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**Conference Paper**

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Beiträge zur Jahrestagung des Vereins für Socialpolitik 2022: Big Data in Economics

**Provided in Cooperation with:**

Verein für Socialpolitik / German Economic Association

*Suggested Citation:* Frank, Marco; Stadelmann, David (2022) : Competition, Benchmarking, and Electoral Success: Evidence from 65 years of the German Bundestag, Beiträge zur Jahrestagung des Vereins für Socialpolitik 2022: Big Data in Economics, ZBW - Leibniz Information Centre for Economics, Kiel, Hamburg

This Version is available at:

<https://hdl.handle.net/10419/264070>

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# Competition, benchmarking, and electoral success: Evidence from 65 years of the German Bundestag<sup>\*</sup>

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February 2022

## Abstract

The German electoral system ensures that there is always at least one federal legislator per constituency. This legislator can face competition from additionally elected competitors to the Bundestag from precisely the same constituency. The existence of several legislators per constituency allows voters to benchmark their quality against each other. We analyze the impact of having more elected competitors from the same constituency on legislators' personal success vs. the success of their parties. Our data cover the legislative terms in the German Bundestag and federal elections in the period 1953–2017. In our analysis, we rely on exogenous variation in elected competitors by investigating changes induced by legislators who leave the Bundestag during the legislative period and their respective replacement candidates as instrumental variables. We find that legislators are less successful in elections when they are exposed to elected competitors from the same constituency. The results suggest that benchmarking possibilities are relevant for voters to hold their representatives accountable.

**Keywords:** Political Competition, Accountability, Split ticket voting, Elections, Political Representation.

**JEL Classification:** D72, D78, H11

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<sup>\*</sup> We thank Lena Gerling, Tommy Krieger, Niklas Potrafke, Henrik Reese, Fabian Ruthardt, Patricia Schafer, Gustavo Torrens and Frederik Wild for their thoughtful comments and suggestions. We have also benefited from feedback at the Graduate Workshop at the University of Bayreuth, the 30th Silvaplane Workshop on Political Economy, the Elections, Institutional Reforms, and Public Policy Workshop at the Ruhr-University Bochum, and the 32<sup>nd</sup> BGPE Research Workshop.

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## I. INTRODUCTION

Elections are a crucial mechanism in democracies to hold politicians accountable. Incumbent politicians' accountability is higher if they are active in a politically competitive environment and if voters are well informed about their performance (e.g., Ferraz and Finan 2011; Ashworth 2012). In this paper, we ask the question of how being exposed to *elected* competitors from the same constituency affects legislators' electoral success. Relying on parliamentary and electoral data from 1953 to 2017 for the German Bundestag (federal parliament), we find that legislators are evaluated less favorably by voters when they have more elected competitors from their constituency with whom they can be compared. We provide evidence that the existence of more than one elected legislator per constituency makes it easier for voters to perceive and assess the quality of their representatives by benchmarking them.

Due to the two electoral tiers of the mixed-electoral system employed in German federal elections, candidates have two options to obtain a mandate: (1) They can obtain a direct mandate in one of the local constituencies by winning the plurality of votes. Alternatively, (2) they can obtain a mandate through a closed state party list. One-half of the statutory size of the Bundestag encompasses legislators elected in the constituencies, and the other half stems from the state party lists allocated by proportional rule. Dual candidacies are allowed, that is, candidates usually run for election in both electoral tiers. Thus, if candidates lose in the direct election in their constituency, they still have a chance to enter the Bundestag via the state party list. While every constituency is represented by a directly elected legislator, it is possible that defeated direct candidates can be mandated additionally to the Bundestag through the party lists depending on their party list positions. The electoral system thereby generates differences in the representation of constituencies in the Bundestag and induces observable differences in the level of competition from *elected* competitors within constituencies (Maaser and Stratmann 2016; Frank and Stadelmann 2021a).

Elected competitors from the same constituency may serve as benchmarks against which voters can compare and evaluate their legislators (Frank and Stadelmann 2021b). Benchmarking can provide valuable information to voters: If legislators run again in the election, voters are better able to assess their dedication and quality, which can result, *ceteris paribus*, in more adverse conditions to being electorally successful (e.g., see Ferraz and Finan 2008; Ashworth 2012; Costas-Pérez et al. 2012; Chong et al. 2015). Legislators without elected competitors instead may profit electorally if there are no benchmarking possibilities for voters.<sup>1</sup>

To analyze the effect of exposure to elected competitors on electoral success, we compile competition data for all German legislators from 1953 to 2017. Conditional on them running at least twice, we investigate the impact of elected competition on their electoral outcomes. We analyze a sample of 6,972 observations in 17 federal elections.

The panel data structure allows us to employ a legislator-specific fixed effects strategy in a first step, that is, we compare the electoral success of the same legislator in situations with elected competitors with situations when the legislator faces no elected competitors. Our fixed effects strategy helps to alleviate omitted variable bias concerns. It does, however, not enable us to account for all potentially time-variant (unobservable) variables, such as changes in a politician's valence, popularity, or political networks which may correlate with both competition and electoral success. Thus, we also employ an instrumental variables strategy. Our instrument leverages a peculiar feature of the electoral system: During a legislative period, it happens that legislators resign their mandate (one in 15 legislators drop out of parliament before the term ends). The most common reasons are the death of the politicians or the acceptance of another office or mandate. There are no by-elections. Instead, the first not yet elected candidate from the closed state party list who is in most instances an unsuccessful direct candidate from another constituency receives the replacement mandate. Consequently, the

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<sup>1</sup> Legislators without elected competitors are usually likely to profit from a standard incumbent advantage.

resignations of legislators lead to changes in the number of representatives and, hence, competition in *two* constituencies. First, competition decreases in the constituency where the withdrawing legislator originated from. Second, competition increases in the constituency of the replacement candidate. The reasons for resignation and the rule-based replacement mechanism should be orthogonal to the characteristics of other legislators representing the two affected constituencies, which qualifies both changes to be used as instruments for elected competition.

Our empirical results show that legislators are less successful when they are exposed to other elected competitors from their constituency. This effect is comparatively large and statistically robust with respect to different specifications for competition, instrument use, and various subtleties that party politics might imply. With regard to mechanisms, we provide evidence in favor of benchmarking to explain the impact of exposure to elected competitors and electoral success. Having elected competitors from the same constituency is more detrimental to legislators when they are from an ideologically close party and in more recent legislative terms characterized by converging positions of the major parties, which is consistent with Buttice and Stone (2012) and Gavaille and Vershelde (2017). To further bolster the benchmarking mechanism for explaining the impact of elected competitors on electoral success, we attempt to exclude other potential channels as much as possible.

The remainder of this paper is organized as follows: Section II discusses related literature. Section III explains the German electoral system and outlines how competition is linked to individual electoral success through benchmarking. Section IV presents the data and our identification strategy. Section V summarizes our main estimation results, robustness checks, and analysis of mechanisms. We provide a summary and conclusion in Section VI.

## II. RELATED LITERATURE

In competitive environments politicians, parties, and governments can be expected to be more accountable to voters and therefore target policies toward voters' preferences (e.g., Stigler 1972; Padovano and Ricciuti 2009). On the macro level, political competition is associated with economic growth and promotes sounder fiscal policies (Rogers and Rogers 2000; Padovano and Ricciuti 2009; Besley et al. 2010; Aidt and Eterovic 2011). The absence of competition fosters various forms of favoritism detrimental to the general electorate's interests (Solé-Ollé and Viladecans-Marsal 2012; Curto-Grau et al. 2018; Lévêque 2020) and the creation of political dynasties (Dal Bó et al. 2009). On the individual level, politicians are more engaged in legislating, adjust their voting behavior in parliament, or reduce absences if political competition is high (Galasso and Nannicini 2011; Bernecker 2014; Gavaille and Vershelde 2017; Gavaille 2018; Kauder and Potrafke 2019; Frank and Stadelmann 2021b). Also, the abuse of power and rent extraction are lower in more competitive environments (Ferraz and Finan 2011; Kauder and Potrafke 2016). Finally, political competition is shown to be positively related to the quality of candidates and elected representatives (De Paola and Scoppa 2011; Galasso and Nannicini 2011; Dal Bó et al. 2017). We add to this strand of literature by introducing a new measure for political competition, which is exposure to elected competitors from the same constituency (see also Frank and Stadelmann 2021b), and we investigate the effect of elected competitors on individual electoral success.<sup>2</sup>

In our analysis, we consider benchmarking possibilities to explain the impact of exposure to elected competitors from the same constituency and electoral accountability. Therefore, we also add to the literature that highlights the importance of voters' information and informational shortcuts for voting behavior (e.g., see Lupia 1994; Carpini et al. 1996). Abundant empirical

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<sup>2</sup> Note that the literature on political competition concentrates more on the effects of competition on policies or behavior and less on electoral success or accountability. The reason is that political competition is quantified predominantly with vote margins, which itself is a measure related to success or accountability.

evidence indicates that voters' ability to hold politicians electorally accountable improves if voters possess credible information about their track record (for an overview, see Pande 2011). For example, corruption that is revealed in random audits or by judiciary intervention is punished by voters and decreases the reelection prospects of involved incumbents (Ferraz and Finan 2008; Costas-Pérez et al. 2012; Chong et al. 2015). Politicians who exhibit a positive track record are rewarded by voters (Banerjee et al. 2011). Incumbents perform better in elections if voters are made aware of their valence and qualification, for instance, by direct mailing (Banerjee et al. 2011; Kendall et al. 2015). Chang et al. (2010) point out that misconduct or a good track record alone are not sufficient to affect voting behavior, but the respective information must be accessible to information sources that voters consult. Voter information in the above mentioned literature is usually affected by increased transparency through independent auditing, judicial intervention, or a researcher's nudge in a randomized controlled trial design. In our analysis, we suggest that information about incumbents can be generated within politics through comparisons of incumbent politicians engaging in direct competition.

### III. INSTITUTIONAL BACKGROUND AND THEORETICAL CONSIDERATIONS

#### *Federal electoral system*

The German mixed-electoral system for the Bundestag combines plurality rule with proportional representation. Voters have two votes corresponding to these two electoral tiers.

The so-called *first vote* is for candidates in single-member districts. The candidate with the plurality of first votes in the constituency wins a direct mandate for the Bundestag. Legislators elected by plurality rule account for one-half of the statutory size of the parliament.

As of 2002, there were 299 constituencies.<sup>3</sup> Constituencies do not cross state borders, and the number of constituencies per state is proportional to the state population, currently with the minimum number of two constituencies in the city state of Bremen (since 2002) and the maximum number of 73 in North Rhine-Westphalia in the elections 1965–1976. Each party can have only one direct candidate per constituency who is nominated by the party members in the constituency or delegates in a secret ballot.

The so-called *second vote* for statewide party lists establishes proportionality of the electoral result at the state level. Legislators elected by proportional rule from the state party lists account for the second half of the statutory size of the Bundestag. State party lists are closed, and the ranking of the candidates is determined in conferences of party delegates in the respective states before the election. The number of mandates a party wins in a state is proportional to its second vote share if it achieves 5% of all valid votes or wins three direct mandates nationwide. In each state, the direct mandates of the party are subtracted from the overall number of mandates it is entitled to due to its second vote share. The remaining mandates are then taken by the candidates from the party list with the highest position who have not yet been elected with a direct mandate. If the number of direct mandates is equal or even larger than the party's proportional number of seats according to the second votes, no further candidates from the state party list enter the Bundestag, but the party can keep these overhang seats.<sup>4</sup>

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<sup>3</sup> The statutory size of the Bundestag and therefore the number of constituencies has changed several times over the last decades. Starting with 242 constituencies in 1949, the number of constituencies increased to 247 in the 1957 election after the Saarland joined the Federal Republic of Germany and to 248 in 1965. After German reunification, the number increased again to 328 until 2002, when it was reduced to its current number of 299 constituencies.

<sup>4</sup> The size of the Bundestag therefore exceeds its statutory size by the number of overhang seats. As overhang seats lead to disproportionate representation, disadvantaged parties have been compensated with leveling seats to establish proportionality again since 2013, leading to a substantial increase in the number of legislators.



### *Representation, competition, and benchmarking*

Even though every constituency is represented by a directly elected legislator (direct mandate), the combination of plurality and proportional rule generates substantial differences in actual political representation among constituencies and within constituencies over time. The reason is the possibility for candidates to present themselves as a direct candidate in a constituency and on a state party list at the same time (dual candidacy). Parties in the Bundestag usually present a direct candidate in a constituency even if their direct candidate has little chance of obtaining a plurality of the votes.

Of all the candidates who served as legislators in the Bundestag in the period from 1953 to 2017, 74.5% made use of such a dual candidacy. A total of 16.9% ran as direct candidate without also presenting themselves on the party list. Only 8.6% presented themselves solely on the party list and were not actively competing for a direct mandate in a constituency.<sup>5</sup>

As described above, candidates who lose in the direct election in the constituency may still obtain a mandate from the state party list. Through party lists, further candidates from the constituency may enter parliament in addition to the already directly elected candidate. Importantly, there is no statutory mechanism that guarantees that all constituencies are represented equally in terms of the number of legislators as the supervening legislators depend on the result of the second vote for the party in the proportional tier and the positions of candidates on the party list. Thus, some constituencies receive up to four additionally elected legislators from the state party lists while others remain represented only by their directly elected legislator. From the perspective of an individual legislator, this means that they can have from zero to four elected competitors from the same constituency. Note again that legislators from the same constituency are always from different parties because each party is restricted to one candidate per constituency. Thus, the legal subtleties of the legislative system

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<sup>5</sup> The share of pure list candidates includes all legislators from West Berlin who were designated by the House of Representatives of Berlin until 1990.

lead to differences in competition within constituencies over time that are independent of individual candidates.

Additional legislators in a constituency, each from a different party, generate a more competitive political environment there. Comparison possibilities, mutual control, and competition activities make it more likely that misconduct and shirking are disclosed and perceived by voters. Commitment to the constituency,<sup>6</sup> in turn, can be evaluated in relation to other legislators. Benchmarking elected competitors from the same constituency against each other reduces the asymmetric information prevalent in politics. It also enables voters to obtain a more realistic picture of the parliamentary work and the characteristics of their legislators and to better assess their quality. If there is only one elected legislator in the constituency, voters lack such direct benchmarks against which their legislator can be evaluated. Benchmarking possibilities should improve voters' knowledge about their legislators and contribute to more information as well as transparency in the constituency. Thus, voters are able to cast a more informed vote and are more responsive when competition is high.

Anecdotal evidence suggests that legislators in the Bundestag who are from the same constituency are actively benchmarked against each other regarding, for instance, their behavior in parliament or commitment to their constituents. For illustration, we provide a collection of benchmarking examples with references to newspapers articles in Appendix A.

#### *Electoral success and competition of elected legislators*

Incumbents are shown to be more accountable in elections if voters are better informed about their personal traits, qualifications, and behavior in office (e.g., see Ferraz and Finan 2008; Banerjee et al. 2011). To analyze whether benchmarking possibilities through elected

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<sup>6</sup> Evidence from Germany suggests that constituencies profit in terms of fiscal transfers and public employment when the number of legislators from the constituency increases (Maaser and Stratmann 2016; Frank and Stadelmann 2021a).

competitors from the same constituency have a similar effect, we rely on additional features of the German electoral system: the timing of the election and split ticket voting.

The normal legislative term of the Bundestag is four years. Usually, elections for the new parliament are scheduled approximately one month before the current legislative term ends. This overlap allows us to identify the exposure of legislators to elected competitors from their constituency in the concluding legislative term *at the time* of the election and to link it to their electoral success *in* the election.

As a measure of a legislator's electoral success in the election, we employ the difference in the first vote share of a competing legislator and the second vote share of the respective party in the constituency. As voters have two votes, split ticket voting is possible, that is, voters can opt for a candidate to represent the constituency who is from a different party than the party they give their second vote to. Relating first and second vote shares within one constituency holds the advantage that we can compare the voting behavior of the *same* voters regarding the legislators versus their parties. Given that the statewide strength of a party is proportional to the second votes it gains, it is reasonable to assume that voters express their true party preferences with their second vote. If voters cast their first votes strictly in accordance with their ideological party preferences, the legislator's first vote share would correspond to the respective party's second vote share in the constituency. A positive vote share difference between the first and the second vote indicates that voters support the legislator beyond the party affiliation. Conversely, a negative vote share difference between the first and the second votes indicates that voters tend to support the party more than the legislator in their constituency. Reasons for positively or negatively evaluating a legislator versus the party can be linked to personal characteristics such as charisma, valence, or political experience in the constituency. It can also be a reward or a punishment for the legislator's performance during

the concluding legislative term.<sup>7</sup> The difference may also be driven by an incumbency advantage over other non-incumbent direct candidates in the constituency.

Benchmarking possibilities induced by elected competitors in the concluding legislative term should allow voters to compare individual legislators from the same constituency such that they are better to assess their quality. Misconduct and shirking may be punished more severely. We hypothesize that more *elected* competitors from the same constituency reduce the individual success of legislators versus the party's success in the same constituency in comparison with when there is only one incumbent legislator.

#### IV. DATA AND IDENTIFICATION STRATEGY

##### *Data*

Our data span all legislative terms and elections from 1953 to 2017. We retrieve legislator data for the period from 1953 to 2013 from Bergmann et al. (2018a). Personal biographies from the Bundestag website and the Data Handbook on the History of the German Bundestag (*Datenhandbuch zur Geschichte des Deutschen Bundestags*) are used as a supplement and to add legislator data for 2013 to 2017. To retrace the constituencies in which legislators run for reelection, we employ information provided by the Federal Election Commissioner (*Bundeswahlleiter*). The Federal Election Commissioner also provided first and second vote results at the constituency level.

Elections for a new parliament take place during the precedent legislative term. To analyze the effect of *elected* competitors, we focus on legislators who are candidates in two subsequent elections. To be included into our sample, they must have been a direct candidate and served in the Bundestag, thus allowing us to measure their exposure to elected competitors from the same constituency. They also must present themselves as direct candidates again in

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<sup>7</sup> A strong candidate in the constituency might be a reason for voters to also cast their second vote for the candidate's party. The difference in first and second votes would then be a conservative measure for the personal electoral success.

the election for the new parliament to calculate their first and second vote share difference. This means that we omit legislators from our analysis who are only a list candidate in one of the two subsequent elections and legislators who do not run for reelection. Our final sample covers 2,705 distinct legislators and 17 elections, which yields a panel data set including 6,972 observations. Summary statistics for all variables included in our main analysis are shown in Appendix Table A1.

*a.) Main dependent variable: Individual electoral success*

We use *Diff. in first and second vote share* as the variable for the individual electoral success of legislators. It is the difference between the first vote share the legislator receives and the second vote share for the legislator's party in the constituency. For example, former chancellor Angela Merkel won 44.0% of the first votes in her constituency in the 2017 election.<sup>8</sup> Her party, the Christian Democratic Union (CDU), gained only 32.9% of the second votes in this constituency. The 11.1 percentage point difference indicates that Angela Merkel was individually successful in the election because she received more votes than her party within the constituency.

Panel A in Figure 1 shows a histogram for the first vote shares of all legislators in our sample. First vote shares vary from 0.007% to 81.9%.<sup>9</sup> The histogram for the respective second vote shares in Panel B shows a similar picture. The first and second vote shares are double peaked. This is explained by legislators affiliated to traditionally centrist parties, that is, the Social Democratic Party (SPD), the CDU, and the Christian Social Union (CSU), who obtain relatively high first vote shares and their parties obtain high second vote shares. Candidates from smaller and more fringe parties usually obtain lower first and second vote shares,

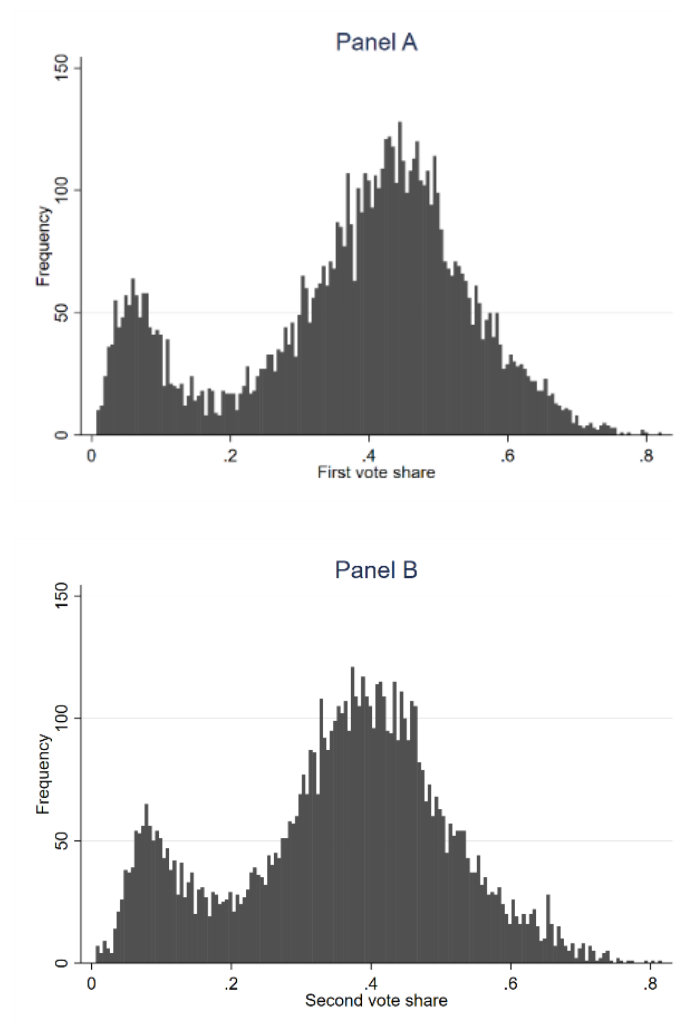
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<sup>8</sup> Angela Merkel was a candidate in constituency 15 (Vorpommern-Rügen – Vorpommern-Greifswald I) in the Mecklenburg-Western Pomerania state.

<sup>9</sup> Minimum and maximum values can be attributed to Georg Körner (German Party [abbreviated with DP for Deutsche Partei]) in the constituency of Duisburg II in 1957 and Kurt Schmücker (CDU) in the constituency of Vechta – Cloppenburg in 1961, respectively.

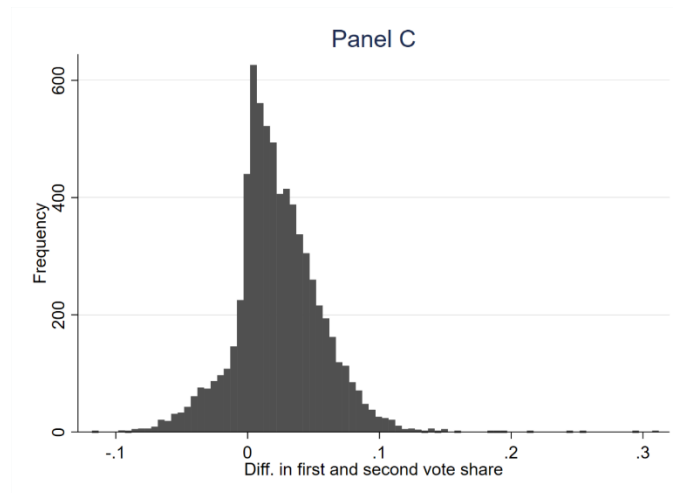
respectively.<sup>10</sup> The difference in first and second vote shares is depicted in Panel C. Elected legislators tend to obtain more first votes on average than their parties receive second votes in the same constituency. The mean difference is 2.3 percentage points, and the median difference is 2.0 percentage points, which is suggestive of a certain incumbent advantage.<sup>11</sup> The values for *Diff. in first and second vote share* have a wide range from  $-11.8$  percentage points to a maximum of 31.0 percentage points.

**Figure 1.** Histograms for the first and second vote shares and the differences in first and second vote shares.



<sup>10</sup> Candidates and parties with usually smaller first and second vote shares include the Free Democratic Party (FDP), Alliance 90/The Greens, the Party of Democratic Socialism (PDS) and its successor party The Left and the DP.

<sup>11</sup> We account for any such advantage in our empirical setting with legislator-specific fixed effects.



*b.) Main explanatory variable: Elected competitors*

Concerning our main explanatory variable of interest, incumbents running for reelection face from zero to four other elected competitors from the same constituency at the time of the election.

As parties can have at most one direct candidate per constituency, the number of parties elected to parliament minus one represents an upper bound for the number of elected competitors. A share of 16.3% of legislators in our sample are the only representatives in their constituency, that is, they face no elected competitors in the Bundestag. Slightly more than half of legislators (55.9%) have one elected competitor, 24.5% have two elected competitors, and 3.1% and 0.2% of all legislators have three and four elected competitors, respectively.

To implement exposure to elected competitors from the same constituency in our analysis, we use a binary variable. *Elected competitors in constituency* takes a value of one if legislators have at least one elected competitor and a value of zero for legislators who are not exposed to elected competitors. We use a binary variable instead of the number of elected competitors as our main explanatory variable of interest for the following reasons. First, it closely mirrors the two-tiered structure of the German electoral law. Second, a majority of legislators have exactly one elected competitor. The mean number of elected competitors is 1.15 and the median is 1. Third, there are only a few legislators with more than two elected

competitors. Using the number of elected competitors from the same constituency instead of the binary variable as an alternative does not change our main insights (see Appendix Table A3).

*c.) Further covariates*

From the perspective of a legislator running for a new mandate, other elected competitors from the same constituency are existent due to the electoral system as described above, that is, competition is reasonably independent of personal characteristics. Moreover, we will account for legislator-specific fixed effects as described below in our empirical strategy. Additionally, when analyzing the effect of elected competitors on individual electoral success, we consider other time-variant explanatory factors for differences in first and second vote shares.

We control for holding a direct mandate, being a member of a party in government, age at the election, and legislative tenure as personal attributes that could also influence the decision of voters. Legislators could also profit when they hold a salient position in government, in the party, or in parliament. We therefore control whether legislators are a minister, junior minister, (vice) parliamentary president, (vice) chair of a committee, (vice) chair of a parliamentary group, or whip in the legislative term preceding the election. We additionally account for experience as a minister in previous legislative terms if their popularity during their time in that position remains consistent. Finally, election-related covariates could also be relevant for the success of politicians. First, turnout has been shown to play a role in an incumbent's success in an election (e.g., for mixed evidence, see Hansford and Gomez 2010; Martins and Veiga 2014; Frank et al. 2020). In addition, citizens could be encouraged or discouraged to vote depending on the information they gather through benchmarking (Chong et al. 2015). Evidently, we account for the number of direct candidates in the constituency in which the incumbent runs for reelection and the number of parties at the state level. The number of candidates running for direct election is a measure for how contested first votes are in the



constituency. Note, however, that the number of direct candidates constitutes another aspect of competition than exposure to *elected* competitors from the same constituency in the concluding term. Most importantly, the latter can be used by voters as benchmarks for the evaluation of the performance and quality of incumbent legislators, which is not possible for yet unelected direct candidates. Parties that are represented in the Bundestag generally have a direct candidate in all constituencies, even if there is no chance to win the direct mandate. By contrast, small political parties that are not present in the Bundestag sometimes refrain from nominating direct candidates. When there are more parties to elect than direct candidates, a positive difference in first and second vote shares could be driven by the relative abundance of parties. We therefore systematically control for the number of direct candidates in the constituency and the number of parties at the state level in all main specifications of our model.

*Identification strategy: Legislator-specific fixed effects and instrumental variables*

*a.) Fixed effects regression framework*

To analyze the effect of political competition on individual electoral success, we start by introducing a regression framework that accounts for individual legislator-specific fixed effects. Thereby, we compare the same legislators in elections when they can be benchmarked against elected competitors from the same constituency to elections when there are no competitors. Observations in our panel data set correspond to legislator  $i$  in election  $t$ . We analyze the following specification:

$$\begin{aligned} \text{Diff. in first and second vote share}_{it} & \\ &= \beta_1 \text{Elected competitors in constituency}_{it} + X_{it}\gamma + \lambda_i + \mu_t + \varepsilon_{it}. \end{aligned} \tag{1}$$

*Diff. in first and second vote share*<sub>it</sub> is the dependent variable capturing the individual electoral success of legislators  $i$  in election  $t$ . The main explanatory variable for exposure to competition is *Elected competitors in constituency*<sub>it</sub>. It measures whether

legislators have elected competitors from the same constituency in the old parliament against which they can be benchmarked at the time of the election  $t$ .<sup>12</sup> We expect that legislators are more accountable in elections when there are benchmarking possibilities, that is, we expect the coefficient estimate  $\hat{\beta}_1$  to be negative.

Time-varying personal characteristics of legislators, political positions, and election related controls such as the overall number of competitors are captured by the  $X_{it}$ . Legislator-specific fixed effects  $\lambda_i$  account for all characteristics of legislators that are constant over time. These include observable ones such as gender, occupation, and party affiliation, but also unobservable traits such as charisma. Legislator-specific fixed effects mitigate concerns from omitted variable bias that could emanate from such constant, but unobservable or difficult to quantify traits of legislator that affect their individual success. The model is complemented by election fixed effects  $\mu_t$  to control for election-specific shocks that are common to all legislators. The error term is constituted by  $\varepsilon_{it}$ .

*b.) Instrumental variables and fixed effects*

Legislator-specific fixed effects in combination with time-varying observable covariates captured in  $X_{it}$  alleviate omitted variable bias concerns. They cover observable, time-variant traits of legislators as well as both observable and unobservable, constant characteristics (fixed effects). Even as the institutional setting insures that elected competitors emerge due the design of the German electoral system, time-variant unobservables such as valence, a legislators' popularity, or political networks matter for electoral success, that is, they can correlate with or impact *Diff. in first and second vote*. If such unobservable, time-variant variables correlate with

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<sup>12</sup> The election for the new parliamentary term takes place during the old legislative term; thus, we can know whether legislators have elected competitors from the same constituency in parliament on election day.

*Elected competitors in constituency*, estimates of  $\beta_1$  would be inconsistent.<sup>13</sup> To deal with endogeneity issues from time-variant omitted variables and to establish the impact of elected competitors on electoral success, we rely on an instrumental variables strategy based on early termination and replacement candidates (for similar approaches, see Jennes and Persyn 2015; Frank and Stadelmann 2021b).

Again, we leverage the German electoral law to examine credibly exogenous variation in competition. Our identification strategy builds on legislators who leave the Bundestag prior to the end of the legislative period (e.g., due to death or acceptance of another office), which induces changes in the level of competition in up to *two* constituencies. First, constituencies from which resigning legislators originate are not compensated for the loss of their representative, for instance, through a by-election. Thus, the number of legislators decreases in the concerned constituency, and the remaining legislators face one fewer elected competitor. Second, a vacant mandate is filled by the first candidate from the respective state party list who has *not* yet obtained a mandate in the Bundestag. Due to the electoral system, this replacement can never be from the same constituency as the resigning legislator. If this replacement candidate is a defeated candidate from another constituency, the number of legislators and competition increases there.

To clarify the peculiar way that early termination of a legislator affects competition due to the electoral law, consider the following example from the period 2013–2017. In 2013, Norbert Müller (The Left) ran unsuccessfully for a direct mandate in constituency 61,<sup>14</sup> and

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<sup>13</sup> A priori, it is unclear whether  $\hat{\beta}_1$  will be biased upwards or downwards. It is reasonable to assume that competent, popular, and connected legislators are more successful. However, whether unobserved quality, valence, popularity, and political networks are, if at all, positively or negatively linked to *Elected competitors in constituency*, is not theoretically evident. If there is a competent legislator in a constituency, other parties could nominate especially competent direct candidates who, at the same time, get a promising position on the party list. More elected competitors would then positively correlate with unobserved quality. On the other hand, quality, valence, popularity, and networks of incumbents can be deterrent for able direct candidates such that only comparatively weak politicians of other parties compete. In such a situation, more elected competitors would correlate negatively with average quality.

<sup>14</sup> Potsdam – Potsdam-Mittelmark II – Teltow-Fläming II in the state of Brandenburg.

then held the unfortunate position of the first candidate from the state party list who *did not* obtain a mandate for the Bundestag. Diana Golze (The Left) lost the contest for the direct mandate in constituency 60,<sup>15</sup> but obtained a mandate through the state party list of The Left. She withdrew from the Bundestag on November 6, 2014, to become a minister in the new state government in Brandenburg. As a consequence, her constituency lost her as an elected legislator and competition decreased there. Norbert Müller received Diana Golze’s replacement mandate. Thus, the number of legislators and, therefore, competition increased in constituency 61 during the legislative term. As in this example, the constituency of the resigning legislator is *always different* from the constituency of the replacement candidate. The reason is that parties can only have one candidate for direct election per constituency.

We use resigned legislators and their replacement candidates to generate two instruments for the variable *Elected competitors in constituency*. First, we create the binary variable *Early dropout in constituency* processing information from all 516 legislators representing a constituency who left the Bundestag prior to the termination of the legislative term from 1953 to 2017. For legislator  $i$  in election  $t$ , *Early dropout in constituency* takes a value of one if an elected legislator from the current constituency has resigned before the election. The second instrument *Replacement in constituency* captures replacement candidates. It takes a value of one for all legislators representing a constituency that has obtained a replacement candidate. We are able to identify 332 replacement legislators who add to elected competitors.<sup>16</sup> As shown in Appendix Table A1, 7.3% of all legislators in our sample are affected by resigning legislators, while 8.6% are from a constituency with a replacement candidate.

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<sup>15</sup> Brandenburg an der Havel – Potsdam-Mittelmark I – Havelland III – Teltow-Fläming I in the state of Brandenburg.

<sup>16</sup> Mandates are not compensated if resigning legislators hold an overhang seat. Moreover, replacement candidates are more likely to be list candidates only rather than initially elected legislators, which explains the difference in the number of resigning and replacing legislators with links to a constituency.

To implement our instrumental variables strategy with *Early dropout in constituency* and *Replacement in constituency* as the instruments, we employ a two-stage least squares (2SLS) estimator. First and second-stage equations are as follows:

$$\begin{aligned} & \textit{Elected competitors in constituency}_{it} \\ &= \alpha_1 \textit{Early dropout in constituency}_{it} \\ &+ \alpha_2 \textit{Replacement in constituency}_{it} + X_{it}\theta + \tau_i + \pi_t + v_{it}, \end{aligned} \quad (2)$$

$$\begin{aligned} & \textit{Diff. in first and second vote share}_{it} \\ &= \beta_1 \widehat{\textit{Elected competitors in constituency}}_{it} + X_{it}\gamma + \lambda_i + \mu_t + \varepsilon_{it}. \end{aligned} \quad (3)$$

The first-stage equation (2) has the variable *Elected competitors in constituency* on the left-hand side and uses the instruments as explanatory factors as well as the vector of covariates  $X_{it}$ , legislator, and election fixed effects. The second stage then uses the instrumented *Elected competitors in constituency* variable to estimate the effect on *Diff. in first and second vote share*. Thereby, we exploit the variation in the instrumented competition variable which is induced by resigning legislators and their replacements to estimate an effect of elected competition on individual electoral success. The coefficient of interest is  $\beta_1$  in Eq. (3). We expect the respective  $\hat{\beta}_1^{2SLS}$  to be negative.

To serve as valid instruments, two conditions need to be fulfilled. The first condition requires that the instruments be strong predictors for the endogenous variable *Elected competitors in constituency*. This is the case by definition of the German electoral law, that is, the electoral system induces the change in elected competition when legislators leave parliament prior to the end of their term. In the next section, we also show empirically that *Early dropout in constituency* is strongly negatively correlated to *Elected competitors in constituency* while *Replacement in constituency* has a strong positive effect on exposure to competitors. As a second condition, the instruments need to be orthogonal to the error term  $\varepsilon_{it}$  conditional on other controls in Eq. (3). To better examine this condition, we separately

contemplate the two instruments starting with *Early dropout in constituency*. Two arguments can be given to justify the exogeneity of *Early dropout in constituency*. First, the reasons why legislators leave the parliament are credibly independent from time-variant characteristics of *other* legislators in the constituency. Indeed, the most common causes for the 516 shortened terms are sickness or premature death (31.8%).<sup>17</sup> Legislators are known to resign their relatively safe and well-paid mandate because of personal ambitions when they accept another political office or mandate (26.6% and 14.9%, respectively), a job in the public sector (11.4%), or a position in the private sector (4.7%). Often, their new position is incompatible with their mandate for legal reasons (e.g., federal president, minister in a state, state secretary, civil servant, or judge) or evaluated critically due to conflicts of interest. Further reasons why legislators leave the parliament are involvement in a scandal (4.7%),<sup>18</sup> the party applies a so-called rotation principle (4.3%),<sup>19</sup> or personal reasons (1.0%). In only four cases are we unaware of the reason a legislator withdrew the mandate. Second, further evidence underlines that legislators resign their mandate credibly independent from the characteristics or even the *existence* of elected competitors. This is well illustrated by the 77 of 516 resigning legislators who were the only representatives in their constituency at the time of their withdrawal. Clearly, their withdrawal could not have been driven by other legislators in their constituency nor their traits, because there were none. These 77 uncontested, resigning legislators reported reasons similar for their withdrawal to those of their contested counterparts.<sup>20</sup> From this, we would consider it reasonable that *Early dropout in constituency* is exogenous to *Elected competitors in constituency*.

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<sup>17</sup> Employing only early dropouts due to death as an instrument does not affect our results (see Appendix C).

<sup>18</sup> Examples of scandals are that legislators are shown to have worked as a spy or accused of another infringement. Excluding withdrawals due to scandals does not affect our results (see Appendix C).

<sup>19</sup> A rotation principle was applied by The Greens in the 1980s. It stipulated that their legislators leave the parliament after half of the legislative term and aimed to prevent professional politicians.

<sup>20</sup> The respective shares for the 77 legislators, who do not have an elected competitor in their constituency when they resign, are as follows: death and sickness (40.2%), political office (27.3%), other political mandate (5.2%), public sector (11.7%), private sector (3.9%), scandal (6.6%), rotation principle (1.3%), and personal reasons (2.6%). The rest are unknown.

Considering the second instrument *Replacement in constituency*, we note once again that vacant mandates are replaced by not yet elected candidates. The replacement candidate is chosen based on the ordering on the closed state party list which prohibits parties to retroactively target constituencies with representatives. The replacement candidate only enters as a new competitor because a former legislator without connection to the receiving constituency withdraws from the Bundestag. Thus, we consider it reasonable that *Replacement in constituency* is exogenous to *Elected competitors in constituency*.

In summary, *Early dropout in constituency* and *Replacement in constituency* plausibly serve as valid instruments in the following analysis

## V. THE EFFECT OF ELECTED COMPETITORS ON ELECTORAL SUCCESS

### *Fixed effects regressions*

Table 1 presents legislator-specific fixed effects regressions results from Eq. (1). Column (1) only includes *Elected competitors in constituency* as an explanatory variable. The coefficient is negative, statistically significant at the 1% level and indicates that the exposure to elected competitors is negatively related to individual electoral success. We subsequently add fixed effects and time-variant controls in columns (2) to (5). While column (2) employs legislator-specific fixed effects and column (3) adds election fixed effects, we also introduce time-variant legislator controls (column 4) and additionally use election-related and political position covariates in column (5). The coefficient for *Elected competitors in constituency* is always negative and statistically highly significant. Legislators' individual success in federal elections is negatively related to exposure to elected competitors in their constituency. In terms of magnitude, the existence of elected competitors in the constituency relates to a 0.24 percentage points smaller *Diff. in first and second vote share* (column 5). This amounts to a non-negligible 10.4% of the mean *Diff. in first and second vote share* in the full sample.

**Table 1.** The link between *Elected competitors in constituency* and the *Diff. in first and second vote share* (OLS fixed effects).

Dependent variable	(1)	(2)	(3)	(4)	(5)
	Diff. in first and second vote share				
<b>Elected competitors in constituency</b>	<b>-0.0127***</b> <b>(0.0013)</b>	<b>-0.0034***</b> <b>(0.0008)</b>	<b>-0.0034***</b> <b>(0.0007)</b>	<b>-0.0024***</b> <b>(0.0007)</b>	<b>-0.0024***</b> <b>(0.0007)</b>
Direct mandate				0.0045*** (0.0011)	0.0043*** (0.0011)
Tenure				0.0050 (0.0039)	0.0039 (0.0039)
Age				0.0010 (0.0011)	0.0014 (0.0011)
Minister				0.0028* (0.0015)	0.0043*** (0.0016)
Government party				0.0038*** (0.0007)	0.0037*** (0.0008)
Number of parties in election					0.0004* (0.0002)
Direct candidates in election					-0.0018*** (0.0004)
Turnout					-0.0272 (0.0290)
Political position controls	No	No	No	No	Yes
Legislator fixed effects	No	Yes	Yes	Yes	Yes
Election fixed effects	No	No	Yes	Yes	Yes
Observations	6,972	6,972	6,972	6,972	6,972
Number of legislators	2,705	2,705	2,705	2,705	2,705
R-squared	0.0204	0.0039	0.1481	0.1690	0.1872

*Notes:* OLS fixed effects estimation. The unit of observation is an individual legislator-election pair. Political position controls include *Junior minister*, *(vice) Parl. president*, *(vice) Chair committee*, *(vice) Chair parl. group*, *Whip*, and *Experience as minister*. Standard error estimates are clustered at the legislator level. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

The results for the other statistically significant covariates allow for reasonable interpretations: legislators who already hold a direct mandate do better in the election. The same applies for legislators who are a minister or member of a governing party.<sup>21</sup> As expected, the number of parties competing at the state level is positively related to *Diff. in first and second vote share*. If voters can choose among more parties, this most likely reduces the second vote share of the legislator's party, and, in turn, mechanically increases their vote share difference.

<sup>21</sup> In respect of the other political controls entered in column (5), only chairs of the parliamentary group have higher differences in first and second vote shares in the upcoming election (results not shown in Table 1). Being a junior minister, parliamentary president, whip, or chair of a committee has just as small of an effect as does experience as a minister in previous legislative periods.



By contrast, more overall candidates for direct election negatively impact the first votes the legislator receives, which is reasonable too.

*Instrumental variables and fixed effects*

The results from our 2SLS strategy are shown in Table 2. Panel (A) provides the second stage results and Panel (B) the corresponding estimates from the first stage.

**Table 2.** The effect of *Elected competitors in constituency* on the *Diff. in first and second vote share* (2SLS fixed effects).

Dependent variable	(1)	(2)	(3)	(4)
	Diff. in first and second vote share			
<i>Panel (A): Second stage results</i>				
<b>Elected competitors in constituency</b>	<b>-0.0081***</b> (0.0028)	<b>-0.0063**</b> (0.0026)	<b>-0.0066***</b> (0.0025)	<b>-0.0064***</b> (0.0025)
<i>Panel (B): First stage results for instruments only</i>				
Dependent variable	<i>Elected competitors in constituency</i>			
Early dropout in constituency	-0.3138*** (0.0247)	-0.3141*** (0.0248)	-0.3203*** (0.0251)	-0.3206*** (0.0251)
Replacement in constituency	0.1625*** (0.0148)	0.1678*** (0.0151)	0.1654*** (0.0153)	0.1638*** (0.0154)
Controls (for all panels):				
Personal controls	No	No	Yes	Yes
Political position controls	No	No	No	Yes
Election controls	No	No	No	Yes
Legislator fixed effects	Yes	Yes	Yes	Yes
Election fixed effects	No	Yes	Yes	Yes
Observations	6,972	6,972	6,972	6,972
Number of legislators	2,705	2,705	2,705	2,705
F-statistic first stage	144.6	147.9	143.2	141.3
Hansen J-statistic (p-val.)	0.256	0.819	0.807	0.834

*Notes:* 2SLS estimation. The unit of observation is an individual legislator-election pair. Personal controls include *Direct mandate*, *Tenure*, *Age*, *Minister*, and *Government party* as in Table 1. Political position controls include *Junior minister*, *(vice) Parl. president*, *(vice) Chair committee*, *(vice) Chair parl. group*, *Whip*, and *Experience as minister*. Election controls include *Number of parties in election*, *Direct candidates in election* and *Turnout*. Standard error estimates are clustered at the legislator level. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

We start with a parsimonious model including only legislator fixed effects in column (1) and add election fixed effects, personal-, position-, and election-related controls in columns (2)

to (4). In all specifications, the instruments have their signs as expected (Panel B): *Early dropout in constituency* decreases *Elected competitors in constituency*, and *Replacement in constituency* increases it. Both coefficients for the instruments are significant at the 1% level and first-stage  $F$ -statistics for the joint significance are well above the standard thresholds. This makes us confident that the instruments are relevant. In addition, testing for overidentifying restrictions yields Hansen's  $J$ -statistic and respective  $p$ -values which underline that the instruments are valid in econometric terms. Given the German electoral law and the design of workings of the system when a legislator leaves parliament early, we consider our instruments as plausibly exogenous.

In line with our hypothesis, the second stage results for the effect of the instrumented *Elected competitors in constituency* variable on individual electoral success in Panel A are all positive and statistically significant. Being exposed to elected competitors from the same constituency decreases the first and second vote share difference by 0.64 percentage points when employing all controls (column 4). The size of the effect from the 2SLS setting is slightly larger in absolute terms than in the OLS analysis. It accounts for approximately one-fourth of the mean difference in the sample or 0.19 standard deviations. We conclude that the existence of elected competitors is an economically relevant determinant of a legislator's success in the election.

#### *Robustness checks*

In the following, the robustness and reliability of our main result from the 2SLS setting are carefully explored. Table 3 provides a first set of robustness checks.

Politics does not always follow straight lines. Sometimes, legislators become a member of another party during their tenure, for example, due to ideological differences, and run for the new party in the election. Ideological or representational differences with their party could also be a reason legislators change the constituency in which they run for direct election. In

both cases, benchmarking these legislators could be complicated for voters. We therefore drop all legislators who change the party or the constituency in columns (1) and (2), respectively.

Exposure to elected competitors and individual electoral success could be confounded when the boundaries of a constituency change.<sup>22</sup> In particular, changing boundaries of the constituency means that the electorate changes, too. Column (3) shows an estimation for the sample of constituencies with unaltered boundaries in the election in comparison to the preceding term.

We account for the potentially special political environment in the capital (Bonn, and later Berlin) and state capital cities that could trigger political competition. For instance, party associations from such capital cities could have a more influential position within the state than associations from more remote constituencies. If that is the case, politicians from capital cities are more likely to have elected competitors. In addition, the media could be concentrated there which improves comparison possibilities for voters and holds these politicians more accountable. We drop observations from all capital and state capital cities from our sample in column (4).

In the history of the German Bundestag, three legislative terms have been shorter than the statutory four years. In all cases, the federal president declared new elections after the parliament denied the chancellor a vote of confidence. Our main result is also robust to the exclusion of elections following a shortened term as shown in column (5).

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<sup>22</sup> As required by electoral law, the boundary of a constituency is adjusted if the population deviates too much from the mean population of all constituencies. Similarly, the number of mandates per state can be reduced or increased by applying a population-based apportionment. This entails a reduction or increase in the number of constituencies and, consequently, an adjustment of their boundaries in affected states.

**Table 3.** Robustness checks for the effect of *Elected competitors in constituency* on the *Diff. in first and second vote share* (2SLS fixed effects).

Dependent variable	Diff. in first and second vote share								
	(1) Different party	(2) Different constituency	(3) Boundary changes	(4) Capital	(5) Short term	(6) Replacement candidate	(7) Mandate changes	(8) Vacant candidacy	(9) Outlier
Elected competitors in constituency	-0.0053** (0.0024)	-0.0064*** (0.0024)	-0.0066** (0.0032)	-0.0068*** (0.0026)	-0.0069** (0.0029)	-0.0046* (0.0024)	-0.0057** (0.0029)	-0.0052** (0.0024)	-0.0037* (0.0021)
Personal controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Political position controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Election controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Legislator fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Election fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,932	6,657	5,539	6,064	5,747	6,738	5,657	6,956	6,832
Number of legislators	2,687	2,618	2,506	2,357	2,617	2,625	2,256	2,699	2,688
<i>F</i> -statistic first stage	141.8	138	94.94	129.2	107	146.2	106.3	141.8	139.9
Hansen <i>J</i> -statistic ( <i>p</i> -val.)	0.665	0.377	0.664	0.646	0.598	0.551	0.693	0.536	0.408

*Notes:* 2SLS estimation. The unit of observation is an individual legislator-election pair. The table shows second stage regression results using *Early dropout in constituency* and *Replacement in constituency* to instrument *Elected competitors in constituency*. Personal controls include *Direct mandate*, *Tenure*, *Age*, *Minister*, and *Government party* as in Table 1. Political position controls include *Junior minister*, *(vice) Parl. president*, *(vice) Chair committee*, *(vice) Chair parl. group*, *Whip*, and *Experience as minister*. Election controls include *Number of parties in election*, *Direct candidates in election*, and *Turnout*. Standard error estimates are clustered at the legislator level. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

When turning to the results in columns (6) and (7), we concentrate on legislators who might be considered “special cases.” First, we drop legislators who have received a mandate in the concluding term through a replacement mandate (column 6). Second, legislators are omitted in column (7) when their mandate type changes; that is, we omit legislators who hold a direct mandate at the time of the election but then enter parliament again through the party list, and vice versa. We additionally drop legislators who fail to be reelected. A changing mandate type might be seen as an indicator of a rather volatile political environment in the constituency, or a new evidence base that inverts how voters perceive their legislators which influences their voting decisions.

In the last two columns of Table 3, we test for the robustness of our main results to political agreements and electoral recommendations. In rare cases in the early days of elections for the German Bundestag, some parties had electoral agreements in single constituencies. Usually, a major party did not nominate own direct candidate to support the direct candidate of a smaller political party. The direct candidate from the smaller party then received a first vote share that was remarkably higher than the respective second vote share. We therefore drop observations from all constituencies in which there was no candidate from either *SPD*, *CDU*, or *CSU* in column (8). Finally, we aim to exclude that our results are driven by other forms of electoral recommendations at the level of the constituency in column (9). It can happen that a competing direct candidate and the respective local party associations give a voting recommendation: they publicly support an ideologically close direct candidate to prevent another undesired direct candidate from representing the constituency.<sup>23</sup> First and second vote shares often differ considerably in constituencies with such voting recommendations. Therefore, we drop outliers with a remarkably high or low *Diff. in first and second vote share*

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<sup>23</sup> We should note here that giving up a hopeless direct candidacy in favor of a direct candidate from another party is a very rare practice: parties fear that voting recommendations for other direct candidates also influence the voters’ second vote behavior. This would impair the recommending party’s representational strength in parliament which is proportional to the second vote share.

(1% of the observation on both sides of the distribution) in column (9) to account for such tactics.

All results from Table 3 illustrate that the negative effect of more elected competitors on individual electoral success is not driven by exceptional political circumstances. In Appendix C, we provide an array of additional robustness checks that we also discuss there in greater detail. First, the instruments and their validity are further examined. Second, we show that we obtain qualitatively similar results when using the number of elected competitors in the constituency as the main explanatory variable instead of a binary indicator for the existence of elected competitors. Third, we provide rolling regressions for legislative terms, states, and parties. We show that our negative effect of elected competition on electoral success is highly robust to different model specifications, instrument choices, and subsamples.

#### *Benchmarking as a mechanism*

All our results are supportive of the negative effect of elected competitors on electoral success. We now investigate potential mechanisms underlying this effect. We start by providing evidence for the explanation that legislators are more accountable in elections if voters can benchmark them against elected competitors (Table 4). To underline the importance of benchmarking, we then try to exclude other rival explanatory mechanisms (Table 5).

A first approach to highlight benchmarking as a mechanism is to contrast the existence of ideologically distinct versus ideologically close elected competitors (Buttice and Stone 2012; Gavaille and Vershelde 2017). Benchmarking legislators with pronounced ideological differences might be of little use to voters as the ideological costs to adjust the first vote would be too high regardless of legislators' quality in comparison with elected competitors. Comparing aspects other than party membership instead is likely to become more pivotal when the elected competitors' ideologies resemble each other.

**Table 4.** Analyzing benchmarking as a mechanism for the effect of *Elected competitors in constituency* on the *Diff. in first and second vote share* (2SLS fixed effects).

Dependent variable	Diff. in first and second vote share				First vote share	Second vote share
	(1) Different ideology	(2) Similar ideology	(3) Pre-reunification	(4) Post-reunification	(5)	(6)
Elected competitors in constituency	-0.0063*** (0.0022)	-0.0141** (0.0071)	-0.0030 (0.0026)	-0.0137* (0.0070)	-0.0139* (0.0074)	-0.0075 (0.0073)
Personal controls	Yes	Yes	Yes	Yes	Yes	Yes
Political position controls	Yes	Yes	Yes	Yes	Yes	Yes
Election controls	Yes	Yes	Yes	Yes	Yes	Yes
Legislator fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Election fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,541	2,893	3,173	3,431	6,972	6,972
Number of legislators	2,611	1,645	1,300	1,545	2,705	2,705
<i>F</i> -statistic first stage	150.4	30.10	92.16	33.02	141.3	141.3
Hansen <i>J</i> -statistic (p-val.)	0.634	0.902	0.824	0.910	0.121	0.102

*Notes:* 2SLS estimation. The unit of observation is an individual legislator-election pair. The table shows second stage regression results using *Early dropout in constituency* and *Replacement in constituency* to instrument *Elected competitors in constituency*. Personal controls include *Direct mandate*, *Tenure*, *Age*, *Minister*, and *Government party* as in Table 1. Political position controls include *Junior minister*, *(vice) Parl. president*, *(vice) Chair committee*, *(vice) Chair parl. group*, *Whip*, and *Experience as minister*. Election controls include *Number of parties in election*, *Direct candidates in election*, and *Turnout*. Standard error estimates are clustered at the legislator level. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 5.** Analyzing other potential mechanisms besides benchmarking for the effect of *Elected competitors in constituency* on the *Diff. in first and second vote share* (2SLS fixed effects).

Dependent variable	Diff. in first and second vote share							
	(1)	(2)	(3)	(4)	(5)	(6)	(7) Backbenchers (I)	(8) Backbenchers (II)
Elected competitors in constituency	-0.0058** (0.0024)	-0.0064** (0.0025)	-0.0062** (0.0025)	-0.0064** (0.0025)	-0.0051* (0.0027)	-0.0052* (0.0027)	-0.0046** (0.0021)	-0.0056** (0.0024)
Vote margin	0.0265*** (0.0049)							
Closeness constituency		0.0059 (0.0051)						
Absentee rate			0.0063** (0.0027)					
Dual candidacy				0.0035*** (0.0013)				
List position					-0.0002*** (0.0001)			
Safe list position						0.0016** (0.0008)		
Personal controls	Yes	Yes	Yes	Yes	Yes	Yes	(Yes)	(Yes)
Political position controls	Yes	Yes	Yes	Yes	Yes	Yes	(Yes)	(Yes)
Election controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Legislator fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Election fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,972	6,972	6,966	6,972	5,672	5,672	4,279	4,207
Number of legislators	2,705	2,705	2,704	2,705	2,308	2,308	2,136	2,119
<i>F</i> -statistic first stage	140.9	141.1	141.4	141.3	107.2	106.9	116.1	97.93
Hansen <i>J</i> -statistic (p-val.)	0.751	0.811	0.868	0.839	0.908	0.902	0.500	0.676

*Notes:* 2SLS estimation. The unit of observation is an individual legislator-election pair. The table shows second stage regression results using *Early dropout in constituency* and *Replacement in constituency* to instrument *Elected competitors in constituency*. Personal controls include *Direct mandate*, *Tenure*, *Age*, *Minister*, and *Government party* as in Table 1. Political position controls include *Junior minister*, *(vice) Parl. president*, *(vice) Chair committee*, *(vice) Chair parl. group*, *Whip*, and *Experience as minister*. Election controls include *Number of parties in election*, *Direct candidates in election*, and *Turnout*. In columns (7) and (8), we only account for those controls that are not used as a condition for defining popular politicians (*Minister*, *Junior minister*, *(vice) Parl. president*, *(vice) Chair parl. group*, *Whip* and *Experience as minister*). Standard error estimates are clustered at the legislator level. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1



Columns (1) and (2) in Table 4 show corresponding estimates which account for exposure to ideologically distinct versus ideologically close competitors.<sup>24</sup> In column (1), we employ a sample that includes legislators who either have no elected competitor or at least one elected competitor from an ideologically distinct party. In column (2), we employ a sample of legislators exposed to competitors with similar ideological leanings. The results support a benchmarking interpretation: while we find that exposure to both ideologically distinct and similar elected competitors have a statistically significant, negative impact on electoral success, the point estimate for elected competitors in the sample accounting for similar ideology (column 2) is more than twice as large in absolute terms than in the sample for distinct ideology (column 1). This suggests that legislators are to a larger extent evaluated concerning their personal characteristics and work in a setting where benchmarking is less constrained by the ideology for voters.

Further evidence in favor of benchmarking as a mechanism is provided in columns (3) and (4). Again, we rely on the argument that voters are expected to be more sensitive to the quality of legislators as revealed by benchmarking if ideological differences are less pronounced. Over the last decades, at first glance, the party landscape in Germany has become more diverse because there are more parties represented in parliament. However, parties have converged on a left–right scale and the positions on topics such as economics, social security, European integration, or the environment now differ for the two major parties SPD and CDU less than in the past and, in particular, when compared with the situation prior to the fall of Communism. This convergence of parties and positions seems to be a phenomenon observed all over Europe (e.g., Spoon and Klüver 2019). Thus, decreasing ideological costs for split

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<sup>24</sup> We divide the German party landscape into left- and right-leaning groups. SPD, The Greens, and PDS/The Left form the left-leaning group. CDU, CSU, and other smaller political parties form the right-leaning group. We classify the FDP as right-leaning party except for the years that it was in a ruling coalition with the SPD. Legislators are considered to have an ideologically close competitor if there is at least one other legislator from the same constituency with a similar ideological leaning. Elected competitors from the group other than their own count as ideologically distinct competitors.

ticket voting make benchmarking legislators increasingly important as a criterion for first vote decisions. Consequently, we should observe a larger effect of having elected competitors from the same constituency on individual electoral success in more recent elections. We divide our sample into a pre- and post-reunification period to leverage the induced convergence of party positions after the fall of Communism. We observe that there is no statistically significant effect of elected competitors in the pre-reunification period in column (3). The coefficient has a theory-consistent sign but is small in absolute terms. After reunification, by contrast, having elected competitors from the same constituency decreases *Diff. in first and second vote share* by 1.37 percentage points. The point estimate is statistically different from zero and larger than for the pre-reunification period.<sup>25</sup> These results add to the evidence that benchmarking might be an underlying mechanism for the effect of elected competitors on individual electoral success.

In columns (5) and (6), we replace the regular dependent variable by the first vote share the legislator receives and the second vote share of the party, respectively. Elected competitors from the same constituency only have a statistically significant negative effect on the legislators' first vote share which suggests that our main result is driven by changes in first votes. Legislators are more accountable in elections individually as soon as there are elected competitors, but the second votes' shares are unaffected. A reasonable explanation for this differential pattern is that voters are better able to assess the characteristics and quality of legislators through benchmarking possibilities and adjust their first vote accordingly.

In Table 5, we explore other potential underlying mechanisms for the effect of elected competitors on electoral outcomes. First, it might be that having elected competitors from the same constituency coincides with other aspects of electoral competition that simultaneously

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<sup>25</sup> Another consistent explanation for this finding is that benchmarking legislators has become easier over time, for example, through more transparency in the legislative process and increasing coverage in the media and on the internet.

impact individual success in elections. We account for vote margins in the direct election as another measure for competition (e.g., see Bernecker 2014). Legislators' vote margins are mechanically positive if they win the direct mandate (margin over the runner-up in direct election) and negative for those who enter through the party list or fail to be reelected (difference to the winner of the direct mandate). A larger vote margin relative to other candidates in the constituency captures another aspect of personal electoral success besides the performance relative to the party. As can be expected, legislators with a larger vote margin also succeed more often in their constituency in comparison with their party. The effect of *Elected competitors in constituency* remains unchanged, that is, statistically significant, negative, and with an absolute size corresponding to about 0.51 percentage points.

In column (2), we include a second measure for political competition that captures how close the race for the direct mandate is in the constituency. *Closeness constituency* displays the difference of the vote shares of the winner and runner-up in the direct election. The respective coefficient is positive, but statistically insignificant. Again, the effect of *Elected competitors in constituency* remains statistically significant, negative, and of the same size. Overall, there is no evidence that *Elected competitors in constituency* simply captures other forms of political competition in the constituency.

Legislators might adjust their behavior in parliament which makes voters evaluating them either more positively or negatively when they are exposed to elected competitors. Being present and voting in parliament is generally perceived as one of the main duties of a legislator (e.g., Gagliarducci et al. 2010; Besley & Larcinese, 2011). The variable *Absentee rate* gives the share of roll call votes a legislator missed during the ending term and is generated from Bergmann et al. (2018b). Surprisingly, *Absentee rate* relates positively to *Diff. in first and second vote share*, that is, legislators are more successful in the upcoming election the more often they are absent in parliament, as shown in column (3). This finding can be rationalized if legislators spend the absences in their constituency to create closer ties to their voters. The

effect of *Elected competitors in constituency* remains literally unchanged such that adjusted behavior as a driver could be discarded.

In columns (4) to (6), we consider that parties could equip legislators with safe positions on the state party lists to offset the existence of elected competitors and increase their probability of reelection. Having a safe position on the party list, legislators could afford to exert less effort in their direct campaigns, which would, in turn, explain their lower electoral success. We can credibly exclude such a channel. We find that legislators with a dual candidacy have more individual electoral success, not less, in column (4). This is substantiated in the subsample of legislators running in the proportional tier, which enables us to directly control for their party list position in column (5). That is, we exclude legislators who run as direct candidates only. Legislators at the bottom of the party list are less successful according to their first and second vote share difference. We get a similar finding when controlling for relatively safe party list positions in column (6).<sup>26</sup> These results point to an interpretation that being a dual candidate or having a prominent position on the party list is a sign of quality. However, the effect of *Elected competitors in constituency* remains unaltered, that is, it remains negative, statistically significant, and of similar size.

Finally, it could be argued that the popularity of politicians matters for the effect of exposure to elected competitors on electoral success. To exclude the possibility that popularity of politicians drives our results, we run subsample regressions on constituencies that are represented by backbenchers only in column (7). That is, all legislators in this subsample and their elected competitors are neither a minister, experienced as minister, junior minister, parliamentary president, chair of the parliamentary group, nor whip. In column (8), we additionally drop legislators who profit from a resigning competitor who holds one of these positions. Again, no changes in our effect of interest can be reported.

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<sup>26</sup> A position on the party list is relatively safe if it is smaller than the number of candidates that entered parliament through the party list in the preceding election divided by two.

While Table 5 always supports the negative effect of elected competitors on individual success, it does not provide direct evidence for the proposed benchmarking mechanism. Nevertheless, excluding other potential channels that could explain the effect of having elected competitors on electoral success such as other forms of competition, behavioral adaptation, safe list positions, and popularity, is suggestive that the proposed benchmarking channel has some merit, especially when considering the results as shown in Table 4 and the anecdotal evidence provided in Appendix A.

## VI. CONCLUSION

This paper presents evidence on the effect of having *elected* competitors from the same constituency on electoral accountability employing data from the German federal elections covering a period of 65 years. We rely on exogenous variation in competition induced by legislators resigning their mandate for reasons such as death and their respective replacements in an instrumental variables approach. We find that legislators are less successful in elections when they are exposed to elected competitors from the same constituency.

Elected competitors from the same constituency create the possibility to benchmark legislators against each other. Such benchmarks are relevant because legislators from the same constituency are active in the same political context and represent the same constituents. Benchmarking improves the knowledge of voters about their legislators, and it allows them to better assess the quality and performance of representatives. The negative effect of elected competitors on electoral success is more pronounced if elected competitors are ideologically close such that voters are more sensitive regarding their quality and track record. Alternative channels such as other aspects of political competition, behavioral adjustments, or being in a safe position on the party list in the upcoming election can be excluded as channels that explain the negative effect of elected competitors on electoral success.

Our results are consistent with the disciplining function of political competition and its role for holding politicians accountable in elections. Benchmarking possibilities can be a way for voters get a more realistic picture of their legislators and alleviate that they cast their first vote for candidates just because they are an incumbent. In that sense, the exposure to other *elected* competitors or rather incumbents from the same constituency can also be seen as factor that reduces the incumbency advantage in elections. Interestingly, benchmarking possibilities in the case of the German Bundestag arise from the institutional design or electoral laws which illustrate that having more transparent politics need not only be contingent on outside information provided by independent audits, the judiciary, non-governmental organizations, or researchers. Local or state media might play a significant role in conveying the benchmarking information, which is a hypothesis left to explore in future research.

We leverage the specific context of the German electoral system to link competition and electoral success. The effect of elected competitors from the same constituency on electoral success through benchmarking is not exclusive to this setting. Other countries operate similar mixed electoral systems, which makes the external validity of our approach and findings testable beyond Germany. Moreover, benchmarking can also be applied by voters in countries with different electoral systems. In proportional systems, this could be done by comparing legislators who represent the same multi-member district. For instance, voters might process benchmarking information if split ticket voting and cumulating votes are possible in open list systems. But also in purely majoritarian systems, benchmarking politicians who are active in the same political environment and for the same voters could be feasible. One example constitutes the two senators representing the same state in the Senate of the United States, who could be benchmarked against each other.

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## APPENDIX – SUPPLEMENTARY INFORMATION

### *Appendix A – Anecdotal evidence for benchmarking*

Voters have various opportunities that allow for benchmarking their legislators. The media does not only report separately about the parliamentary work of legislators and their presence in the constituency but also publishes articles that are intended for direct benchmarking. Such articles provide, for instance, track records and overviews of political engagement for all legislators in a constituency.<sup>27</sup> Local newspapers compare the voting behavior in salient roll-call votes<sup>28</sup> or report about the performance in evaluations on the transparency platform *Abgeordnetenwatch*.<sup>29</sup> Comparative assessments of how much legislators cater for the constituency<sup>30</sup> are provided just like an evaluation of their quality and campaigns<sup>31</sup>.

Apart from coverage in local media outlets, voters can rely on additional sources to gather benchmarking information. On social media sites, legislators highlight their own work or achievements and criticize the positions of their competitors from the same district. Moreover, the Bundestag publishes all plenary protocols and voting behavior in roll-call votes. Nowadays, it also provides filter options on its website for constituencies such that interested persons can directly compare the topics and contents of competing legislators' speeches, absences, and

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<sup>27</sup> For examples of summarizing overviews of legislators' work active for the same constituency, see e.g., Kossakowski, Stanislaus. Welchen Eindruck die Oberfranken im Bundestag hinterlassen haben, published online: <https://www.br.de/nachrichten/bayern/welchen-eindruck-die-oberfranken-im-bundestag-hinterlassen-haben,SSkXxKH> (accessed January 21, 2022) or Sohr, Stephan. Im Wahlkreis Fürth ist Christian Schmidt unangefochten, in: Nürnberger Zeitung, 31.08.2005.

<sup>28</sup> For the example of an article about the opposite voting behavior in the roll-call vote on same-sex marriage, see Ehe für alle – Otte: „Nein“, Lühmann: „Ja“, published online: <https://celleheute.de/ehe-fuer-alle-otte-nein-luehmann-ja> (accessed January 15, 2021).

<sup>29</sup> See, e.g., Giustolisi, Daniele. Das sind Dortmunds fleißigste Politiker in Berlin, published online: <https://www.ruhr24.de/dortmund/sind-fleissigsten-dortmunder-politiker-bundestag-13090323.html> (accessed January 21, 2022) or Post, Tilmann. Note „sehr gut“ für zwei Politiker, published online (accessed January 21, 2022).

<sup>30</sup> For example, Christian Wagner writes in the online newspaper *baden online* about what the legislators already did to contribute to the realization of a new railway tunnel in the constituency (see <https://www.bo.de/lokales/offenburg/tunnel-schaeuble-hat-schon-mit-mehdorn-gesprochen#>, accessed January 21, 2022). Another example is an article about legislators from Bonn about their engagement to alleviate the consequences for the city of moving the seat of government to Berlin (Leyendecker, Bernd. Wohnungen für Pendler und Jobbörse gefordert, in: *Bonner Generalanzeiger*, 22.06.1998, p.6).

<sup>31</sup> See, e.g., Elss-Seringhaus, Cathrin. Die netten Minister von nebenan, in: *Saarbrücker Zeitung*, 09./10.09.2017, p.3.

voting behavior. The transparency platform *Abgeordnetenwatch* monitors legislators with regard to their voting behavior, absences, parliamentary work in committees, and outside income and allows voters to connect with them by asking questions (answers and missing answers are published). Again, filter options for constituencies can be applied for benchmarking. Public events and plenary discussions are designed for benchmarking purposes, particularly prior to elections. Presenting own positions and highlighting differences to elected competitors is something legislators also often do in distributed flyers, press statements, local party newspapers or on their personal websites. To provide just one of many examples, Sven Kindler (The Greens) criticizes his elected competitor Ursula von der Leyen (CDU, now head of the European Commission) for not showing up in any of the plenary discussions in the constituency in a press statement that is also published on his website.<sup>32</sup>

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<sup>32</sup> See <https://www.sven-kindler.de/2017/09/pm-kindler-von-der-leyen-war-auf-keiner-einzigem-podiumsdebatte-im-wahlkreis>, accessed January 15, 2021. Meanwhile, the press statement cannot be accessed on Sven Kindler's website anymore, but there is still a similar entry on his Facebook site.

Appendix B – Summary statistics

**Table A1.** Summary statistics.

Variable	Dummy	Obs	Mean	Std. Dev	Min	Max
<i>Competition</i>						
Elected competitors in constituency	Yes	6,972	0.838	0.369	0	1
Number of elected competitors	No	6,972	1.151	0.726	0	4
<i>Instruments for Elected competitors in constituency</i>						
Early dropout in constituency	Yes	6,972	0.073	0.260	0	1
Replacement in constituency	Yes	6,972	0.086	0.280	0	1
<i>Variables from election</i>						
Diff. in first and second vote share	No	6,972	0.023	0.033	-0.118	0.310
First vote share	No	6,972	0.380	0.165	0.00696	0.819
Second vote share	No	6,972	0.357	0.153	0.00601	0.813
Closeness constituency	No	6,972	0.151	0.117	0.00012	0.704
Vote margin	No	6,972	-0.029	0.238	-0.658	0.704
Turnout	No	6,972	0.820	0.071	0.576	0.947
Direct candidates in election	No	6,972	6.924	1.630	3	18
Number of parties in election	No	6,972	12.43	4.977	5	25
Dual candidacy	Yes	6,972	0.814	0.390	0	1
List position	No	5,672	12.25	14.10	1	94
Safe list position	Yes	5,672	0.419	0.494	0	1
<i>Legislator-specific variables</i>						
Direct mandate	Yes	6,972	0.511	0.500	0	1
Government party	Yes	6,972	0.591	0.492	0	1
Age	No	6,972	51.06	8.345	22	89
Tenure	No	6,972	2.504	1.567	1	12
Absentee rate	No	6,966	0.113	0.138	0	1
<i>Position and experience</i>						
Minister	Yes	6,972	0.042	0.200	0	1
Junior minister	Yes	6,972	0.047	0.212	0	1
(vice) Parl. president	Yes	6,972	0.010	0.099	0	1
(vice) Chair committee	Yes	6,972	0.093	0.290	0	1
(vice) Chair parl. group	Yes	6,972	0.063	0.242	0	1
Whip	Yes	6,972	0.034	0.182	0	1
Experience as minister	Yes	6,972	0.043	0.202	0	1

*Notes:* Variable from election for the federal elections 1957-2017 are generated from the official electoral results as published by the *Bundeswahlleiter* (Federal Election Commissioner). The scope of the data relies on lists of all candidates in federal elections as provided by the Federal Election Commissioner. All other data for the time period 1953-2013 is generated from Bergmann et al. 2018a and Bergmann et al. 2018b and collected and generated accordingly for 2013-2017 from the personal biographies of legislators provided on the official website of the German Bundestag and from the *Datenhandbuch zur Geschichte des Deutschen Bundestags* (Data Handbook on the History of the German Bundestag) from the official Bundestag website. Data for *Absentee rate* 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.

### *Appendix C – Additional robustness checks*

In Table A2, we aim to illuminate the instruments and to show that the main results are robust to adjustments in the definition of the instruments and main explanatory variable. We concentrate on the timing of the withdrawal and replacement, the duration of exposure to elected competitors, and the reasons why legislators resign.

One important consideration concerning the changes in exposure to elected competitors from the same constituency induced by the withdrawal or replacement of a political competitor could be their timing. The former existence of legislators who resign shortly before the election could still linger such that they are used as a benchmark by voters at the time of the election. Legislators instead who receive a replacement mandate shortly before the election only have little time to be acknowledged as a relevant competitor by voters. Vice versa, withdrawals and replacements that happen long before the election might be more likely to consolidate the situation as measured by *Elected competitors in constituency*. In that sense, changes that happen early in the legislative term could be better suited as an instrument for (perceived) elected competitors and benchmarking possibilities.

In column (1) of Table A2, we only use variation to instrument the endogenous variable *Elected competitors in constituency* that stems from resignations and replacements within the first half of the legislative term preceding the election. The effect of *Elected competitors in constituency* on *Diff. in first and second vote share* is similar in terms of magnitude and significance to our main results in Table 2. Column (2) shows the corresponding results when concentrating the instruments on changes in the second half of the legislative term. Again, we obtain a coefficient of similar size that is marginally statistically insignificant. We conclude that the timing of the withdrawal and replacement only plays a minor role, if at all, for being perceived as an elected competitor and therefore for our identification approach.

To further pick up the argument that the duration of the term in office could be crucial for being perceived as a relevant competitor by voters, it is also possible to adjust the main

explanatory variable. So far, we constructed our main explanatory variable *Elected competitors in constituency* conditional on being exposed to elected competitors on election day. An alternative measure for competition that better reflects the duration of exposure could be *Competitors with at least half of LT*. It takes a value of one if a legislator is exposed to an elected competitor from the same constituency for at least half of the legislative term (LT) and zero otherwise. To instrument this alternative explanatory variable, it makes sense to use the instruments for the changes within the first half of the period again. This is because resigning legislators are absent and replacing legislators are present for more than half of the legislative term only if the change happens within the first half. Our result and interpretation are robust to using this slightly different measure for competition.

In column (4), we combine the conditions to count legislators as elected competitors as applied in column (3) and when constructing our main explanatory variable. First, legislators need to be a member for more than half of the legislative term as in column (3) to count as a competitor. Second, legislators must be a member of the Bundestag on election day. This can be considered a more stringent measure for competition that accounts for both the duration of exposure to competitors and the fact that the most relevant point in time to measure exposure is the election day. As shown in column (4), we obtain a result that is fully comparable to our main estimations.

In columns (5) to (7), we closely examine the instruments by having a look at resigning legislators. Among the reasons why legislators withdraw their mandate, it could be argued that scandals stand out. Legislators left the parliament due to a scandal when they were, for instance, shown or suspected to collaborate with the Ministry for State Security (*Stasi*) of the German Democratic Republic, involved in bribery, or accused of sexual assault. Legislators also left parliament when they were involved in political affairs like the CDU's donation scandal or their moral integrity got damaged as in the case of Karl-Theodor zu Guttenberg (plagiarism) or Petra Hinz (faking CV). But legislators also resigned because of disputes with their party. One

could be concerned that scandals directly influence the electoral outcomes in concerned constituencies apart from the channel of competition that we are interested in. Incumbent legislators from other parties could profit when constituents punish succeeding candidates. This would compromise the exogeneity condition of the instrument. In column (5), we therefore exclude all observations from constituencies that had a resigning legislator who was involved in a scandal. In column (6), we additionally exclude all observations from the respective state to consider that such scandals could spill over to neighboring constituencies. Contemplating the results in columns (5) and (6), there is no hint that the main results are driven by scandals.

In the main text, we provide a detailed list of the reasons why legislators withdraw their mandate. While there are good reasons to believe that *Early dropout in constituency* fulfills the exogeneity conditions, we cannot fully dispel that there might be some competitive motivation to resign when legislators, for instance, accept another mandate or a job in the private sector. To address such concerns, we only consider deaths when estimating the effect of instrumented *Elected competitors in constituency* on *Diff. in first and second vote share* in column (7). We do so by dropping observations from all constituencies that record a resigning legislator for a reason other than death. Variation in the variable *Elected competitors in constituency* through *Early dropout in constituency* induced by deaths only should be clearly exogenous. The respective estimation in column (7) gives a statistically significant coefficient for the effect of elected competitors that is of nearly similar size to our main result. We conclude that results from columns (5) to (7) do not only add to the list of robustness checks, but provide further evidence for the validity of our instruments.

In Table A3, we exchange the binary variable *Elected competitors in constituency* by a measure that counts the number of elected competitors from the same constituency on election day (*Number of elected competitors*). Legislators can have up to four elected competitors. Results from Table A3 indicate that the increase in the number of elected competitors from the same constituency by one leads to a decline in the dependent variable by approximately 0.30



percentage points. The coefficients are statistically different from zero at conventional levels. This finding is qualitatively similar to our main result and the first-stage results suggest that the instruments are equally relevant determinants of the *Number of Elected competitors*.

Table A4 shows results from rolling regressions. The strategy is to systematically exclude all observations from one specific election and to repeat our 2SLS strategy for each of the smaller samples. Panel A.1 column (1) for example shows results for a sample without observations from the third federal election in 1957, and so on. We repeat this exercise for states in Panel B and parties in Panel C. All point estimates from these rolling regressions are within a distance of one standard error of our main result (Table 2, column 4). This suggests that the effect of elected competitors from the same constituency is not sensitive to the exclusion of single legislative terms, states or parties.

**Table A2.** Examining the instrument and the *Elected competitors in constituency* variable.

Dependent variable	Diff. in first and second vote share						
	(1)	(2)	(3)	(4)	(5) Drop scandals (I)	(6) Drop scandals (II)	(7) Keep deaths
<b>Panel (a): Second stage results</b>							
Elected competitors in constituency	-0.0061** (0.0029)	-0.0066 (0.0044)			-0.0065** (0.0025)	-0.0091*** (0.0031)	-0.0067** (0.0034)
Competitors with at least half of LT			-0.0065** (0.0030)				
Competitors with at least half of LT at its end				-0.0069*** (0.0026)			
<b>Panel (b): First stage results for instruments only</b>							
Dependent variable	<i>Elected competitors in constituency</i>		<i>Competitors with at least half of LT</i>	<i>Competitors with at least half of LT at its end</i>	<i>Elected competitors in constituency</i>		
Early dropout in constituency				-0.3263*** (0.0249)	-0.3236*** (0.0258)	-0.3057*** (0.0293)	-0.4213*** (0.0478)
Replacement in constituency					0.1630*** (0.0156)	0.1702*** (0.0180)	0.1595*** (0.0155)
Dropout in first half of LT	-0.3868*** (0.0371)		-0.3644*** (0.0361)				
Replacement in first half of LT	0.1127*** (0.0187)		0.1207*** (0.0190)	0.1409*** (0.0198)			
Dropout in second half of LT		-0.2435*** (0.0327)					
Replacement in second half of LT		0.2013*** (0.0218)					
Controls (for all panels):							
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Legislator fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Election fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,972	6,972	6,972	6,972	6,945	5,622	6,607
Number of legislators	2,705	2,705	2,705	2,705	2,702	2,436	2,661
F-statistic first stage	71.95	70.57	69.93	109.7	135.8	102.2	89.92
Hansen J-statistic (p-val.)	0.309	0.840	0.340	0.414	0.835	0.538	0.697

Notes: 2SLS estimation. The unit of observation is an individual legislator-election pair. Controls include *Direct mandate*, *Tenure*, *Age*, *Minister*, *Government party*, *Junior minister*, *(vice) Parl. president*, *(vice) Chair committee*, *(vice) Chair parl. group*, *Whip*, *Experience as minister*, *Number of parties in election*, *Direct candidates in election*, and *Turnout*. Standard error estimates are clustered at the legislator level. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Table A3.** The effect of *Number of elected competitors* on the *Diff. in first and second vote share* (2SLS).

Dependent variable	(1)	(2)	(3)	(4)
	Diff. in first and second vote share			
<i>Panel (a): Second stage results</i>				
<b>Number of Elected competitors</b>	<b>-0.0040***</b> (0.0013)	<b>-0.0030**</b> (0.0012)	<b>-0.0032***</b> (0.0012)	<b>-0.0031***</b> (0.0012)
<i>Panel (b): First stage results for instruments only</i>				
Dependent variable	<i>Number of Elected competitors</i>			
Early dropout in constituency	-0.6042*** (0.0306)	-0.6070*** (0.0310)	-0.6174*** (0.0312)	-0.6176*** (0.0312)
Replacement in constituency	0.4229*** (0.0320)	0.4273*** (0.0316)	0.4235*** (0.0316)	0.4225*** (0.0318)
Controls (for all panels):				
Personal controls	No	No	Yes	Yes
Political position controls	No	No	No	Yes
Election controls	No	No	No	Yes
Legislator fixed effects	Yes	Yes	Yes	Yes
Election fixed effects	No	Yes	Yes	Yes
Observations	6,972	6,972	6,972	6,972
Number of legislators	2,705	2,705	2,705	2,705
F-statistic first stage	303.9	309.9	311.4	306.7
Hansen J-statistic (p-val.)	0.433	0.966	0.958	0.926

*Notes:* 2SLS estimation. The unit of observation is an individual legislator-election pair. Personal controls include *Direct mandate*, *Tenure*, *Age*, *Minister*, and *Government party* as in Table 1. Political position controls include *Junior minister*, *(vice) Parl. president*, *(vice) Chair committee*, *(vice) Chair parl. group*, *Whip*, and *Experience as minister*. Election controls include *Number of parties in election*, *Direct candidates in election*, and *Turnout*. Standard error estimates are clustered at the legislator level. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Table A4.** Rolling regressions for elections, states and parties.

Dependent variable	Diff. in first and second vote share								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<i>Panel A.1: Exclude election for LT</i>	3	4	5	6	7	8	9	10	11
Elected competitors in constituency	-0.0053** (0.0025)	-0.0069*** (0.0026)	-0.0072*** (0.0027)	-0.0074*** (0.0028)	-0.0072*** (0.0026)	-0.0062** (0.0027)	-0.0069** (0.0028)	-0.0070** (0.0027)	-0.0061** (0.0027)
Observations	6,659	6,626	6,638	6,649	6,645	6,607	6,614	6,555	6,582
<i>Panel A.2: Exclude election for LT</i>	12	13	14	15	16	17	18	19	
Elected competitors in constituency	-0.0062** (0.0026)	-0.0068** (0.0027)	-0.0061** (0.0026)	-0.0059** (0.0024)	-0.0054** (0.0024)	-0.0064*** (0.0025)	-0.0055** (0.0025)	-0.0061** (0.0026)	
Observations	6,604	6,493	6,426	6,509	6,491	6,497	6,472	6,485	
<i>Panel B.1 Exclude the state</i>	<i>NW</i>	<i>BY</i>	<i>BW</i>	<i>NI</i>	<i>HE</i>	<i>SN</i>	<i>RP</i>	<i>BE</i>	<i>SH</i>
Elected competitors in constituency	-0.0079*** (0.0030)	-0.0056** (0.0026)	-0.0059** (0.0026)	-0.0055** (0.0027)	-0.0066*** (0.0026)	-0.0058** (0.0025)	-0.0066** (0.0026)	-0.0062** (0.0025)	-0.0072*** (0.0026)
Observations	5,194	5,862	6,012	6,174	6,383	6,772	6,571	6,849	6,682
<i>Panel B.2 Exclude the state</i>	<i>BB</i>	<i>ST</i>	<i>TH</i>	<i>HH</i>	<i>MV</i>	<i>SL</i>	<i>HB</i>		
Elected competitors in constituency	-0.0062** (0.0025)	-0.0066*** (0.0024)	-0.0064*** (0.0025)	-0.0064** (0.0025)	-0.0063** (0.0025)	-0.0066*** (0.0025)	-0.0064** (0.0025)		
Observations	6,871	6,859	6,865	6,800	6,899	6,878	6,909		
<i>Panel C: Exclude the party</i>	<i>SPD</i>	<i>CDU</i>	<i>CSU</i>	<i>FDP</i>	<i>Green Party</i>	<i>Left P./PDS</i>	<i>Others</i>		
Elected competitors in constituency	-0.0086** (0.0039)	-0.0061* (0.0033)	-0.0060** (0.0025)	-0.0070*** (0.0022)	-0.0052** (0.0024)	-0.0064** (0.0025)	-0.0053** (0.0024)		
Observations	4,265	4,511	6,376	6,313	6,666	6,769	6,932		

*Notes:* 2SLS estimation. The unit of observation is an individual legislator-election pair. The table shows second stage regression results using *Early dropout in constituency* and *Replacement in constituency* to instrument *Elected competitors in constituency*. All estimations include legislator and election fixed effects, personal controls for *Direct mandate, Tenure, Age, Minister, and Government party*, political position controls for *Junior minister, (vice) Parl. president, (vice) Chair committee, (vice) Chair parl. group, Whip, and Experience as minister*, and election controls for *Number of parties in election, Direct candidates in election, and Turnout*. Standard error estimates are clustered at the legislator level. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.