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Political competition and legislative shirking in roll-call votes: Evidence from Germany for 1953–2017

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Political competition and legislative shirking in roll-call votes: Evidence from Germany for 1953–2017*

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Abstract

We analyze the impact of *elected* competitors from the same constituency on legislative shirking in the German Bundestag from 1953 to 2017. The German electoral system ensures that there is always at least one federal legislator per constituency with a varying number of elected competitors from the same constituency from zero to four. We exploit the exogenous variation of elected competitors by investigating changes in competition induced by legislators who leave parliament during the legislative period and their respective replacement candidates in an instrumental variables setting with legislator fixed effects. The existence of elected competitors from the same constituency decreases absence rates in roll-call votes by about 6.1 percentage points, which corresponds to almost half of the mean absence rate in our sample. This effect is robust to the inclusion of other measures for political competition.

Keywords: Political Competition, Accountability, Absence, Rent Seeking, Political Representation.
JEL Classification: D72, D78, H11

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I. INTRODUCTION

Political competition affects the behavior of politicians and legislative shirking (e.g., Bernecker 2014; Gavoille and Verschelde 2017). Voters usually benefit as political competition increases because competition increases their opportunities to punish the undesired behavior of politicians. We investigate how the existence of *elected* competitors from the same constituency, but from different parties in the German federal parliament, affects legislative shirking. The German national electoral system institutionally guarantees that the number of elected legislators per constituency varies from one to five, that is, there is always at least one legislator per constituency who faces from zero to four competitors. To establish the causal impacts of elected competitors, we exploit changes in the number of competitors from legislators who leave parliament during the legislative period in an instrumental variables setting. Our approach allows us to explore the effect of more political competition in a situation where constituents can directly compare the behavior of already elected legislators.

Political competition is argued to increase citizens' welfare, enhance the efficiency of decision-making, improve the quality of political outcomes, and reduce rent extraction efforts (e.g., Stigler 1972; Padovano and Ricciuti 2009). Empirically, political competition has been shown to affect economic development (Padovano and Ricciuti 2009; Besley et al. 2010), public spending (Rogers and Rogers 2000; Padovono and Ricciuti 2009; Aidt and Eterovic 2011), public debt (Skilling and Zeckhauser 2002), tax revenues (Yogo and Ngo Njib 2018), and government efficiency (Ashworth et al. 2014; Sørensen 2014). It influences the policy decisions of governments (Besley and Preston 2007; Besley et al. 2010; Bracco et al. 2019) and increases the amount of public goods provided by politicians (Arvate 2013). The lack of political competition has been linked to diverse forms of favoritism (Solé-Ollé and Viladecans-Marsal 2012; Curto-Grau et al. 2018; Lévêque 2019), a less independent judiciary (Hanssen 2004), and the concentration of power (Dal Bó et al. 2009).

At the individual legislator level, more political competition relates to more legislative activity (Gavoille and Verschelde 2017; Gavoille 2018), less outside income (Becker et al. 2009), and less rent extraction (Ferraz and Finan 2011; Kauder and Potrafke 2016), and it influences legislators' voting behavior (Kauder and Potrafke 2018). Competition seems to foster a higher quality of politicians, measured either by education, previous employment in high-skilled occupations or political experience, cognitive and leadership abilities, or even facial competence (Atkinson et al. 2009; De Paola and Scoppa 2011; Galasso and Nannicini 2011; Dal Bó et al. 2017). It has been linked to absence rates in roll-call votes (Galasso and Nannicini [2011] and Bernecker [2014] find lower absence rates as competition increases, while Besley and Larcinese [2011] and Willumsen [2019] find no effect). Political competition is usually measured with winning vote margins or the number of (effective) candidates who run for office. Our contribution introduces a novel and alternative measure of competition and analyzes its effects on the behavior of individual legislators.

We argue that the existence of elected competitors from the same constituency but different parties in parliament has thus far been a largely neglected aspect of political competition. If there is more than one legislator per constituency, voters can directly compare the activity and the quality of political representation efforts of all these legislators who are supposed to be acting as principals for them. Thus, elected competitors from the same constituency can be directly benchmarked against each other. They are active in the identical political environment and for the same constituents. This allows voters to make more informed decisions, which in turn changes the incentives of legislators to take account of their constituents' interests. Hence, more competition from other elected legislators from the same constituency makes legislative shirking more costly and less appealing.

The informative institutional setting at the German federal level allows us to analyze the effect of more elected competitors on absenteeism in roll-call votes. The German electoral system combines elements of a majoritarian system with proportional representation in a mixed

electoral system. Candidates running for a direct mandate in constituencies are typically simultaneously listed on the party lists, that is, they have the chance to enter parliament as direct candidates or through the party list (e.g., Frank and Stadelmann 2020). Defeated candidates from the direct election in the constituencies may still obtain mandates through the party lists if they are ranked high enough on their respective party list. Consequently, the overall number of elected legislators per constituency can be more than one: next to the directly elected legislator, one or more legislators may be elected through the party lists such that more legislators per constituency enter the federal parliament. In most cases, there is more than one legislator per constituency, that is, there are elected competitors, and benchmarking is possible. Anecdotal evidence from newspaper reports suggests that such benchmarking takes place.[1]

For our empirical analysis, we use data from German legislators in the federal parliament for the legislative periods from 1953 to 2017. The number of elected competitors from the same constituency varies from zero to a maximum of four competitors. As is commonly done in the literature, we use absence rates in roll-call votes as a dependent variable to measure legislative shirking (e.g., Gagliarducci et al. 2010; Besley and Larcinese 2011; Bernecker 2014).

Our results show that facing competition from elected legislators from the same constituency negatively correlates with the absence rates of individual politicians. This holds when controlling for a large set of covariates. We also account for legislator fixed effects such that the same individual legislators are compared when facing elected competitors and when not facing them over different legislative periods. Again, competition decreases absence rates.

While legislator fixed effects go some way to address endogeneity issues, unobservable variables such as political ability or valence could be time-variant. To address such issues, we use exploit variation in the number of legislators per constituency in an instrumental variables

[1] For instance, a local newspaper from the constituency Rendsburg-Eckernförde compares its two elected legislators based on grades given for their activity on the platform *Abgeordnetenwatch* (see https://www.shz.de/lokales/landeszeitung/note-sehr-gut-fuer-zwei-politiker-id7170601.html, accessed October 19, 2020).

setting: During the legislative period, legislators may end their mandate and leave parliament for reasons such as death, sickness or moves to higher political offices. Vacant mandates are allocated in Germany *without* another election to the next candidate from the closed state party list who has not yet been elected to federal parliament. Therefore, legislators who leave parliament bring about changes in the number of competitors in *two* constituencies simultaneously: in the constituency where they originally served and in the constituency where the replacement candidate takes office.[2] Thus, we can generate two instrumental variables from these changes that are both credibly exogenous to competition from *other* legislators from the two constituencies concerned. This allows us to estimate the causal effect of political competition and elected competitors.

Employing our instrumental variables, we find that the existence of an elected competitor from the same constituency leads to a statistically significant decrease of 6.1 percentage points in the absence rate in roll-call votes. This effect is quantitatively substantial and represents about 49% of the mean absence rate in our sample. This effect is robust to the inclusion of other indicators for political competition, that is, our measure of competition captures aspects of electoral competition and benchmarking in addition to what is reflected by, for example, vote margins. Subsample regressions and alternative measures for the dependent variable capturing legislative shirking also yield robust results.

The remainder of this paper is structured as follows: Section II describes the institutional setting and our data. Section III presents the identification strategy and the empirical method used. Estimation results, robustness checks, and mechanisms are presented in Section IV. Section V summarizes our results and offers our conclusions.

[2] This means that, if a legislator ends his/her mandate, his/her constituency loses a legislator (thus, competition decreases there) while another constituency wins a legislator (and competition increases there).

II. INSTITUTIONAL BACKGROUND AND DATA

Electoral System

Germany has a mixed-electoral system. About half of the German federal parliament consists of legislators elected by plurality rule in single-member districts, the constituencies. These politicians hold a direct mandate. The other half (and potentially more due to overhang mandates and leveling seats) consists of legislators who are elected by proportional rule in multimember districts, the states. These politicians enter parliament through the closed party list. Voters cast two ballots simultaneously, the so-called *first vote* and the *second vote*. Parties nominate either no candidates or *exactly* one candidate for direct election in each constituency. The candidate with the plurality of first votes wins the direct mandate and enters the federal parliament. Voters cast their second vote for a party list at the state level. The second vote guarantees overall proportional representation in parliament since the share of seats a party wins in a state is proportional to its second vote share (conditional on reaching 5% of all votes nationwide). Subtracting the party's direct mandates from its overall seats at the state level yields the number of legislators elected from the party list. Party lists are closed so that only the candidates with the highest ranks obtain a list mandate and enter the federal parliament. In the case where the number of direct mandates in a state exceeds the number of seats a party is entitled to according to its second vote share, it is allowed to keep the excess mandates as a bonus (the so-called overhang mandate).[3]

Candidates usually make use of the possibility to run for election as a direct candidate and simultaneously placed on the state party list to increase their chances of entering parliament. They use the party list as a fallback option in case they do not win a direct mandate in their constituency. In the period from 1953 to 2017, 73.4% of all legislators were candidates

[3] This leads to an increase in the overall number of mandates. Since 2013, overhang mandates have been compensated by receiving leveling seats to restore the proportionality of second vote results (Federal Constitutional Court, BVerfG 2 BvF 3/11, July 25, 2012). Our identification strategy is not affected by either the overhang or leveling seats as it relies solely on the existence of the mixed-member electoral system.

competing for a direct mandate and were simultaneously on the party list. A total of 15.9% ran as direct candidates in single-member districts without a fallback option on a party list, and 10.7% of the legislators were only candidates on the state party lists and cannot be linked to competitors in specific constituencies. Candidates who win the plurality in their constituency must accept the direct mandate.[4] They are later skipped over on the party list when allocating the mandates from the list. However, defeated candidates in the direct election might still receive a mandate from the closed state party list if they are ranked high enough. Conferences of state delegates determine the ranking of the closed state party lists before the elections. Whether a defeated direct candidate finally receives a mandate from the party list is the combined result of his/her ranking on the party list and the second vote result of the party in that state. Consequently, mandates from the party lists are not equally distributed over constituencies (e.g., Frank and Stadelmann 2020).

The direct mandates ensure that every constituency is represented by at least one legislator. Additional legislators who lose the direct election but then enter parliament through the party list increase the constituency's representation (e.g., Maaser and Stratmann 2016; Frank and Stadelmann 2020). These additional legislators per constituency are always from different parties as parties are only allowed to have one candidate per constituency. They are competitors, and they can be directly benchmarked against each other regarding their parliamentary activity. The number of elected legislators per constituency has an upper bound defined by the number of parties in parliament, and it varied from one to five from 1953 to 2017, that is, the number of *elected* competitors from the same constituency, yet other parties vary from zero up to a maximum number of four.

[4] We are aware of only four cases where the winner of the district race refused the mandate and did not enter the federal parliament (Holger Börner [1976], Franz-Josef Strauß [1980, 1983], and Oskar Lafontaine [1990]).

Roll-call Votes

Voting in parliamentary sessions is one of the central tasks of legislators (Besley and Larcinese 2011). Voters, media, and competing legislators regularly criticize politicians for legislative shirking and high absences in parliamentary sessions.[5] As (sub-)committee sessions, meetings of the parliamentary groups, and other parliamentary bodies are scheduled during parliamentary sessions however, low participation in plenum sessions does not imply legislative shirking. We rely on absence in roll-call votes as a measure for legislative shirking as is commonly done in the literature (e.g., Gagliarducci et al. 2010; Besley and Larcinese 2011; Bernecker 2014). Roll-call votes are frequently requested for controversial topics, economic policy, and recently defense which have been the most demanded, and account for roughly 5% of all votes on final passages in Germany (Sieberer et al. 2018). When roll-call votes are scheduled, no other committee sessions or meetings take place. Individual voting behavior is published after roll calls, including information on whether a legislator missed the roll-call vote. We measure the share of all roll-call votes in a legislative period a legislator is absent, which is a common method in the literature.

Participation in roll-calls is compulsory, and an unexcused absence entails a current deduction of 100 euros from the legislator's monthly lump sum (§13(2) *Geschäftsordnung des Deutschen Bundestages und Geschäftsordnung des Vermittlungsausschusses* and §14(2) *Abgeordnetengesetz*). It is important to note that German voters have been shown to punish legislators for high absence rates (Bernecker 2014). Anecdotal evidence suggests that parties put pressure on legislators to attend roll calls.[6] The salience of roll-call votes, the media

[5] To provide two recent examples for Germany: The Spiegel notes that representatives often shirk on Fridays (see https://www.spiegel.de/politik/deutschland/bundestag-abgeordnete-fehlen-am-liebsten-freitag-a-1272666.html, accessed October 15, 2020), and the tabloid Bild provides a ranking of legislators who often miss parliamentary sessions (see https://www.bild.de/bild-plus/politik/2019/politik/bundestag-die-abwesenheitsliste-der-bundestagsabgeordneten-62654054, accessed October 15, 2020).

[6] Carl Eduard Graf von Bismarck has obtained the unflattering title of "Germany's laziest politician" (see https://www.sueddeutsche.de/politik/carl-eduard-graf-von-bismarck-deutschlands-faulster-politiker-tritt-ab-1.352492, accessed February 26, 2020), and the Christian conservatives put pressure on him to either behave differently or resign.

attention they receive, mandatory participation, and the fines lead to the conclusion that absences in roll-call votes are a conservative measure for legislative shirking.

Data

Bergmann et al. (2018a, 2018b) provide data on voting behavior in all roll-call votes in the German Bundestag for the period 1953–2013 and information on legislators' characteristics. We augmented their collected data using the same sources for the period 2013–2017 to also analyze the most recent full legislative period. Roll-call votes are obtained from the publications of the Bundestag administration, and we use personal biographies from the Bundestag website and the *Datenhandbuch zur Geschichte des Deutschen Bundestags* (Data Handbook on the History of the German Bundestag) to add further bibliographical data. Our data covers 64 years from the second to the 18th legislative periods. The very first legislative period of the Bundestag from 1949-1953 is not suitable for our empirical analysis due to differences in the electoral system.

Our final sample includes all legislators who ran for a direct mandate only (15.9%) and those who ran for a direct mandate and were simultaneously placed on a party list (73.4%). We must drop legislators from the sample who solely run for election on closed state party lists, as they cannot be linked to constituencies (10.7%). If legislators served less than half of a legislative period, we omit observations from this shortened period for reasons of precision (<3.8%).[7] In total, we obtain a final dataset of 8,732 observations from 3,006 distinct individual legislators over 17 legislative periods.

Table A1 in the Appendix provides summary statistics. The outcome variable *Absence rate in roll-call votes* is the number of recorded votes a legislator misses divided by the overall number of roll-call votes during his/her term in one legislative period. The average rate of

[7] If these observations are included, our results and interpretations do not change (see Robustness Checks).

missed roll-call votes is 12.5%. We also construct the share of days when a legislator misses at least one roll-call vote as an alternative measure for absence with an average of 15.1%.

Our main explanatory variable *Elected competitors in constituency* is a binary variable indicating whether a legislator has elected competitors in parliament from the same constituency but from other parties. The variable is zero for legislators without any elected competitor in their constituency.[8] *Elected competitors in constituency* mirrors precisely the peculiarities of the German mixed electoral system that we exploit. For 84.2% of our observations, legislators face at least one elected competitor from the same constituency in parliament. To provide further information on the composition of this number, a majority of 55.6% of all legislators face competition from *exactly* one *elected* co-representative from the same constituency, while 25.0% have *exactly* two *elected* competitors, 3.4% of the legislature have *exactly* three *elected* competitors, 0.2% of representatives in the Bundestag have a maximum number of four competitors, and 15.8% of legislators face no elected competitors from the same constituency. Figure A1 in the Appendix suggests that the existence of elected competitors negatively relates to absenteeism, and Figure A2 shows that the fraction of legislators without an *elected* competitor varies moderately over time from 11.9% to 26.8%.

We also employ a number of standard measures for electoral competition including *Vote margin* (the differences of first votes), the number of *Direct candidates* in the constituency, or the *Parliamentary group size*, which are all commonly cited in the literature (e.g., Bernecker 2014; Gavoille and Verschelde 2017). This allows us to analyze whether our measure *Elected competitors in constituency* matters independently of other forms of competition, that is, whether *Elected competitors in constituency* measure a different aspect of political competition.

[8] We obtain qualitatively similar results when using the number of elected competitors from the same constituency (see Robustness Checks).

Regarding other variables in our dataset, we account for holding a direct mandate, being a member of a party in government, average age at the beginning of the legislative period, and legislative tenure. Moreover, we analyze indicators related to positions and the experience of legislators. All these variables serve as controls and have been previously employed in the related literature (e.g., see Gagliarducci et al. 2011; Mocan and Altindag 2013).

III. IDENTIFICATION STRATEGY

Fixed Effects Regression Framework

More political competition through elected competitors makes it easier for voters to evaluate legislative performance, to contrast legislators to each other, and to penalize undesired behavior when candidates are observed to shirk. Voters can benchmark legislators' behaviors more directly when they are from the same constituency. Hence, legislative shirking is supposed to become more costly.

We leverage the German mixed electoral system to analyze the effect of more political competition from *elected* competitors from the same constituency on the absence rate in roll-call votes. We analyze the following regression framework:

$$Absence\ rate\ in\ roll\ call\ votes_{it} = \beta_1 Elected\ competitors\ in\ constituency_{it} + X_{it}\gamma + \lambda_i + \mu_t + \varepsilon_{it}. \quad (1)$$

The unit of observation in our analysis is legislator–legislative period-specific, that is, we explain *Absence rate in roll-call votes* of legislator *i* in legislative period *t*. *Elected competitors in constituency* serves as the main explanatory variable. The vector X_{it} contains typical covariates to control for mandate type, being a member of a party in government or a minister, and age and tenure as well as alternative measures for electoral competition. Legislative period fixed effects μ_t account for common changes affecting all legislators over time, such as changes in legislators' salaries and differences in monitoring technology such as news coverage, etc. (see, e.g., Mocan and Altindag 2013; Braendle 2014; Fisman et al. 2015; Hofer

2017). Importantly, the panel structure allows us to include legislator fixed effects λ_i to consider all legislator-specific characteristics that are constant over time, including observable ones (gender, occupation, and political experience at lower levels of government) and potentially unobservable ones such as charisma or personality traits. Including legislator fixed effects ensures that we compare the same legislators over time in situations where they face elected competitors in their constituency to situations where they do not face such competition; thus, β_1 captures the relevance of elected competitors for the same legislator. We expect $\beta_1 < 0$, if competition reduces absence rates.

Our legislator fixed effects approach goes some way toward establishing the effect of competition on absence in roll-call votes. Political ability or valance may be time-variant and unobservable (if they were time-invariant, they would be captured in the fixed effects). Legislators who increase their political ability will increase their chances of winning the direct mandate. Legislators who decrease their political ability over time will have a lower probability of winning a direct mandate but might still receive a mandate from the party list. Having a list mandate implies that the number of competitors from the same constituency is at least one, as there is always exactly one directly elected legislator. Hence, political ability is likely to negatively correlate with our measure of political competition. More able politicians tend to get more important positions in their party groups and more attention from interest groups, such that less time is left to participate in roll-call votes. If changes in political ability correlate negatively with both *Elected competitors in constituency* and *Absence rate in roll-call votes,* we should have an *upward* bias of β_1 in an OLS fixed effects framework, that is, our setting will underestimate the negative effect of competition on legislative shirking if changes in political ability are not accounted for.

Instrumental Variables Strategy and Fixed Effects

To account for a potential bias and estimate the causal effect of political competition on absenteeism, we employ an instrumental variables strategy in a 2SLS setting including fixed effects. We leverage a credibly exogenous variation in the number of elected competitors from the same constituency by investigating legislators leaving parliament during the legislative period.[9]

The reasons for legislators ending their tenure during the legislative period are the following: 32.4% leave parliament during the legislative period due to sickness and unexpected death; 26.8% accept a higher political position, such as prime minister or minister in a state, state secretary and Federal President; 15.2% accept a different mandate, for example, at the European Union or state level or as a mayor; 10.0% leave for jobs in the public sector and 3.9% for jobs in the private sector; 7.0% are linked to other reasons[10] unrelated to electoral competition with their constituency; and only 4.7% of dropouts are linked to scandals. We cannot trace a specific reason for six cases of legislators who left parliament during the legislative period since the start of our dataset in 1953. We expect the reasons to drop out of parliament to be independent of the time-varying characteristics of *other* legislators in the constituency.

a.) Early termination induces changes in competition in two constituencies

In Germany, there is no by-election to replace a vacant mandate. Instead, the mandate is filled by the next candidate from the respective party list. Mandates are not filled at all if the legislator who drops out holds an overhang mandate or if there are no other candidates left on the party list who would accept it. By construction of the electoral system, any replacement candidate

[9] Jennes and Persyn (2015) use a comparable strategy when instrumenting the representation of Belgian constituencies with resigning ministers.

[10] Such cases include former civil servants who resign at the very end of the legislative period after the election of the next parliament has already taken place, knowing that they were elected again (the old term continues until the new parliament is constituted). In some instances, this gives them the opportunity of being promoted or increasing their pension claims.

must always be either a defeated candidate from *another* constituency in that state or a candidate who only ran for election on the party list. To make it entirely clear: If a legislator drops out from parliament, his/her constituency always loses a representative, while *another* constituency gains an additional representative who was not previously elected to parliament.

Legislators who leave parliament during the legislative period therefore entail changes in political competition in two constituencies. Thus, we create two binary variables to instrument the variable *Elected competitors in constituency*. *Early dropout in constituency* takes a value of one for legislator *i* at time *t* if another elected competitor from his/her constituency terminates his/her term within the first half of the legislative period. *Replacement in constituency* equals one if a not yet elected candidate from the constituency receives the replacement mandate from the list within the first half of the legislative period.[11]

b.) 2SLS Estimation Strategy

We employ *Early dropout in constituency* and *Replacement in constituency* as two instrumental variables. The first stage equation in our instrumental variables approach is as follows:

$$\begin{aligned} Elected\ competitors\ in\ constituency_{it} \\ = \alpha_1 Early\ dropout\ in\ constituency_{it} \\ + \alpha_2 Replacement\ in\ constituency_{it} + X_{it}\theta + \tau_i + \pi_t + \upsilon_{it}. \end{aligned} \tag{2}$$

Elected competitors in constituency is explained by our two instruments as well as the vector of covariates X_{it}, legislator and legislative period fixed effects. We then employ the prediction to explain absence rates:

[11] There is a tradeoff when considering changes in political competition induced during the first half of the legislative period. On the one hand, it reduces the number of observations we count as legislators who drop out or as replacement candidates, thus making it potentially more difficult in our setting to find an effect. On the other hand, the effect that dropouts and their respective replacement candidates have on competition within constituencies and subsequently on absence rates can be more accurately measured if these changes affect a large portion of the legislative period.

$$Absence\ rate\ in\ roll\ call\ votes_{it} = \beta_1 \widehat{Elected\ competitors\ in\ constituency_{it}} + X_{it}\gamma + \lambda_i + \mu_t + \varepsilon_{it}. \quad (3)$$

We estimate the model implied by Eqs. (2) and (3) by employing a 2SLS estimator. The effect of political competition on *Absence rate in roll-call votes* is identified in the second stage regression by the instrumented variable in *Elected competitors in constituency*, which itself is explained by the instruments. Following the above discussion of our fixed effects regression framework and the potential upward bias of the OLS setting, we expect $\hat{\beta}_1^{2SLS} < \hat{\beta}_1^{OLS}$ (or in absolute terms $|\hat{\beta}_1^{2SLS}| > |\hat{\beta}_1^{OLS}|$, as both coefficients are expected to be negative).

To serve as valid instrumental variables, *Early dropout in constituency* and *Replacement in constituency* correlate strongly with the main explanatory variable *Elected competitors in constituency*. At the same time, the instruments should be orthogonal to the error term ε_{it}. We argue that this is the case for *Early dropout in constituency* and *Replacement in constituency*. Whether and why competitors resign is the result of personal or career considerations or unfortunate circumstances and, hence, credibly exogenous to *other* legislators from both the same and *other* constituencies. If a legislator leaves parliament during the legislative period, this should not directly affect absence rates of other legislators in his/her constituency and certainly not legislators of districts where due to his/her resignation a replacement candidate obtains a mandate apart from the induced change in political competition. Dropouts and replacements directly affect political competition in terms of the number of competitors, as will be shown below.

Overall, we are able to construct our instruments based on 255 legislators who drop out and 167 who replace them. Table A1 in the Appendix shows that about 3.55% of elected

competitors may benefit from other legislators from the same constituency dropping out and that 4.64% of observations are affected due to replacements.[12]

IV. RESULTS

Fixed Effects Regressions: The Link between Elected Competitors and Absence Rates

Table 1 shows the link between *Elected competitors in constituency* and *Absence rate in roll-call votes* controlling for mandate type, being a member of the government party, age, tenure, being a minister as well as individual legislator and time fixed effects in an OLS fixed-effects setting as specified in Eq. (1).

Specification (1) suggests that being a legislator who faces elected competitors from the same constituency is associated with a statistically significant lower absence rate. Quantitatively, being a legislator who faces elected competitors reduces absence rates by about 0.9 percentage points. The signs of the other covariates are mostly as expected. Being a directly elected legislator reduces absence rates (similar to Gagliarducci et al. 2011), members of the parties in government miss parliamentary sessions less often, being a minister increases absence rates, legislators tend to be more absent the longer they are members of the parliament (*Tenure*), and age itself is statistically insignificant. In specification (2), we include further covariates in our regression to control for more political positions (see Table A1 in the Appendix). *Elected competitors in constituency* is still negatively related to *Absence rate in roll-call votes*.[13]

Several roll-call votes may take place in the same parliamentary session. When calculating our dependent variable *Absence rate in roll-call votes*, it makes no difference

[12] The difference in the means of *Early dropout in constituency* and *Replacement in constituency* is purely mechanical as the replacement candidate necessarily enters a constituency where there is already at least one representative.

[13] Parliamentary presidents, chairs of the parliamentary group, and whips miss recorded votes less often. Being a junior minister and chair of a committee has just as small of an effect on absence rates as does experience as a minister or junior minister from previous legislative periods (coefficients not shown in Table 1).

whether a legislator misses, for example, five roll-call votes on the same day or five days each with a single roll-call vote. To account for such differences, we use the share of days that legislators are absent at least once as an alternative dependent variable in columns (3) and (4) to account for frequent roll-call votes on the same day. The link between *Elected competitors in constituency* and *Share of days absent* is comparable to results using *Absence rate in roll-call votes* as the dependent variable. If legislators face other elected competitors in their constituency, the share of days that they are absent from parliament is statistically lower.

Table 1: The effect of *Elected competitors in constituency* on the *Absence rate in roll-call votes* (OLS fixed effects)

	(1)	(2)	(3)	(4)
Dependent variable	Absence rate in roll-call votes		Share of days absent	
Elected competitors	-0.0101**	-0.00914**	-0.00899**	-0.00790*
in constituency	(0.00457)	(0.00457)	(0.00459)	(0.00456)
Direct mandate	-0.0121**	-0.0106*	-0.0143**	-0.0125**
	(0.00607)	(0.00603)	(0.00610)	(0.00605)
Government party	-0.0400***	-0.0403***	-0.0479***	-0.0488***
	(0.00367)	(0.00375)	(0.00376)	(0.00383)
Age	-0.00308	-0.000979	-0.00235	-0.000224
	(0.00338)	(0.00329)	(0.00364)	(0.00351)
Age²	-1.43e-05	-2.85e-05	-2.02e-05	-3.38e-05
	(2.06e-05)	(2.12e-05)	(2.14e-05)	(2.19e-05)
Tenure	0.0384***	0.0437***	0.0365**	0.0427***
	(0.0140)	(0.0138)	(0.0142)	(0.0139)
Minister	0.0988***	0.0929***	0.106***	0.0995***
	(0.0139)	(0.0140)	(0.0138)	(0.0138)
Political position controls	No	Yes	No	Yes
MP fixed effects	Yes	Yes	Yes	Yes
Legislative period fixed effects	Yes	Yes	Yes	Yes
Observations	8,732	8,732	8,732	8,732
Number of legislators	3,006	3,006	3,006	3,006
R-squared	0.255	0.262	0.337	0.347

Notes: OLS fixed effects estimation. The unit of observation is an individual legislators-legislative period pair. The dependent variables are the share of absent roll-call votes in columns (1) and (2) and the share of days a roll-call vote is missed at least once in columns (3) and (4). Political position controls include *Junior minister*, *(vice) Parliamentary president*, *(vice) Chair committee*, (vice) *Chair parl. group*, *Whip*, *Experience as minister, Experience as jun. minister*. Standard error estimates are clustered at the member of parliament level. *** p<0.01, ** p<0.05, * p<0.1.

Instrumental Variables: The Effect of Elected Competitors on Absence Rates

We report the 2SLS regression results in Table 2. We use *Early dropout in constituency* and *Replacement in constituency* as instruments for *Elected competitors in constituency*.

The first stage results in all columns in panel (b) indicate that our instruments strongly correlate with *Elected competitors in constituency*. As expected, the variable *Early dropout in constituency* negatively affects competition, while the variable *Replacement in constituency* positively affects competition. *F*-statistics for the excluded instruments indicate that the instruments are not weak. The first stage results underscore the relevance of our instruments in explaining political competition from other elected legislators, as could be expected due to the institutional setting.

We explore a parsimonious 2SLS setting without controls in column (1) of panel (a). The coefficient of *Elected competitors in constituency* is statistically significant and negative. Adding personal time-variant covariates, legislator fixed effects, and legislative period fixed effects in column (2) as well as additional political positions controls in column (3), we find that the statistically significant and negative effect persists but becomes smaller in magnitude. The existence of elected competitors from the same constituency, which is due to dropouts or replacements, leads to a decrease in the absence rate by about 6.1 percentage points, which is larger than the OLS results as expected. This effect is quantitatively substantial and corresponds to about 49% of the average absence rate in roll-call votes (12.5%). Thus, competition from other elected legislators in the same constituency explains about half of the average absence rate. Results for Hansen's J-statistic and respective p-values, as reported in Table 2, corroborate the argument that the instruments are uncorrelated with the error term and suggest that the instruments are econometrically valid.

The IV results are qualitatively and quantitatively similar when using the *Share of days absent* as the dependent variable in columns (4)–(6). Dropouts and replacements affect electoral

competition (first stage), and competition from elected competitors negatively affects legislators' absence rates.[14]

Table 2: The effect of *Elected competitors in constituency* on the *Absence rate in roll-call votes* (2SLS)

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable	Absence rate in roll-call votes			Share of days absent		
Panel (a): Second stage results						
Elected competitors in constituency	-0.142***	-0.0612***	-0.0614***	-0.149***	-0.0581**	-0.0583**
	(0.0329)	(0.0233)	(0.0234)	(0.0337)	(0.0226)	(0.0227)
Panel (b): First stage results for instruments only						
Dependent variable	*Elected competitors in constituency*					
Early dropout in constituency	-0.290***	-0.367***	-0.366***	-0.290***	-0.367***	-0.366***
	(0.0283)	(0.0315)	(0.0315)	(0.0283)	(0.0315)	(0.0315)
Replacement in constituency	0.164***	0.123***	0.123***	0.164***	0.123***	0.123***
	(0.00609)	(0.0145)	(0.0144)	(0.00609)	(0.0145)	(0.0144)
Controls (for all panels):						
Personal controls	No	Yes	Yes	No	Yes	Yes
Political position controls	No	No	Yes	No	No	Yes
MP fixed effects	No	Yes	Yes	No	Yes	Yes
Legislative period fixed effects	No	Yes	Yes	No	Yes	Yes
Observations	8,732	8,732	8,732	8,732	8,732	8,732
Number of legislators	3,006	3,006	3,006	3,006	3,006	3,006
F-statistic first stage	432.5	101.9	102.1	432.5	101.9	102.1
Hansen J-statistic (p-val.)	0.122	0.792	0.724	0.108	0.678	0.616

Notes: 2SLS estimation. The unit of observation is an individual legislators-legislative period pair. The dependent variables are the share of absent roll-call votes in columns (1) and (2) and the share of days a roll-call vote is missed at least once in columns (3) and (4). Personal controls include *Direct mandate*, *Government party*, *Age*, *Age*^{2}, *Tenure* and *Minister* as in Table 1. Political position controls include *Junior minister*, *(vice) Parliamentary president*, *(vice) Chair committee*, *(vice) Chair parl. group*, *Whip*, *Experience as minister, Experience as jun. minister*. Standard error estimates are clustered at the member of parliament level. *** p<0.01, ** p<0.05, * p<0.1.

[14] We also note that the coefficients of *Elected competitors in constituency* in Table 2, Panel (a) are, as expected (see Section III), larger in absolute terms than the respective coefficients in Table 1

Robustness Checks and Refinements

Table 3 shows a series of robustness checks.[15] We continue to employ our instrumental variables strategy. Next to the existence of elected competitors from the same constituency, other aspects of political competition might be important to explain legislative shirking.

We investigate whether the effect of *Elected competitors in constituency* is independent of commonly used measures of political competition in our regressions. In column (1), we include vote margins following, for example, Galasso and Nannicini (2011). Vote margins are positive for legislators with a direct mandate (difference to runner-up in direct election) and negative for legislators from the list (difference to winner of the direct mandate). We suspect that the effect of vote margins is non-linear and largest when legislators are either closely elected or closely not elected. Hence, we also include the squared term of vote margins. The effect of *Elected competitors in constituency* remains unchanged, that is, statistically significant, negative and with an absolute size corresponding to about 6.1 percentage points. In column (2), we include two further measures for political competition: *Closeness district* is the difference of the vote shares of the first and second candidate in the constituency's direct election, and the number of *Direct candidates* is the sum of all candidates running for direct election in the constituency. Again, the effect of *Elected competitors in constituency* remains statistically significant, negative, and of the same size. The other measures for political competition have the expected sign, but are statistically insignificant.

[15] To save space we do not report results with *Share of days absent* as a dependent variable. Our insights and interpretations do not change when employing *Share of days absent* (results are available upon request).

Table 3: Robustness checks for the effect of *Elected competitors in constituency* on the *Absence rate in roll-call votes* controlling for alternative measures of political competition

Dependent variable	Absence rate in roll-call votes					
	(1)	(2)	(3)	(4)	(5)	(6)
	Include further control variables				More than 30 roll-call votes	More than 50 roll-call votes
Elected competitors in constituency	-0.0605***	-0.0607***	-0.0604***	-0.0622***	-0.0767***	-0.0687**
	(0.0232)	(0.0233)	(0.0230)	(0.0235)	(0.0281)	(0.0289)
Vote margin	-0.0235					
	(0.0262)					
Vote margin²	0.00130					
	(0.0560)					
Closeness district		-0.00625				
		(0.0248)				
Direct candidates		-0.00149				
		(0.00119)				
Last term			0.0296***			
			(0.00442)			
Parl. group size			-0.000301***			
			(6.88e-05)			
Personal controls	Yes	Yes	Yes	Yes	Yes	Yes
State*Seat gov. controls	No	No	No	Yes	No	No
MP fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Legislative period fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,732	8,732	8,732	8,732	7,763	6,480
Number of legislators	3,006	3,006	3,006	3,006	2,944	2,662
F-statistic first stage	104.0	103.1	101.8	100.7	71.45	48.03
Hansen J-statistic (p-val.)	0.773	0.818	0.796	0.844	0.456	0.375

Notes: 2SLS estimation. The unit of observation is an individual legislators-legislative period pair. The table shows second stage regression results using *Early dropout in constituency* and *Replacement in constituency* to instrument *Elected competitors in constituency*. The dependent variable is the share of absent roll-call votes in all columns. Personal controls include *Direct mandate*, *Government party*, *Age*, *Age²*, *Tenure* and *Minister* as in Table 1. *State*Seat gov. controls* are dummy variables for every state multiplied with an indicator variable taking a value of one when the seat of government is located in Berlin. Standard error estimates are clustered at the member of parliament level. *** p<0.01, ** p<0.05, * p<0.1.

Legislators have been found to be absent more often in their last term when reelection incentives no longer have any disciplining effect (Lott 1987; Rothenberg and Sanders 2000; Besley and Larcinese 2011; Willumsen and Goetz 2017). Results from column (3) confirm this result and indicate that, in their last term, legislators' absence rate is about 3.0 percentage points higher. The size of the parliamentary faction has a negative impact. The effect of the existence of elected competitors in the same constituency is unaffected by the inclusion of these controls as its effect remains negative at about 6 percentage points.

In column (4), we take the distance of the legislators' state to the seat of government into account (see, e.g., Willumsen 2019). Distance is related to traveling time, which may affect absence rates. We also exploit the change in the seat of government from Bonn to Berlin in 1999 to account for distance and interact state dummies with a variable indicating whether the seat of parliament is in Berlin. Again, the effect of elected competitors in constituency remains statistically significant, negative, and virtually the same in magnitude, as in earlier specifications.

The number of roll-call votes which legislators are theoretically able to participate varies over legislative periods. We drop observations from legislators who were only able to theoretically participate in less than 30 or 50 recorded votes in columns (5) and (6), respectively. If anything, point estimates for the variable *Elected competitors in constituency* slightly increase in absolute terms in these subsamples. The effect always remains negative and statistically significant.

Table A2 in the Appendix shows further robustness checks. We exclude all observations from legislators in their last term from our sample in column (1).[16] In column (2), we drop ministers from the sample. In column (3), we also drop junior ministers, parliamentary

[16] We are able to observe that legislators are in their last term, but we do not know whether they do not present themselves for reelection voluntarily or fail reelection, such that the variable *Last term* only partly captures the actual incentives of legislators in their last term.

presidents, chairs of parliamentary groups or committees, and whips, as their legislative behavior might systematically differ from legislators without such positions. Columns (4) and (5) investigate subsamples in the pre- and post-reunification periods, respectively. In column (6), we exclude all observations from legislative periods that are shorter than the regular four years. In column (7), we include observations from legislators when they served for less than half of the legislative period. All subsample regressions in columns (1)–(7) in Table A2 provide overall support for our main results. In column (7), we use the total number of elected competitors instead of an indicator variable, that is, we count the number of elected competitors in the same district. The effect is statistically significant, negative, and corresponds to a decrease of 3.1 percentage points per additional competitor. The effect of having elected competitors from the same constituency is robust.

There might be different reasons and circumstances for legislators missing roll-call votes. Table A3 in the Appendix explores diverse nuanced measures for *Absence in roll-call votes*. The legislators can officially excuse their absence in parliament in advance, but no reason for the absence has to be indicated, and an excused absence no longer entails reductions of the lump sum for missed roll-call votes. Legislators may apply for a leave of absence for any reason without indicating it and are thus able to cleverly circumvent wage deductions. The effect of having elected competitors in one's constituency negatively affects excused (column 1) and unexcused (column 2) absences. In column (3), we employ the number of days a legislator misses all roll-call votes as a share of all days when recorded votes are scheduled; thus, legislators who appear once in roll-call votes and show at least some presence do not count as shirkers when using this measure. Column (4) uses the share of days when legislators miss all roll-call votes without excuse as a dependent variable (see Fisman et al. 2015). In columns (5) and (6), we take absence rates in the first half and in the second half of the legislative period as dependent variables. The effect of *Elected competitors in constituency* remains statistically significant and negative in all specifications. The quantitative effect can be compared with

previous estimates when taking account of the nuances in the dependent variables used (e.g., there are fewer roll calls that are missed without an excuse and with an excuse).

Heterogeneity, Mechanisms, and Deviation from the Party Line

To explore potential mechanisms of how elected competitors influence the absence rates of legislators, we conduct an analysis for subgroups of legislators in Table 4.

Legislators from the large parties (Christian conservatives, CDU/CSU, and the social democrats, SPD) usually compete for the direct mandates in the constituency, while legislators from smaller parties have little chance to seize the direct mandate. For politicians from smaller parties, it is more important to have a promising position on the party list. Consequently, the existence of elected competitors is expected to more strongly influence the legislative behavior of politicians from large parties. In columns (1) and (2), we run regressions for subsamples of legislators from larger and smaller parties. As expected, we find a negative and statistically significant effect of *Elected competitors in constituency* on *Absence rate in roll-call votes* for legislators from larger parties, while the effect is not statistically significant for legislators from smaller parties.[17]

Columns (3) and (4) differentiate between legislators directly elected in the constituencies and those from the closed state party list. For both groups, we find a negative effect that is statistically significant and quantitatively comparable to our main results. There is no evidence that the existence of elected competitors from the same constituency has a different effect on legislators from the constituencies in contrast to legislators from the party lists.

[17] The statistical insignificance and the large point estimate for the sample of politicians from smaller parties was to be expected due to our instrumental variables setting: There is virtually no variation in our competition variable for the sample of legislators from the smaller parties. This is because they are mostly elected from the party lists. Consequently, the number of elected competitors they face from the same constituency is almost always at least one and often even more as an additional legislator from the defeated candidate of a larger party supervenes. Indeed, the instrumentation strategy yields small *F*-statistics for the excluded instruments in the first stage.

Table 4: Mechanisms explaining the effect of *Elected competitors in constituency* on the *Absence rate in roll-call votes*

Dependent variable	Absence rate in roll-call votes								Deviation
	(1) Legislators from large parties	(2) Legislators from small parties	(3) Legislators elected in constituency	(4) Legislators elected from party lists	(5) Small vote margins (|*MV*|<= 0.15)	(6) Large vote margins (|*MV*|>0.15)	(7) 0 and 1 direct competitors	(8) 0 and more than 1 competitors	(9) Share of votes a legislator deviates from party line
Elected competitors in constituency	-0.0466**	-0.440	-0.0644*	-0.0524*	-0.0688**	-0.0653	-0.0532**	-0.0348	-0.0162*
	(0.0221)	(0.303)	(0.0329)	(0.0303)	(0.0283)	(0.0514)	(0.0242)	(0.0328)	(0.00914)
Personal controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
MP fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Legislative period fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,249	1,483	4,515	4,217	4,166	4,566	6,238	3,874	8,729
Number of legislators	2,339	684	1,649	1,821	1,742	2,015	2,467	2,034	3,006
F-statistic first stage	105.6	2.577	64.19	43.68	64.10	24.01	91.44	48.93	101.9
Hansen J-statistic (p-val.)	0.430	0.703	0.641	0.715	0.972	0.859	0.201	0.876	0.725

Notes: 2SLS estimation. The unit of observation is an individual legislators-legislative period pair. The table shows second stage regression results using *Early dropout in constituency* and *Replacement in constituency* to instrument *Elected competitors in constituency*. The dependent variable is the absence rate in roll-call votes in all columns. Personal controls include *Direct mandate*, *Government party*, *Age*, *Age*², *Tenure* and *Minister* as in Table 1. Columns (1) – (8) show subsample regressions. Columns (1) and (2) divide the sample according to the belonging to large or small parties. Columns (3) and (4) divide the sample considering legislators elected in the constituency or elected from the closed state party list respectively. Columns (5) and (6) divide the sample according to the vote margin in the direct tier. The first group in column (5) consists of legislators with small vote margins (|*MV*|<=0.15). The second group consists of legislators with larger vote margins. In columns (7) and (8), we divide the sample according to the number of competitors from the same constituency. Standard error estimates are clustered at the member of parliament level. *** p<0.01, ** p<0.05, * p<0.1.

Column (5) shows that the effect of political competition is negative and statistically significant when legislators win or lose within a 15-percentage point margin, that is, when the direct election is comparatively close. On the other hand, if winners are safely elected (e.g., by more than a 15-percentage point margin) and the losers care more about their list position within their parties party list, we would expect that having more elected competitors might be less relevant for winner and loser (corresponding to the results of column 6). Thus, (expected) vote margins can moderate the effect of elected competitors on absence rates.

Having elected competitors from the same constituency may matter more when they contest the direct mandate in the next election. In column (7), we drop all observations of legislators having more than two elected competitors. In column (8), observations of legislators with exactly one elected competitor are omitted. A higher number of competitors from the same constituency increases the likelihood that the additional legislators are candidates from smaller parties who lose the direct election with a large difference of first votes. They represent a smaller electoral threat to those competing for the direct mandate. Point estimates in column (7) are negative and statistically significant. In column (8), the point estimates are negative, somewhat smaller compared to column (7), and statistically insignificant, as expected.

Next to absence rates, the roll-call vote data allow us to analyze deviations from the party line. The deviation rate is the number of times a legislator votes against the majority of his/her party divided by the number of participated roll-call votes.[18] Party discipline is strongly enforced in Germany, and the mean deviation rate in our sample is only 2.4%. Interestingly, however, column (9) shows that legislators having elected competitors from the same constituency deviate less often from the party line. Having elected competitors from the same constituency reduces the deviation rate by 1.6 percentage points in our 2SLS estimations, which

[18] Three observations are dropped from our sample in estimations for the deviations from the party line as the corresponding legislators miss all roll-call votes they could potentially have attended.

is substantial given the high levels of party discipline. More elected competitors at the constituency level thus seem to make the fallback option on the party list and hence voting with the party line more relevant due to the German electoral system.

V. Conclusion

We analyze the effect of political competition on legislative shirking in roll-call votes using data from the German Bundestag from 1953–2017. We leverage the German mixed electoral system, which institutionally leads to differences in the number of *elected* legislators from the same constituency but from different parties. Having more elected legislators from the same constituency is relevant as it allows voters to evaluate their representational effort and to compare them with each other under the same circumstances. Exogenous variation in the number of competitors per constituency is established by using legislators who leave parliament during the legislative period and their respective replacement candidates as instruments. This allows us to identify the effect of political competition induced by elected competitors on legislative shirking in an instrumental variables setting.

We find that legislators who face elected competitors from the same constituency reduce their absence rates by about 6.1 percentage points. This effect is substantial and corresponds to nearly 49% of the mean absence rate. The effect of elected competitors is robust to the inclusion of individual fixed effects and other covariates found to be relevant predictors of legislative shirking. The effect is also independent of other measures of political competition commonly used in the literature. This suggests that, apart from the relevance of political competition for legislative shirking, *elected* competitors from the same constituency might be seen as a thus far neglected measure of political competition.

Evidence from our regression analysis indicates that our measure of political competition also impacts deviation from the party line in roll-call votes in addition to absence rates. Future

research may further investigate the congruence of deviation from party lines included by political competition. Furthermore, research might explore the effect of political competition on other behavioral variables of politicians, including the number of speeches, interpellations, and social media. As mixed electoral systems are more and more prevalent in different countries, our measure of competition and our empirical strategy may be applied elsewhere. Intra-constituency competition from *elected* legislators should matter in other political contexts too, even if institutional differences matter.[19]

[19] For example, two U.S. Senators are elected in every state, and they can be benchmarked by voters, but they do not compete against each other in the same election.

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APPENDIX – SUPPLEMENTARY INFORMATION
(Intended for online publication only)

Table A1: Summary statistics

Variable	Dummy	Obs	Mean	Std. Dev	Min	Max
Absence Rates (dependent variables)						
Absence rate in roll-call votes	No	8,732	0.125	0.149	0	1
Share of days absent	No	8,732	0.151	0.159	0	1
Competition						
Elected competitors in constituency	Yes	8,732	0.842	0.365	0	1
Vote margin	No	8,732	-0.0240	0.241	-0.683	0.710
Closeness district	No	8,732	0.155	0.121	0	0.710
Direct candidates	No	8,732	6.854	1.535	3	16
Parl. group size	No	8,732	211.0	78.67	8	319
Instruments for Elected competitors in constituency						
Early dropout in constituency	Yes	8,732	0.0355	0.185	0	1
Replacement in constituency	Yes	8,732	0.0464	0.210	0	1
Legislator specific variables						
Direct mandate	Yes	8,732	0.517	0.500	0	1
Government party	Yes	8,732	0.578	0.494	0	1
Age	No	8,732	49.48	8.952	19.28	85.70
Tenure	No	8,732	2.752	1.713	1	12
Last term	No	8,732	0.268	0.443	0	1
Position and experience						
Minister	Yes	8,732	0.0366	0.188	0	1
Junior minister	Yes	8,732	0.0462	0.210	0	1
(vice) Parl. president	Yes	8,732	0.0112	0.105	0	1
(vice) Chair committee	Yes	8,732	0.0983	0.298	0	1
(vice) Chair parl. group	Yes	8,732	0.0613	0.240	0	1
Whip	Yes	8,732	0.0320	0.176	0	1
Experience as minister	Yes	8,732	0.0473	0.212	0	1
Experience as jun. minister	Yes	8,732	0.0480	0.214	0	1

Notes: Data (except *Vote margin* and *Direct candidates*) for the time period 1953-2013 is generated from Bergmann et al. 2018a and Bergmann et al. 2018b. The *Vote margin* and *Direct candidates* variable for the period 1953-2017 is generated from the official electoral results as published by the *Bundeswahlleiter* (Federal Election Commissioner). Data for absence rates 2013-2017 is taken from the publicly available records for the results of roll-call votes in the German Bundestag from the official Bundestag website. Data for legislator specific covariates 2013-2017 is collected from the personal biographies provided on the official website of the German Bundestag. The remaining variables 2013-2017 are generated with the help of the *Datenhandbuch zur Geschichte des Deutschen Bundestags* from the official Bundestag website.

Table A2: Robustness checks for the effect of *Elected competitors in constituency* on the *Absence rate in roll-call votes* estimating subsamples

Dependent variable	Absence rate in roll-call votes							
	(1) Exclude legislators in their last term	(2) Exclude ministers	(3) Exclude legislators with position	(4) Subsample 1953 - 1990	(5) Subsample 1990-2017	(6) Exclude legislative periods that ended prematurely	(7) Include observations when served less than half of the period	(8) Count of elected competitors
Elected competitors in constituency	-0.0491**	-0.0417**	-0.0432*	-0.0584*	-0.0443	-0.0696**	-0.0494**	-0.0313***
	(0.0249)	(0.0207)	(0.0233)	(0.0328)	(0.0304)	(0.0279)	(0.0232)	(0.0114)
Personal controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
MP fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Legislative period fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,396	8,412	6,487	4,440	4,292	6,771	9,120	8,732
Number of legislators	2,373	2,987	2,795	1,589	1,770	2,905	3,121	3,006
F-statistic first stage	66.89	98.31	75.42	67.77	27.07	74.83	106.0	174.3
Hansen J-statistic (p-val.)	0.522	0.378	0.362	0.584	0.576	0.609	0.347	0.731

Notes: 2SLS estimation. The unit of observation is an individual legislators-legislative period pair. The table shows second stage regression results using *Early dropout in constituency* and *Replacement in constituency* to instrument *Elected competitors in constituency*. The dependent variable is the absence rate in roll-call votes in all columns. Personal controls include *Direct mandate*, *Government party*, *Age*, Age^2, *Tenure* and *Minister* as in Table 1. In column (1) we exclude legislators in their last term from the sample. In columns (2) and (3) we drop ministers and ministers, junior ministers, chairs of committees and parliamentary groups, parliamentary presidents and whips respectively. Columns (4) and (5) estimate subsamples for the period 1953-1990 and 1990-2017. In column (6), we drop legislative periods from the sample that ended before the regular four years. In column (7), we use the count of elected competitors as main explanatory variable. Standard error estimates are clustered at the member of parliament level. *** p<0.01, ** p<0.05, * p<0.1.

Table A3: Using different dependent variables to estimate the effect of *Elected competitors in constituency* on legislative shirking

Dependent variable	(1) Share of votes that legislator misses with excuse	(2) Share of votes that legislator misses without excuse	(3) Share of days that legislator misses the whole day	(4) Share of days that legislator misses the whole day without excuse	(5) Share of votes that legislator misses in first half of legislative period	(6) Share of votes that legislator misses in second half of legislative period
Elected competitors in constituency	-0.0344*	-0.0268*	-0.0579***	-0.0212*	-0.0706**	-0.0503*
	(0.0181)	(0.0162)	(0.0211)	(0.0116)	(0.0294)	(0.0299)
Personal controls	Yes	Yes	Yes	Yes	Yes	Yes
MP fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Legislative period fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,732	8,732	8,732	8,732	8,706	8,709
Number of legislators	3,006	3,006	3,006	3,006	2,997	2,997
F-statistic first stage	101.9	101.9	101.9	101.9	103.0	102.4
Hansen J-statistic (p-val.)	0.211	0.313	0.727	0.513	0.599	0.391

Notes: 2SLS estimation. The unit of observation is an individual legislators-legislative period pair. The table shows second stage regression results using *Early dropout in constituency* and *Replacement in constituency* to instrument *Elected competitors in constituency*. The dependent variables are different variations of the previously used dependent variables. Personal controls include *Direct mandate*, *Government party*, *Age*, *Age*², *Tenure* and *Minister* as in Table 1. Standard error estimates are clustered at the member of parliament level. *** p<0.01, ** p<0.05, * p<0.1.

Figure A1: Mean *Absence rate in roll-call votes* by *Elected competitors in constituency*

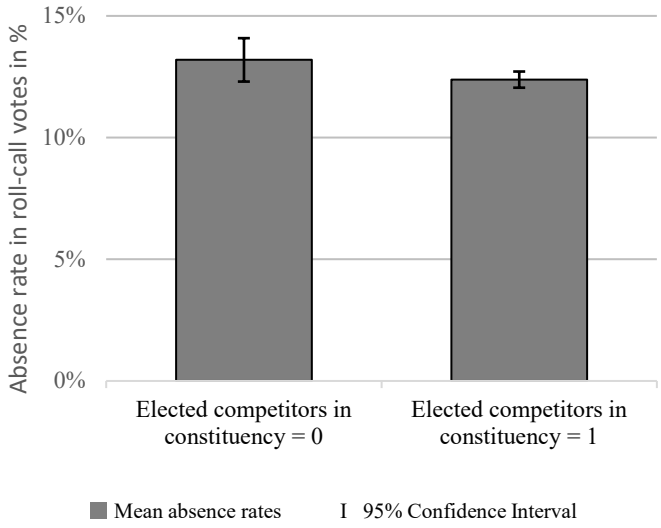

Figure A2: Share of legislators having no elected competitor by legislative periods *(Elected competitors in constituency* = 0)