondt method has been in place in the new provincial districts, with the exceptions of Brussels-Halle-Vilvoorde, Leuven and Brabant Wallon. These districts preserved the old system, since they combine their lists at the second level.

redistributed when necessary. After the reform, no more than half of them are re-allocated. In the above example, 33,866 votes were redistributed. Absent the reform, this figure would have been twice as large (67,732) and would have resulted in the election of Ms De Schamphelaere from list place four instead of Mr. Verhaegen from list place six. This effect was visible more generally; in the elections of 2003, 67 per cent of the voters made use of the possibility to cast a preference vote, which resulted in 18 of the 150 MPs being elected 'out of order', that is, they managed to 'overtake' a partisan colleague placed higher on the list (de Winter 2005: 422). In 1999, when all list votes were redistributed, only one MP managed to do so, although a comparable share of 60 per cent of the voters had used preference votes. Preference votes have therefore clearly become more important for intra-party seat allocation after the reform.

MPs' rights to legislate

Parliamentary systems vary in regard to the legislative rights they grant MPs (Mattson 1995). In Belgium, MPs possess considerable leeway with regard to the initiation of private members bills (Andeweg et al. 2008: 92). A private members bill can be introduced by any single MP or a group of MPs - the *author(s)* - at any time. If the author(s) want the bill to be deliberated on, at least five other MPs must express their support in the form of a signature (these MPs are therefore called *signatories*). These institutionally granted generous opportunities for individual legislative activity make bill initiation strategies a suitable focus for studying personal vote-seeking incentives in Belgium. On the other hand, there are two factors that may speak against MPs' use of bills as tools for signalling personal reputations. First, MPs need to overcome an informal hurdle, since they must usually ask permission from their party group before introducing a bill (de Winter & Dumont 2006). Government parties (and thus their MPs) are additionally bound in what bills to introduce by the coalition agreement (de Winter & Dumont 2003). As a consequence, we cannot expect that private members bills reflect policies that diverge from the party (or government coalition) line. This tendency is reinforced by individual MPs' scarce resources and their dependence on party-based research assistance (de Winter & Dumont 2006). Second, constituency service and casework may be better means than legislative work for building up a personal reputation. De Winter (2002) reports that Belgian MPs in fact used to focus more on constituency-oriented rather than on legislative activities, but also stresses that the casework

load for national MPs has dropped after the introduction of regional parliaments in 1995. In any case, both the gatekeeping role of parties and the availability of constituency work as an alternative strategy make Belgium in fact not an easier, but a harder testing ground for our arguments.

In empirical terms, the sheer number of private members bills introduced each term (1202 between 1999 and 2003, 1638 between 2003 and 2007) shows that despite party group influence and constituency work MPs still make wide use of the opportunities for bill initiation. Importantly, they do so although the prospects of getting a proposal passed are rather low. In the period between 1999 and 2003, only 9.9 per cent (2003-2007: 6.2 per cent) of private member bills were finally adopted. De Winter & Dumont (2006) attribute the low success rate to the detailed coalition agreements, since only issues that are not part of the document but still find support among government parties have a chance to be passed. They argue that even 'successful private member's bills are usually of little policy importance and are often motivated entirely by a desire to claim credit for specific legislation' (de Winter & Dumont 2006: 965). If - as our arguments below suggest - the aim is signalling effort, however, the bills need not have prospects of being passed. The use of bills in this way is illustrated by the fact that more than half (54 per cent) of individual MPs' homepages allow the user easily to locate information on the bills initiated, usually with links to their full text.[12]

Theory and hypotheses

The Belgian electoral system has the potential to shape MPs' incentive structures and in consequence their parliamentary behaviour, including the decision to introduce bills. Here, we consider bill initiation as behaviour arising from vote-seeking considerations. We do not argue that MPs never pursue policy-related goals by drafting proposals, but rather see vote-seeking as a proximate reason for drafting proposals, since in the long run MPs will only be able to pursue other goals if they get re-elected (Mayhew 1974; Strøm 1997; Heitshusen et al. 2005). We argue

[12] The percentage figure is based on a screening of 106 current MPs' homepages with working links from the official website of the Belgian parliament (conducted on 10-11 January 2010). For 42 of the listed MPs, no link was provided or the link did not work.

that given the incentive structure shaped by the flexible list PR system, MPs make a choice with regard to (a) how many proposals they should draft, (b) whether or not they should cooperate with other MPs on these and - if so - with whom they should co-sponsor proposals.

The basic notion is that the initiation of bills is a tool for signalling activity, claiming credit and thus improving reputation and cultivating a personal vote. Since activity is inherently a concept of degree, it is expected that a higher number of initiated bills implies a more powerful signal of activity than a lower number of initiated bills. Stronger incentives for personal vote seeking should therefore lead to a higher number of bills that serve this aim. We consider authorship itself the main content of the signal. As Bowler (2010: 481) puts it: 'The specific legislation at hand may not matter so much as the fact that the MP is taking, and being seen to be taking, action of some kind.' If a bill is single-authored, the initiator can claim all of the credit for the initiative. Co-authoring with people always implies considerably less credit to be claimed, although it makes a difference whether the benefits need to be shared with district co-partisans or with other colleagues.

We distinguish between three types of bills. *Single-authored bills* can most strongly advance the personal reputation of an MP. If a bill is initiated by a single MP, she is able to improve her name recognition and to distinguish herself from party colleagues, because she can claim all the credit for herself. Such bills also have the advantage that they may cover issues that are only of interest to the MP's personal audience, and they may be linked to issues brought up in individual casework. While an MP initiating a bill alone also has to bear all the costs of drafting, single authorship does not create any decision-making costs and gives the initiator full flexibility for example, in terms of when to deposit the proposal. Single-authored bills therefore provide a customised tool for sharpening the personal profile.

Bills co-authored with district-co-partisans, on the other hand, are limited for the purpose of differentiation from intra-party competitors. First, by definition, these bills always benefit at least one other colleague from the same district party list. Therefore, they cannot be tools to express the 'uniqueness' among district-co-partisans. Signalling uniqueness may not be strictly necessary

in the Belgian electoral system which allows a voter to cast preference votes for more than one candidate; bills co-authored with district co-partisans may then have the advantage of splitting preparation costs or making use of shared district party staff. If the aim of bill initiation is signalling activity to, and improving name recognition among, the electorate, however, the expected relative credit for a certain effort made should be lower for bills that are co-authored. For instance, drafting a bill with a district co-partisan may require only half of the resources of doing it alone, but it likely does not return half of the benefit in name recognition compared to district co-partisans who are not involved (and any non-incumbent challengers). We do not make a definite statement about the main aim(s) of bills initiated with district party colleagues (they could for example, be about signalling teamwork capacities to a party audience), but it should be clear that these proposals are at best a very limited means to distinguish oneself from competitors on the same party list.

Somewhere in between the first two types are *co-authored bills without district-co-partisan involvement*. Bills of this type do not benefit any intra-party competitor running on the same district list and can therefore improve a candidate's standing compared to all district co-partisans, similar to single-authored bills. Still, the credit for authorship needs to be shared, which makes them less effective tools for showing activity and improving name recognition. The signalling potential of co-authored bills without district-co-partisan involvement therefore combines features of the other two kinds of proposals.

We believe that our distinction based on authorship is more appropriate for the Belgian context than a distinction based on a classification of bill content as referring to local/parochial issues (c.f. Martin 2011) or as dealing with local public goods versus national public goods/'pork' versus policy (Crisp et al. 2004). First, Belgium introduced directly elected regional parliaments in 1995 (Deschouwer 2009: 57-64), and since then sub-national issues are rarely dealt with by the national parliament. Second, there seems to be no theoretical reason why a bill referring to a national-level policy could not contribute to the personal reputation of its author. This is nicely illustrated by the proposal of a single MP that suggests removing the requirement to hand in a doctor's note when missing a single day of work (an example from the 51st legislature, document number 51-

1018/001). Similarly, a bill may refer to local issues, but if an MP chooses to co-author it with district partisan colleagues it will not help in distinguishing her from them.[13]

In the following, we discuss how we expect the flexible list PR system to shape MPs' behaviour concerning the introduction of the three types of bills. The first factor that we deem important is related to intra-party competition for the expected number of seats (H 1). The second set of variables is related to the actual flexibility of the party lists, which is affected by the extent to which the voters of the party-in-a-district make actually use of preferential voting (H 2), the weight of preference votes as defined by formal electoral rules (H 3) and the interaction of these two factors (H 4). All these variables are expected to directly affect an MP's incentives for differentiation from district party colleagues and thus should be associated with a higher number of single-authored bills and proposals that are initiated without involvement of district partisans, but with a lower number of bills co-authored with district partisans. Since we expect an implicit resource constraint on the total number of bills initiated and because it is possible that we do not consider additional factors that shape personal vote-seeking incentives, we can expect that individual MPs' inclinations to initiate either single-authored bills or proposals without district co-partisans are positively correlated with each other, but each negatively correlated with the propensity to initiate bills together with district co-partisans.

Since Belgian ballots allow voters to cast one or several preference votes, candidates compete with their district co-partisans for votes. In other words, the list is 'open' if the meaning of term is understood in a dichotomous way. Under open lists, as Crisp, Jensen & Shomer (2007) convincingly argue, the level of intra-party competition increases with the number of co-partisans *C* that compete for the number of seats *P* a party expects to obtain at the subsequent elections. For instance, if a party expects to win three seats in a district in the next elections, then nine

[13] These arguments are corroborated by an analysis of how frequently the names of communities located in the authors' districts are mentioned in proposals. Across all bills, the average number of community mentions per author is 0.11, that is, an author refers to a community located in her constituency only in every 9th bill she (co-)authors. This provides evidence that sub-national issues are in fact rarely dealt with by the national parliament. Furthermore, split by type of bills, this figure is 0.11 for single-authored bills, 0.09 for co-authored bills without district-co-partisan involvement, but 0.17 for bills co-authored with one or several district-co-partisans. This strengthens the argument that authorship type is related to, but different from, a national vs. local reference of a bill. Single-authored bills and bills co-authored with district-co-partisans more often address local issues but not at all exclusively. Single-authored bills, if our argument is correct, then are a way to build up a local reputation whatever their geographical scope is while co-authored bills are less suited to distinguish oneself from one's competitors.

people competing for these three seats face stronger incentives to differentiate themselves from each other compared to a situation where there are only six competitors for the three seats. While the logic of the original argument refers to intra-party competition among all district candidates of a party, it can also describe the personal-vote seeking incentives of Belgian incumbent MPs.

For clarification, it is necessary to introduce the exact operationalisation of the measure we use here. Belgian parties may nominate at most a number of candidates that is equal to district magnitude, and since they mostly do so it is MPs' best guess that the lists will be completely filled for the next election.[14] We therefore use district magnitude *M* as the measure for the expected number of candidates fielded, the numerator of the ratio. The denominator requires a proxy for the number of seats a party-in-a-district is likely to win. We chose the number of seats *S* the party currently holds as, especially at the beginning of the legislative period, this should well reflect MPs' expectations about the outcome of the next election.[15] Note that our measure then becomes *M/S*, district magnitude *M* over the current number of seats *S*, which is a proxy for the overall level of intra-party competition within a list. We can think of this measure as capturing two kinds of intra-party competition. First, there is competition among incumbents, because there is no *guarantee* that the party will retain all *S* seats (*S* is just a proxy for *P* and it is always possible that $P<S$). So sitting MPs have an incentive to differentiate themselves from each other unless they can be absolutely sure that the party will re-gain all its current seats (which we assume they usually cannot be). Second, the measure *M/S* reflects competition between incumbent MPs and challengers, since it perfectly correlates with the number of expected challengers per incumbent (*M-S* is the expected number of challengers, and $[M-S]/S = [M/S]-1$). An important theoretical implication of this is that we expect MPs to be less cooperative in bill sponsorship among themselves because of expected competition with challengers. While sitting MPs may have an incumbency advantage in visibility and name recognition, a higher number of expected challengers requires them to sharpen their individual profile and signal their activity, and

[14] The number of candidates fielded was identical to district magnitude in 100 per cent of district-party combinations in the 1999 elections and in 94 per cent of those in the 2003 elections.

[15] Due to the introduction of the new district structure for the 2003 election using seat averages across several elections as a measure of 'traditional' party-in-a-district strength is impossible (at least without further assumptions about how to aggregate pre-2003 constituency results to the new units, which we do not want to make).

according to our argument this can best be achieved by working alone. We therefore obtain the following hypothesis:

H1: As the ratio of expected candidates to expected seats for a party-in-a-district increases, MPs initiate more single-authored bills, more co-authored bills without district co-partisans, and fewer bills authored with district co-partisans.

The Belgian flexible list system allows the voter to decide if she wants to cast her ballot for a party list or to express preferences for one or more candidates within one party list. The degree to which the list order chosen by a party is changed therefore depends on the choices of the voters. The extent to which voters actually make use of their entitlement to preference votes varies across party electorates and socio-demographic groups (Deschouwer 2009).[16] The incentives for MPs to foster a personal vote should therefore be higher if more voters actually make use of preference votes. If more preference votes are cast, it is easier to reach the Droop quota merely based on preference votes, and fewer list votes will be available for redistribution to candidates on the top of the list, diminishing the relevance of the list rank for determining the candidates elected within the party. MPs can be expected to react to voters' demand for features that make them stand out, since it increases their re-election chances. And on the basis of past election results, MPs should be well aware as to how many of their potential voters opt for one or several specific candidates rather than just the party list. This leads to the following hypothesis:

H2: As more voters of a party-in-a-district make use of preference votes, more single-authored bills, more co-authored bills without district co-partisans, and fewer bills co-authored with district co-partisans should be initiated by MPs.

The previous hypothesis originates from the notion that an MP's parliamentary behaviour should depend on the flexibility of the list, that is, the weight of preference votes for determining seat allocation within a party list. As described above, an additional factor in this context is institutional rules. With the reform of the electoral system coming into effect in 2003, the number of list votes

[16] Compare also (Marsh 1985; Katz 1985).

that would be redistributed to the candidates at the top of the list was reduced by 50 per cent, thereby, rendering the preference votes more influential. Because of the same mechanism underlying H2 we would expect:

H3: The electoral rule change increasing the relative weight of preference votes leads to an increase in single-authored and co-authored bills without district co-partisans, and to a decrease in bills co-authored with district co-partisans.

The electoral reform effectively reduced the number of list votes to be redistributed by a factor of 2. Since the maximum number of votes available for re-allocation is the product of list votes and the weighting factor, it can also be expected that the effects postulated in H 2 and H 3 condition each other. Voters' propensity to cast preference votes should more strongly affect legislative activity after the reform, since it is now more likely that they alter the original list order. Similarly, the reform should have a higher impact on MPs from parties-in-a-district with high levels of preference voting rather than MPs who face low levels of preference voting. In extreme cases, if preference voting is very uncommon, even after the reform preference votes would not have enough weight to alter the party list order on the ballot. Our final hypothesis is then:

H4: The relationships put forward in H 2 and H 3 reinforce each other.

The hypotheses derived above describe the expected relationship between electoral incentives and MPs' parliamentary behaviour. Evidently, there are additional factors influencing an MP's decision how many and which kind of bills to draft. In the empirical test of our hypotheses, we therefore control for some other institutional and personal variables. These controls as well as data and method more generally are introduced in the next section.

Data and method

We test our hypotheses empirically using data on bill initiation in the Belgian lower house of parliament, the Chamber of Representatives, between 1999 and 2007. Since the theoretical

interest lies in explaining differences in parliamentary behaviour across MPs, the individual parliamentarian constitutes the unit of observation. The Belgian Chamber of Representatives consists of 150 MPs at any time. As cabinet members cannot be MPs and politicians tend to move between different levels of the federal state, individual changes in the composition of parliament are frequent and candidates from the successor list often take up a mandate. Including these, the 50th legislature saw a total of 170 different MPs and the 51st legislature included 201 MPs.[17] Since 96 politicians served in parliament for at least some time in both periods, our dataset consists of 275 different MPs.

The dependent variables are the *absolute number of single-authored bills*, the *absolute number of co-authored bills without district-co-partisan involvement* and the *absolute number of bills co-authored with one or several district-co-partisans* that a parliamentarian introduced in each of the two legislative periods. Since our theoretical arguments refer to personal vote-seeking as differentiation from district co-partisans, the criterion to distinguish between the second and third type of bills is whether or not any party-in-a-district colleague is one of the co-authors of a bill.[18] The identity of any other possible co-authors is not taken into account; for instance, a co-authored bill without district-co-partisan involvement may be co-authored with party colleagues from other districts, with MPs from other parties, or a combination of both. This three-fold classification covers all private members bills initiated. Note that a single bill may be classified differently for different authors if there are more than two of them, for example, a bill with two co-sponsors *C*1 and *C*2 from party *A* in district *X* and *C*3 from party *A* in district *Y* may be a tool for differentiation only for *C*3. A descriptive overview therefore must refer to authorships rather than bills as unit of analysis. For the 50th (51st) legislative period, we documented 1202 (1638) private member bills with a total of 2679 (4367) authorships. 17.5 per cent (12.2 per cent) of all authorships referred to single-authored bills, 75.3 per cent (60.3 per cent) to co-authored bills did not include district co-partisans as authors while 7.2 per cent (27.5 per cent) were co-authored bills that did so. The data on bill introduction was retrieved from the parliamentary document

[17] These figures do not include three MPs whom we removed from the sample since the duration of their mandate was less than 20 days.

[18] We do not consider who gave the five signatures that a bill requires for deliberation, since this should be a low cost and low visibility activity.

data base of the Belgian Chamber of Representatives.[19]

The main independent variables refer to personal vote-seeking incentives. We justified above at some length our choice of the ratio of district magnitude to party-in-a-district's current seats (*M/S*) as measure of *intra-party competition*. We also argue that the flexibility of party lists matters. This will depend on the extent to which voters of a party-in-a-district make use of preference votes and we therefore calculate the *share of preference voters* as the proportion of a party-in-a-district's voters that cast a preference vote, referring to the previous election. To capture the effect of the electoral reform that increased the weight of preference votes as compared to list votes, we use a dummy variable that takes on a value of one for the 51st *legislature*. To test H 4, an interaction term between the period dummy and *share of preference voters* is included.

The statistical models also include some control variables. First, we use a dummy variable that equals one for all MPs who *lack a district co-partisan* in parliament, since their strategy space is different (they cannot co-author bills with district co-partisans) and therefore their incentive structure may be dissimilar to that of other MPs. Second, bill initiation behaviour may also depend on the way that an *individual* MP was elected, especially on the origin of her votes (list or preferential). Among MPs elected from the main list, we distinguish three types that are given somewhat casual names (which should not be taken too literally). MPs who obtained a number of preference votes that is equal to or higher than the Droop quota that usually guarantees one of the party's seats qualify as *top-list-stars* (14.0 per cent of the sample). At the same time, a *top-list-star* MP would have benefited from the redistributed list votes if necessary because her or his list rank was higher than the list rank of those who actually received redistributed votes. *List-vote-receivers* (57.7 per cent) did not reach the quota on the basis of their preference votes and received redistributed list votes. *Preference-vote-dependants* (5.1 per cent) were elected solely on the basis of their preference votes. In contrast to their *top-list-star* colleagues, they would not

[19] The French-language version of the relevant information can be found online at `www.lachambre.be` under 'Projets et propositions de loi'. The data were collected and prepared for the DFG-funded project 'Comparative Legislation'. We want to thank the *Dienst Informatica en Burotica* of the Chamber of Representatives for their support.

have benefited from redistributed votes because their list rank was lower than the rank of the last candidate receiving redistributed votes. The fourth category (23.2 per cent) are MPs who ran on the successor list (or ran on both lists but were not successful on the main list) and became MPs only because other candidates did not take up or gave up their mandate. The past election result should create different incentives for parliamentary behaviour for the four types, since they will differ in terms of their electoral marginality and the origin of their votes (list or preferential). Due to space constraints, we treat MP types as control variables and do not further elaborate on respective theoretical expectations.

We also add variables referring to personal-vote-earning attributes (PVEA) as introduced by Shugart, Valdini & Suominen (2005). PVEA such as local origin and local electoral experience may be factors substituting for parliamentary activity (if a personal reputation is already built) or reinforcing it (if they are indicators of familiarity with the district and constituents' concerns). *Local origin* is coded as one if the MP was born in the district. We introduce one change to the standard variable of lower-level electoral experience, however. Since there are few MPs with no such experience in our sample we opt for *current local office* as our variable of choice.[20] Biographic information comes from the official parliamentary biographies of the MPs[21] and information about their individual results in the 1999 and 2003 elections comes from the official vote statistics.[22]

Further, as noted in note 11 above, in the time period under study two different seat allocation systems had been in place simultaneously. To allow for varying incentive structures between MPs elected on the basis of different systems, we use a dummy variable *Hare* that takes a value of one if the MP is from a district with two-tier seat allocation using the Hare quota. In addition, we code a variable *tier-2-seat MP* as one if the MP was elected from the main list and holds a seat that was allocated at the second tier. Since the *seniority* of MPs may affect vote-seeking incentives,

[20] Local offices taken into account are Bourgmestre (mayor), échevin (alderman), or conseiller communal (city councillor).

[21] `www.lachambre.be` under `'Les deputes'`.

[22] The data for the 2003 elections can be found online at `http://elections2003.belgium.be`; the data for the 1999 elections was kindly provided by the *Service Public Fédéral Intérieur*.

we also distinguish between MPs serving their first term, second term, third term, and fourth/higher term. *High-level party office* is a dummy variable taking the value of one if an MP is leader of the party or of the parliamentary party group. In addition, an indicator variable for *opposition MP* complements the models. Since not all MPs served the full term, it is necessary to include an offset for *duration of mandate*. Descriptive statistics for all variables are given in Appendix I.

Statistical model

Our dependent variables have a discrete count structure. The basic model for count data is based on the univariate Poisson distribution: $Pr(y \mid \mu) = \frac{e^{-\mu}\mu^{y}}{y!}$ for $y = 0,1,2,...,$ where μ is a rate parameter that reflects the expected number of times an event will occur over a given period (Cameron & Trivedi 1998: 3). The Poisson regression model is an extension of the univariate Poisson distribution as it allows each observation to have a different value μ. The mean μ_i is then estimated using the independent variables for each observation i:

$$\mu_i = Var(y_i \mid x_i) = E(y_i \mid x_i) = exp(x_i'\beta). \quad (1)$$

In our application, a special feature arises from the fact that the number of each of the three types of bills an MP submits may be correlated. To address this issue, we follow the approach put forward by Chib & Winkelmann (2001) who consider a set of correlated latent effects and assume that, conditioned on these latent effects, the counts are independent Poisson with a conditional mean function that depends on the latent effects and a set of covariates. We extend their model considering three types of counts to be observed in two time periods. More specifically, let $y_i = (y_{is1}, y_{in1}, y_{iw1}, y_{is2}, y_{in2}, y_{iw2})$ be the sextuple of ***s***ingle-authored bill, co-authored bill with ***n***o district co-partisan involvement and co-authored bill ***w***ith district co-partisan involvement counts of MP i in time periods 1 and 2, $b_i = (b_{is1}, b_{in1}, b_{iw1}, b_{is2}, b_{in2}, b_{iw2})$ a sextuple of subject and outcome-specific latent effects, and x_{ijt} a set of covariates for MP i, bill types $j = 1,2,3$, and legislative terms $t = 1,2$. Using the mean function $\mu_{ijt} = exp(x_{ijt}'\beta_j + b_{ijt})$, the counts are then assumed to be

independent Poisson, conditioned on b_{ijt} and $\beta_j \in R^{k_j}$ where k_j is the number of covariates in each of the three count models. If D denotes an unrestricted covariance matrix, we then model the correlation between counts by

$$b_i \mid D \sim N_6(\mathbf{0}, D).$$

We use Markov Chain Monte Carlo (MCMC) simulation methods to generate inferences for the model parameters as well as the latent effects (in which we are not really interested). This method provides us with posterior distributions of the quantities of interest, which we summarise in the following section computing Bayesian mean point estimates and 90 per cent credibility intervals. As the prior distribution for β_j, we choose $\beta_j \sim N_{k_j}(\mathbf{0}, (B_0^j)^{-1})$ where $(B_0^j)^{-1}$ is the inverse of a variance-covariance matrix with variances of 1000 on the diagonal and zeros elsewhere.

Chib & Winkelmann (2001: 431) show that the inverse of D can be sampled from a Wishart distribution with $n + v_0$ degrees of freedom and scale matrix $\left[R_0^{-1} + \sum_{i=1}^{n} (b_i b_i^{'}) \right]^{-1}$, that is:

$$D^{-1} \mid b \sim Wishart\left(n + v_0, \left[R_0^{-1} + \sum_{i=1}^{6} (b_i b_i^{'}) \right]^{-1} \right)$$

As priors, we choose $n + v_0 = 6$ and $R_0^{-1} = I$. Implementing this approach we obtain inferences for the correlation between counts of each type of bills in the $t = 1, 2$ legislatures ($\rho_{tsn}, \rho_{tsw}, \rho_{tnw}$) as well as the correlation between the counts across the two time periods for single-authored bills (ρ_s), co-authored bills with no district co-partisan involvement (ρ_n) and co-authored bills with district co-partisan involvement (ρ_w) from the matrix D:

$$D = \begin{pmatrix} \sigma_{s1}^2 & \rho_{1sn}\sigma_{s1}\sigma_{n1} & \rho_{1sw}\sigma_{s1}\sigma_{w1} & \rho_s\sigma_{s1}\sigma_{s2} & \cdots & \cdots \\ \rho_{1sn}\sigma_{s1}\sigma_{n1} & \sigma_{n1}^2 & \rho_{1nw}\sigma_{n1}\sigma_{w1} & \cdots & \rho_n\sigma_{n1}\sigma_{n2} & \cdots \\ \rho_{1sw}\sigma_{s1}\sigma_{w1} & \rho_{1nw}\sigma_{n1}\sigma_{w1} & \sigma_{w1}^2 & \cdots & \cdots & \rho_w\sigma_{w1}\sigma_{w2} \\ \rho_s\sigma_{s1}\sigma_{s2} & \cdots & \cdots & \sigma_{s2}^2 & \rho_{2sn}\sigma_{s2}\sigma_{n2} & \rho_{2sw}\sigma_{s2}\sigma_{w2} \\ \cdots & \rho_n\sigma_{n1}\sigma_{n2} & \cdots & \rho_{2sn}\sigma_{s2}\sigma_{n2} & \sigma_{n2}^2 & \rho_{2nw}\sigma_{n2}\sigma_{w2} \\ \cdots & \cdots & \rho_w\sigma_{w1}\sigma_{w2} & \rho_{2sw}\sigma_{s2}\sigma_{w2} & \rho_{2nw}\sigma_{n2}\sigma_{w2} & \sigma_{w2}^2 \end{pmatrix}.$$

Since the variances on the diagonal of the matrix D are simulated without specific restrictions, this model also relaxes the assumption of equidispersion for the six individual count data.[23] For the MCMC simulations, we employ the WinBUGS-package (Lunn et al. 2000), using the code that can be found in the appendix. Three Markov chains with 150,000 iterations were run, with a burn-in of 50,000 iterations and a thinning factor of ten.[24] As recommended by Gelman & Hill (2007: 419) and Jackman (2009: 270-272), continuous variables were mean-deviated to improve convergence. The Gelman and Rubin convergence diagnostic is used to make sure that the chains have 'forgotten' their initial values after the burn-in.

Results and discussion

Results of the empirical analysis are summarised in Table 2. The triple *absolute number of single-authored bills*, the *absolute number of co-authored bills without district co-partisan involvement* and the *absolute number of bills co-authored with one or several district co-partisans* an MP

[23] Another problem that can arise with count data is an excessive number of zeros in the data. Although the numbers of MPs who did not introduce any single-authored bill (49.1 per cent of observations), any co-authored bill without district co-partisan involvement (15.6 per cent of observations) or any co-authored bill with district co-partisan involvement (29.2 per cent of MPs that have district co-partisans) are substantial, we refrain from further complicating the already quite intricate model with correcting for zero-inflation for two reasons. First, the share of zeros appears not to be drastically underpredicted by our model. Calculating the expected share of zero counts under the model (the posterior expected probability of observing a zero count, averaged across observations (compare Cameron & Trivedi 1998: 155-158)) gives 46.1 per cent, 9.0 per cent and 24.1 per cent. Second, count models addressing the problem of zero-inflation assume that there are two processes generating the data, one for the zeros and one for non-negative counts. However, we cannot think of good theoretical reasons for assuming the existence of two processes.

[24] As starting values for one chain, we specified the maximum-likelihood estimates for the β_j, an identity matrix for D^{-1}, and a zero matrix for the latent effects. The other two chains were initialised respectively with values of the maximum-likelihood estimates ± 1 standard error, a matrix with (0,1)-uniform random numbers on the diagonal and standard normal random numbers elsewhere, and a matrix with entries of standard normal random numbers.

Table 2: Correlated count data regression of MPs' bill submissions

	single authored bills			no district co-partisan			with district co-partisan		
	(1) 5%	(2) mean	(3) 95%	(4) 5%	(5) mean	(6) 95%	(7) 5%	(8) mean	(9) 95%
Intra-party competition	0.05	**0.1**	0.15	0	**0.03**	0.06	-0.17	**-0.1**	-0.03
Share of preference votes	0.96	**2.7**	4.52	-1.07	**-0.17**	0.73	-0.15	**2.12**	4.55
Share of preference votes × 51st legislature	-2.92	**-0.58**	1.76	-1.74	**-0.58**	0.58	-6.89	**-4.03**	-1.25
51st legislature	-0.65	**-0.27**	0.1	0.29	**0.48**	0.67	1.32	**1.71**	2.11
MP type (*top-list-stars* are baseline)									
list-vote-receivers	0.19	**0.69**	1.22	0.16	**0.44**	0.72	-0.12	**0.37**	0.87
preference-vote-dependants	0.51	**1.29**	2.08	-0.48	**-0.02**	0.43	0.21	**0.88**	1.56
successor	0.18	**0.78**	1.39	-0.02	**0.31**	0.64	0.28	**0.83**	1.4
Local birth	-0.27	**0.07**	0.42	-0.12	**0.08**	0.27	-0.42	**-0.11**	0.2
Current local office	-0.37	**-0.05**	0.27	-0.16	**0.02**	0.2	-0.12	**0.2**	0.53
Seat allocation rule (*one-tier d'Hondt* is baseline)									
Hare	-0.12	**0.27**	0.67	-0.05	**0.17**	0.38	0	**0.38**	0.77
Tier-2-seat MP	-0.96	**-0.58**	-0.2	-0.17	**0.04**	0.25	0.05	**0.47**	0.9
Lack of district co-partisan (0/1)	-0.91	**-0.5**	-0.1	0	**0.22**	0.44			
Seniority (*fourth or higher term* is baseline)									
first term	-0.64	**-0.17**	0.3	0.06	**0.33**	0.6	-0.51	**-0.1**	0.32
second term	-0.14	**0.33**	0.8	0.17	**0.43**	0.7	-0.26	**0.18**	0.63
third term	-0.09	**0.34**	0.77	-0.02	**0.22**	0.47	-0.3	**0.13**	0.56
High-level party office	0.57	**1.04**	1.53	0.29	**0.59**	0.89	0.14	**0.64**	1.14
Opposition	0.57	**0.9**	1.24	-0.1	**0.1**	0.29	0.35	**0.68**	1.01
Constant	-8.81	**-7.98**	-7.18	-6.57	**-6.12**	-5.69	-9.17	**-8.31**	-7.54
ρ_s	0.57	**0.74**	0.87						
ρ_n	0.71	**0.81**	0.88						
ρ_w	0.24	**0.51**	0.75						
ρ_{1sn}	0.23	**0.41**	0.57						
ρ_{1sw}	-0.27	**0.03**	0.33						
ρ_{1nw}	-0.05	**0.2**	0.43						
ρ_{2sn}	0.38	**0.53**	0.66						
ρ_{2sw}	0.23	**0.43**	0.61						
ρ_{2nw}	0.15	**0.3**	0.45						

submitted in the 50th and the 51st legislature is the dependent variable of this model. Columns (1) to (3) report the mean estimate and 90 per cent credibility intervals of the posterior distributions for each model parameter with respect to the first bill type, columns (4) to (6) give inferences for parameters for the second bill type, columns (7) to (9) for the third bill type. At the bottom, mean point estimates for the correlations between bill types at each point in time and between counts of the same type across time are reported. Due to the inclusion of the interaction effect between voter behaviour and institutional reform, the distributions of the coefficients provide only limited information. We therefore also examine the relationships of key interest more closely with the help of expected values below.

We find clear evidence that *intra-party competition* has an effect on the incentives of incumbent MPs to cultivate a personal-vote (H 1). With a large ratio of district magnitude and party-in-a-district's current seats, we expect that intra-party competition among candidates is more intense. In fact, as intra-party competition becomes stronger, we find that MPs submit more single-authored bills which can most strongly advance the personal reputation and more bills co-authored without district co-partisan involvement (column 5). MPs also co-author fewer bills with one or several district co-partisans when intra-party competition is higher (column 8).

We also find evidence for H 2, which stated that MPs' submission strategies are driven by the opportunity to collect preference votes. We expect that as more voters of a party-in-a-district make use of preference votes, MPs have incentives to increase their re-election chances by submitting more single-authored bills and bills co-authored without district co-partisans but submitting fewer bills with district co-partisans. The posterior distribution of the coefficient of the *share of preference votes* indeed is positive with almost certainty for single-authored bills with a mean estimate of 2.70 in the 50th legislature. For the second and the third bill type the posterior distributions range from negative to positive values in the first period, indicating no clear-cut effect. Thus, while the results for co-authored bills are mixed, the positive effect of voters' use of preferential voting on personal-vote cultivation via single-authored bills stands out.[25]

[25] It may be argued that the variable *use of preference votes* is not exogenous, but simply reflects voters' reaction to past bill initiation behaviour of the same MPs. This is an important concern, but some additional empirical analysis

By contrast, the expected mechanical effect of the reduction in redistributed list votes (as stated in H 3 and represented by the dummy variable for the 51st legislature) is not visible in Table 2. Coefficients refer to the case when preference voting is at the sample mean, and only the mean point estimate for bills co-authored without district co-partisans has the expected (positive) sign. In contrast, we cannot be certain that the number of single-authored bills increased or decreased in the second period in districts with the average level of preference voting, and bills co-authored with district co-partisans apparently are more (rather than less) frequent in the second period. A possible reason for these findings might be that other relevant factors also changed between the two time periods. Most importantly, district magnitude almost doubled from the 50th to the 51st legislature, which may simply create more possibilities for multi-author cooperation. H 4 suggested that the use of preference votes and the change in the formal weight of these should have mutually reinforcing effects. There is no evidence for such a relationship for the first two types of bills (that should serve personal vote-seeking purposes), as the means of the coefficients' distributions are negative. In accordance with what we hypothesised in H 4, on the other hand, we can be more than 90 per cent certain that the electoral reform changed the relationship between constituents' inclination to use preference votes and cooperation among district co-partisans, or - considering it from a different angle - that constituents' choice to cast preference votes conditions the impact of the reform.

The results for the control variables can tell us something about other electoral incentives. There is evidence for systematic variation in submission patterns across different types of MPs. *Top-list-stars* are almost 'safe' and thus have few incentives to engage in bill submission to spur re-election chances. In the model, they serve as baseline and we mostly find that other MP types

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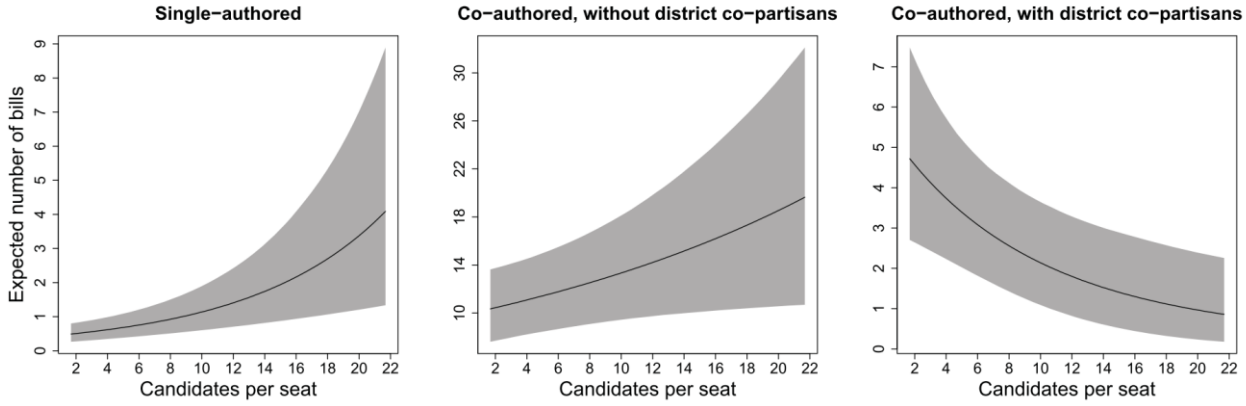
backs up our notion that the causal direction runs mostly from voters to MPs rather than the other way around. First, a large number of MPs (37.7 per cent in the 50th and 46.8 per cent in the 51st legislature) were new in parliament in that period and therefore cannot have contributed to more preferential voting through own past legislative activity. Second, we test how the *use of preference votes* by a party-in-a-district constituency depends on *use of preference votes* in the previous elections and on aggregated bill initiation behaviour during the preceding legislative period (see Appendix II). The results suggest that at this aggregate level (a) current preference vote usage is largely explained by past preference vote usage, that (b) the coefficients referring to the district-level bill measures are rarely statistically significant and that (c) adding the legislation variables in all models explains only very little variation beyond that captured by past preference vote usage.

submit more of any kind of bills than *top-list-stars*. It is worth noting that MPs who won their seats based on the preference votes they received - *preference-vote-dependants* - are more likely to sponsor bills alone than any other type of MP. Single-authored bills should be a tool for them to win a considerable amount of preference votes again at the next elections. We do not find any clear association between personal-vote-earning attributes (*local origin* and *current local office*) on the one hand and bill initiation on the other. These factors seem neither to reinforce personal-vote seeking through bill initiation nor to make it redundant. MPs holding a 'lottery' seat allocated at the second tier initiate fewer bills on their own and feature a higher number of co-sponsorships with district partisan colleagues. We can only speculate why this is so, but it might have to do with securing intra-party support for obtaining a better list place in the next candidate selection contest. Those MPs who lack any district co-partisans nevertheless introduce fewer single-authored proposals. Less senior MPs more often draft proposals with colleagues they are not in competition with, and holding a high-level party office goes along with increased legislative activity. Unsurprisingly, members of the opposition in parliament produce more bills than their colleagues from the government coalition parties. This can be said with a probability of over 90 per cent, at least for single-authored bills and bills with district co-partisan involvement. This confirms the intuitive notion that opposition parties cannot legislate through the cabinet and bills can be a tool for pointing out weaknesses in government policy.

Finally, the posterior distributions of correlation terms are clearly concentrated on positive values, suggesting that specifying the multivariate model is strongly indicated. The mean point estimates of ρ_s, ρ_n and ρ_w suggest that MPs who were members of both legislatures put forward either a high or a low number of bills of each type in both time periods. This is hardly astonishing, since this correlation will partly be caused by time-constant factors that the model does not take into account. We also observe the expected positive correlations between the first and second type of bills in each of the periods ($\rho_{1sn} = 0.41, \rho_{2sn} = 0.53$). These are the highest among the cross-type correlations in each period, which makes sense as they are both of a personal-vote seeking nature. The estimates for ρ_{tsw} and ρ_{tnw} are more surprising, as they suggest that the two types of differentiation strategy are not real substitutes for the cooperation strategy. Omitted factors that drive the initiation of all types of bills seem to be stronger than resource

constraints. We note that in the 50th legislature the posterior distributions ρ_{1sw} and ρ_{1nw} also support negative values.

Figure 1: Intra-party competition and expected number of bills



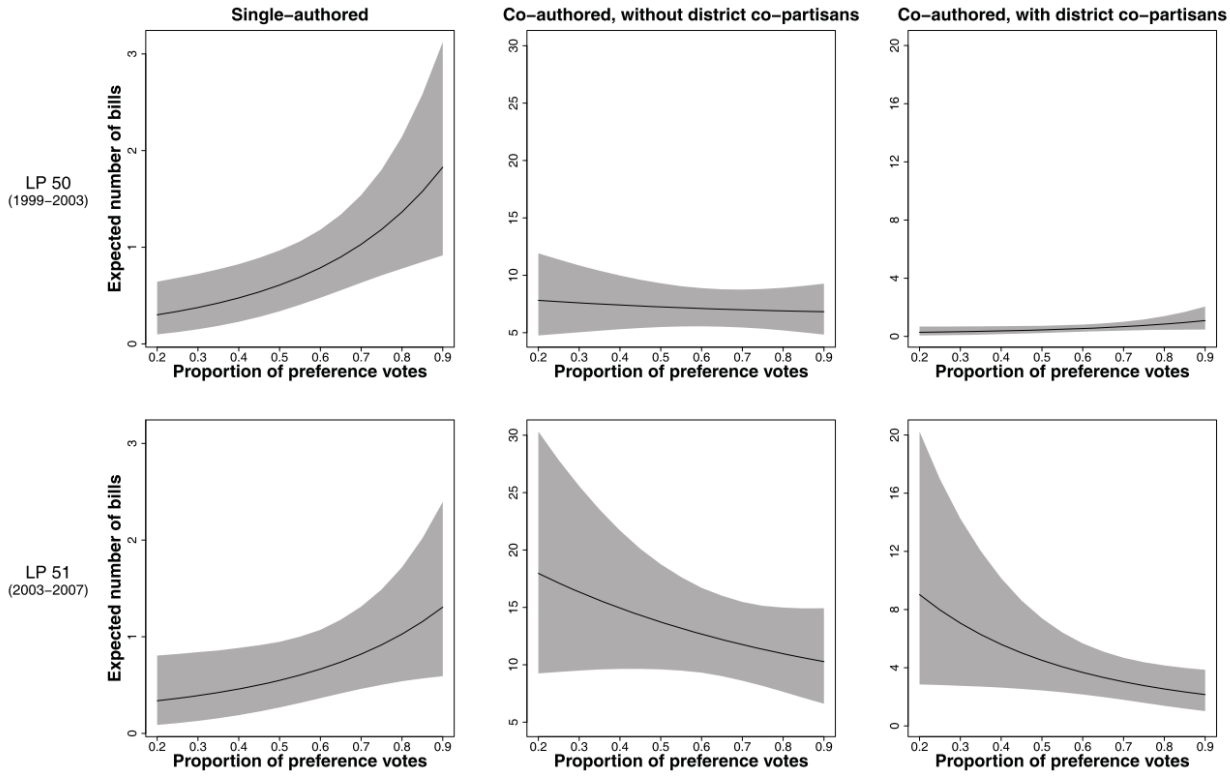
Note: Based on posterior expected values referring to the baseline scenario described in the main text. Figures show mean and 90 per cent credibility intervals.

Figures 1 and 2 illustrate the central findings graphically. On the basis of the MCMC results, we computed how changes in the independent variables of key interest affect the posterior expected number of bills (c.f. King et al. 2000: 352). As a reference case, we define a baseline MP by setting continuous variables to their mean and categorical variables to their mode.[26] Figure 1 shows how the expected numbers of *single-authored bills*, of *co-authored bills without district co-partisan involvement* and of *bills co-authored with one or several district co-partisans* vary with the ratio of expected candidates to expected seats. The depicted range reflects the sample values of intra-party competition reaching from a low-competition environment with less than two expected candidates per expected seat to a maximum of 22 candidates per expected seat. As can be seen from the left panel, MPs who face a higher level of intra-party competition introduce more single-authored bills on average than their colleagues facing fewer intra-party challengers per expected seat. With few candidates competing per party seat, we expect less than one single-authored bill, but in situations of high intra-party competition this number increases to around four. For bills co-authored without any district co-partisan (middle panel) a similar pattern can be observed.

[26] See Appendix I for specific values.

Moving from the sample minimum to the maximum level of intra-party competition implies an increase from around 10 to around 20 bills. The right panel confirms that an increase in the number of challengers per expected seat is generally associated with fewer bills co-authored with district co-partisans. Expected bill numbers decrease from around five to only one as intra-party competition becomes fiercer. Overall these results provide good evidence for our expectation that higher levels of intra-party competition increase the incentives to use bills as a tool to foster a personal vote.

Figure 2: Extent of preference voting and expected number of bills



Note: Based on posterior expected values referring to the baseline scenario described in the main text. Figures show mean and 90 per cent credibility intervals.

Figure 2 illustrates the relationships between preference vote usage and bill initiation patterns, and how these relationships changed with the electoral reform. The x-axis of the plots refers to the share of voters of a party in a district that made use of preference votes in the previous election. In our sample the share ranges between 26 and 86 per cent. First, as shown in the left graphs, voters' inclination to use preference votes is, as hypothesised, associated with an increase

in the expected number of single-authored bills in both the 50th and the 51st legislative period (H 2). Contrary to what was stated in H 3 and H 4, however, the absolute number of single-authored bills is somewhat lower in the second period and the relationship between preference vote usage and the number of single-authored bills is also less pronounced. For bills sponsored with other MPs from outside the MP's own party-in-a-district (graphs in middle column), most findings are not in line with the expectations. In the first period, the curve reflecting the relationship with preference voting is almost flat, and in the second period even falling. The only expectation confirmed here is that there are more such bills overall after the electoral reform, regardless of the extent of preference voting (H 3).

An obvious difference between the time periods can be found from the right column, which refers to bills co-authored with one or several district co-partisans. In the legislative period after the reform, more frequent preference voting by the electorate is indeed associated with less cooperation among district co-partisans (H 2). This relationship does not exist in the legislature before the change in electoral rules. This finding points to an interaction of institutional reform and voters' behaviour (H 4), and this interaction is also visible if we compare the absolute numbers of bills between the two periods. The prediction of H 3 that there should be fewer bills co-authored with district co-partisans after the reform does not hold up. There are more of these bills in the 2003-2007 period, and this difference is so strong that even the credibility intervals for the expected values do not touch, at least with low and medium levels of preference voting. This is not the case for MPs whose party constituents make strong use of preference votes.

Conclusion

Our study was guided by the notion that electoral systems shape incentives to cultivate a personal vote. Unlike most existing work, we tested for personal vote-seeking incentives within a single country - Belgium - with a focus on variation across parties-in-a-district and time that is linked to its flexible list system. To infer personal vote-seeking strategies, patterns underlying the initiation of private members bills were analysed. The findings make at least three contributions that go well beyond the context of Belgian politics.

First, our study points out that the initiation of private members bills in a European parliamentary system can reflect personal vote-seeking incentives. This complements recent findings that electoral marginality is related to the scope of legislative activity in the UK (Bowler 2010), and shows that bill initiation in parliamentary systems may at least partly be traced back to electoral motivations. Second, our findings provide empirical support for the theoretical arguments in favour of a new measure of personal vote-seeking incentives introduced by Crisp, Jensen & Shomer (2007). The ratio of candidates running per expected party seat is indeed associated with Belgian MPs' bill sponsorship decisions in a way that reflects motivations to signal effort and build up a personal reputation. Third, and most importantly, our study is - to the best of our knowledge - the first to show that MPs elected under the same flexible list system react to empirical variation in the flexibility of their party-in-a-district list. Two sources of such variation were the main focus: voters' inclination to cast preference votes and the institutional rules defining the relative impact of preference votes. As more voters make use of preference votes, Belgian MPs generally initiate more single-authored bills. With regard to the second source, we did not find any evidence that the reform increasing the impact of preference votes (compared to list votes) in intra-party seat allocation raised the overall *level* of personal vote-seeking in bill initiation. However, the reform appears to have induced a negative relationship between voters' propensity to cast preference votes and MPs' cooperation with district co-partisans. When institutional change made preference votes more important, representatives were less likely to work together on legislative proposals if their party constituencies more strongly tended towards casting preference votes.

The findings concerning Belgian MPs' reaction to the flexibility of their party list have further implications. First, the results show that within flexible list systems, different parties-in-a-district may practically operate under different electoral systems with different personal vote-seeking incentives. Voters' decisions whether or not to use the preference vote assign the electoral system a place on a continuum between closed-list PR (no preference voting, party list order can/will not be changed) and a latent list system (all voters cast preference votes, but list order will be changed only if a certain number of voters favour the same candidate). Second, since voters' behaviour in the aggregate decides about the flexibility of the list, it can also condition the

effect of a change in the formal weight of preference votes. For instance, an increase in the formal impact of preference votes on intra-party seat allocation does not necessarily lead to higher incentives for personal vote-seeking if an MP's constituents tend to cast few preference votes. This study also opens up a number of avenues for further research. For the sake of simplicity, our analysis did not take into account incentives linked to candidate selection and intra-party competition for the best list ranks. A related point that we omitted is a distinction between competition among incumbents and competition between incumbents and challengers. Another follow-up question is whether or not the analysed bill-initiation strategies actually pay off for MPs in terms of attracting preference votes. We would like to stress that these questions are by no means confined to the Belgian case. It would be interesting to examine whether there are similar patterns of personal vote-seeking in other countries with flexible list systems, such as Austria, the Czech Republic or Sweden. Sweden, for instance, in 2011 also increased the impact of preference votes in intra-party seat allocation (Svensk författningssamling 2010) and would therefore be an interesting case for comparison.

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APPENDIX I: DESCRIPTIVE STATISTICS

Table 3: Descriptive statistics for sample

Continuous variables	Min	Mean	Median	Max
Single-authored bills	0	2.7	1	45
Co-authored bills without district co-partisan(s)	0	12.54	9	83
Co-authored bills with district partisan(s)	0	3.76	1	47
Intra-party competition	1.67	5.19	4	22
Share of preference votes	0.26	0.66	0,68	0,86
Duration of mandate (days)	22	1144.12	1436	1485
Indicator variables		Mean	Sum	
Lack of district co-partisan		0.23	87	
MP type				
top-list-stars (*baseline*)		0.14	52	
list-vote-receivers		0.58	214	
preference-vote-dependants		0.05	19	
successor		0.23	86	
51st legislature		0.54	201	
Local origin		0.69	254	
Current local office		0.7	260	
Seat allocation rule				
one-tier d'Hondt (*baseline*)		0.48	178	
Hare		0.52	193	
Tier-2-seat MP		0.22	81	
Seniority				
first term		0.43	158	
second term		0.22	80	
third term		0.14	51	
fourth or higher term (*baseline*)		0.22	82	
High-level party office		0.07	27	
Opposition MP		0.28	104	

N=371 for all variables.

APPENDIX II: PERSISTENCE OF PREFERENCE VOTE USAGE

Table 4: Results from OLS regression at party-in-a-district level

	Dependent variable: Use of preference votes in 2003 (%)			Dependent variable: Use of preference votes in 2007 (%)		
	Baseline (1a)	Total no. of bills (1b)	MP-mean no. of bills (1c)	Baseline (2a)	Total no. of bills (2b)	MP-mean no. of bills (2c)
Use of preference votes in previous election (%)	0.80	0.77	0.81	0.92	0,92	0.89
	(15.9)	(14.4)	(15.1)	(15.7)	(14.6)	(14.1)
Bill initiation in preceding legislature						
Single-authored bills		0.18	0.25		0,02	0.18
		(1.75)	(1.02)		(0.27)	(0.98)
Co-authored bills without district co-p.		-0.02	0.12		0.03	-0.07
		(-0.54)	(1.08)		(0.89)	(-0.83)
Co-authored bills with district co-p.		0.08	0.62		-0.03	-0.26
		(0.71)	(1.32)		(-1.15)	(-2.18)
Constant	16.5	17.3	13.2	1.82	0.79	5.81
	(5.1)	(4.6)	(3.4)	(0.46)	(0.18)	(1.22)
R-squared	0.85	0.87	0.88	0.87	0.87	0.88
N	47	47	47	40	40	40

Note: t-statistics in parentheses. Units of analysis are party-district combinations that had MPs in adjacent legislative periods (1999-2003 and 2003-2007 for Models 1a-c and 2003-2007 and 2007-2010 for Models 2a-c). Parties CD&V and N-VA formed joint lists for the 2007 elections and were therefore excluded from Models 2a-c. For models 1a-c the predictor use of preference votes in 1999 is a weighted mean of the 1999 districts, where the 1999 districts receive their share of the pooled 1999 party votes as weight. Bill counts are aggregated as total number of respective bills by MPs from party-in-a-district (Models b) and the average number of respective bills by MPs from party-in-a-district (Models c).

APPENDIX III: WINBUGS CODE FOR RUNNING THE MCMC-SAMPLER

```
corr.count3 <- function() {

        # main model for MPs without district co-partisans (2 bill types only)
        for(i in 1:87) {
                for(j in 1:2) { # j=1,2 - single-auth. bills, co-auth. bills without distr. co-
                part.
                        y3[i,j] ~ dpois (lambda[i,j])
                        log(lambda[i,j]) <- b[j,1]
                        + b[j,2]*quotmaginc[i]
                        + b[j,3]*prefshare[i]
                        + b[j,4]*t2.prefshare[i]
                        + b[j,5]*type.2[i] + b[j,6]*type.3[i] + b[j,7]*type.4[i]
                        + b[j,8]*local.birth[i] + b[j,9]*local.off.cur[i]
                        + b[j,10]*hare[i] + b[j,11]*tier2seat[i]
                        + b[j,12]*firstleg[i] + b[j,13]*secleg[i] + b[j,14]*thirdleg[i]
                        + b[j,15]*party.off[i] + b[j,16]*oppo[i]
                        + b[j,17]*t2[i]
                        + b[j,18]*zero.dis.copart[i]
                        + ln.period.length[i]
                        + bij[i,j]
                }
        }

        # main models for MPs with district co-partisans
        for(i in 88:371) {
                for(j in 1:2) {
                        y3[i,j] ~ dpois (lambda[i,j])
                        log(lambda[i,j]) <- b[j,1]
                        + b[j,2]*quotmaginc[i]
                        + b[j,3]*prefshare[i]
                        + b[j,4]*t2.prefshare[i]
                        + b[j,5]*type.2[i] + b[j,6]*type.3[i] + b[j,7]*type.4[i]
                        + b[j,8]*local.birth[i] + b[j,9]*local.off.cur[i]
                        + b[j,10]*hare[i] + b[j,11]*tier2seat[i]
                        + b[j,12]*firstleg[i] + b[j,13]*secleg[i] + b[j,14]*thirdleg[i]
                        + b[j,15]*party.off[i] + b[j,16]*oppo[i]
                        + b[j,17]*t2[i]
                        + b[j,18]*zero.dis.copart[i]
                        + ln.period.length[i]
                        + bij[i,j]
                }

                for(j in 3:3) { # j=3 - co-authored bills with district co-partisan(s)
                        y3[i,j] ~ dpois (lambda[i,j])
                        log(lambda[i,j]) <- b[j,1]
                        + b[j,2]*quotmaginc[i]
                        + b[j,3]*prefshare[i]
                        + b[j,4]*t2.prefshare[i]
                        + b[j,5]*type.2[i] + b[j,6]*type.3[i] + b[j,7]*type.4[i]
                        + b[j,8]*local.birth[i] + b[j,9]*local.off.cur[i]
                        + b[j,10]*hare[i] + b[j,11]*tier2seat[i]
                        + b[j,12]*firstleg[i] + b[j,13]*secleg[i] + b[j,14]*thirdleg[i]
                        + b[j,15]*party.off[i] + b[j,16]*oppo[i]
                        + b[j,17]*t2[i]
                        + ln.period.length[i]
                        + bij[i,j]
                }
        }

        b[1,1:no.indep] ~ dmnorm(mu.b1[1:no.indep], B1.inv[,])
        b[2,1:no.indep] ~ dmnorm(mu.b2[1:no.indep], B2.inv[,])
        b[3,1:no.indep-1] ~ dmnorm(mu.b3[1:no.indep-1], B3.inv[,])

        # Latent effects for MPs without district co-partisans from 50th period only
        for(i in 1:35) {
                aa[i,1:6] ~ dmnorm(mu.bij6[1:6], DD.inv[,])
                bij[i,1] <- aa[i,1]
                bij[i,2] <- aa[i,2]
        }
```

```
# Latent effects for MPs without district co-partisans from 51st period only
for(i in 36:41) {
        aa[i,1:6] ~ dmnorm(mu.bij6[1:6], DD.inv[,])
        bij[i,1] <- aa[i,4]
        bij[i,2] <- aa[i,5]
}

# Latent effects for MPs without district co-partisans in both periods
for(i in 1:10) {
        aa[41+i,1:6] ~ dmnorm(mu.bij6[1:6], DD.inv[,])
        bij[41+i,1] <- aa[41+i,1]
        bij[41+i,2] <- aa[41+i,2]
        bij[51+i,1] <- aa[41+i,4]
        bij[51+i,2] <- aa[41+i,5]
}

# Latent effects for MPs from both periods with district co-partisans only in 51st period
for(i in 1:25) {
        aa[51+i,1:6] ~ dmnorm(mu.bij6[1:6], DD.inv[,])
        bij[61+i,1] <- aa[51+i,1]
        bij[61+i,2] <- aa[51+i,2]
        bij[88+i,1] <- aa[51+i,4]
        bij[88+i,2] <- aa[51+i,5]
        bij[88+i,3] <- aa[51+i,6]
}

# Latent effects for MPs from both periods with district co-partisans only in 50th period
for(i in 1:1) {
        aa[76+i,1:6] ~ dmnorm(mu.bij6[1:6], DD.inv[,])
        bij[86+i,1] <- aa[76+i,4]
        bij[86+i,2] <- aa[76+i,5]
        bij[87+i,1] <- aa[76+i,1]
        bij[87+i,2] <- aa[76+i,2]
        bij[87+i,3] <- aa[76+i,3]
}

# Latent effects for MPs from both periods with district co-partisans in both periods
for(i in 1:60) {
        aa[77+i,1:6] ~ dmnorm(mu.bij6[1:6], DD.inv[,])
        bij[113+i,1] <- aa[77+i,1]
        bij[113+i,2] <- aa[77+i,2]
        bij[113+i,3] <- aa[77+i,3]
        bij[173+i,1] <- aa[77+i,4]
        bij[173+i,2] <- aa[77+i,5]
        bij[173+i,3] <- aa[77+i,6]
}

# Latent effects for MPs with district co-partisans from 50th period only
for(i in 1:39) {
        aa[137+i,1:6] ~ dmnorm(mu.bij6[1:6], DD.inv[,])
        bij[233+i,1] <- aa[137+i,1]
        bij[233+i,2] <- aa[137+i,2]
        bij[233+i,3] <- aa[137+i,3]
}

# Latent effects for MPs with district co-partisans from 51st period only
for(i in 1:99) {
        aa[176+i,1:6] ~ dmnorm(mu.bij6[1:6], DD.inv[,])
        bij[272+i,1] <- aa[176+i,4]
        bij[272+i,2] <- aa[176+i,5]
        bij[272+i,3] <- aa[176+i,6]
}

DD.inv[1:6,1:6] ~ dwish(R03.inv[,], df3)
DD[1:6,1:6] <- inverse(DD.inv[,])
var1[1] <- DD[1,1]
var1[2] <- DD[2,2]
var1[3] <- DD[3,3]
rho1[1,2] <- DD[1,2]/sqrt(DD[1,1]*DD[2,2])
rho1[1,3] <- DD[1,3]/sqrt(DD[1,1]*DD[3,3])
rho1[2,3] <- DD[2,3]/sqrt(DD[2,2]*DD[3,3])
var2[1] <- DD[4,4]
var2[2] <- DD[5,5]
```

```
        var2[3] <- DD[6,6]
        rho2[1,2] <- DD[4,5]/sqrt(DD[4,4]*DD[5,5])
        rho2[1,3] <- DD[4,6]/sqrt(DD[4,4]*DD[6,6])
        rho2[2,3] <- DD[5,6]/sqrt(DD[5,5]*DD[6,6])
        tcor[1] <- DD[1,4]/sqrt(DD[1,1]*DD[4,4])
        tcor[2] <- DD[2,5]/sqrt(DD[2,2]*DD[5,5])
        tcor[3] <- DD[3,6]/sqrt(DD[3,3]*DD[6,6])
}

# Priors
mu.bij6 <- rep(0,6)
R03.inv <- diag(6)
df3 <- 6
mu.b1 <- rep(0,18)
mu.b2 <- rep(0,18)
mu.b3 <- rep(0,17)
B1.inv <- diag(18)/1000
B2.inv <- diag(18)/1000
B3.inv <- diag(17)/1000
```