Online Appendix

The Constrained Politics of Local Public Investment under Cooperative Federalism

Table of Contents

A Further Information about the data

A.1 Further Information about the investment database

Our fiscal data on district-level budgets are derived from official reporting by districts to the statistical authorities in their states. To collect the data for all states for a comprehensive time period, we collaborated with all statistical agencies, which assembled the data series for our analysis at our request. The lowest level at which data was available was Germany's districts. Ideally, we would have conducted the analysis at the level of Germany's 11,054 municipalities. However, municipal data is impossible to gather in a comprehensive dataset, not least due to marked differences in the organization and functions of local governments across Germany's states.

As a second-best, we, therefore, collected data and conducted the analysis at the level of the districts. There are 401 districts in Germany divided into 294 rural districts (*Landkreise*) and 107 "urban districts" or "district-free cities" (*Kreisfreie Städte*). For the 107 urban districts in our sample, the municipality and the district coincide within one single administrative and political entity. For the remaining rural districts, our analysis provides only for an imperfect proxy because the district contains multiple municipalities with elected officials and tax-raising and spending powers. However, elected officials in rural districts still maintain key investment competencies in areas such as secondary roads, public transport, pedestrian areas, cycle lanes, district hospitals, public libraries, and secondary schools (WOFI, 2019). Moreover, our results hold if we run the analyses separately dividing the subsamples into one for urban districts and one for rural districts.

As shown in Table A.1, some statistical offices were able to deliver data from 1991 to 2018; others were only able to deliver data starting in the mid-1990s. Moreover, gaps in the data series may derive from incomplete reporting by districts to statistical offices or states' failures to maintain or provide comprehensive data for their districts. We merged the data that we received from all state statistical agencies. We then made two adjustments to the data. First, since many states changed the prescribed accounting systems from cameralism to double-entry bookkeeping (usually in the late 2000s), we had to deal with different ways in which districts report their budgets. While these changes led to gaps in our data, we worked with the statistical agencies and carefully merged the different categories to create continuous time series for the most important variables. In our analysis, we controlled for whether states used a single-entry or double-entry bookkeeping, which did not affect our results.

Second, we had to account for districts reforms, which took place in the period of our investigations. Major district reforms took place in Saxony-Anhalt (2007), Saxony (2008), and Mecklenburg-Vorpommern (2011). Moreover, some smaller reforms combined individual districts in other states, for example by merging cities with their surrounding districts (e.g., Aachen Stadt and Aachen district were merged in 2009). We originally received the data for investments from Saxony-Anhalt and Saxony based on the list of districts that existed in the final year of observation, i.e., in 2018. In other words, the statistical agencies in both states added up pre-reform districts to their post-reform territorial states for the entire period of investigations. To make it consistent, we also applied this method to the rest of our sample. Specifically, for Mecklenburg-Vorpommern as well as the smaller district reforms in our sample, we calculated the data for the post-reform districts by summing up the pre-reform districts. Given that most of the reforms involved the

merging of two or more districts this was straightforward, except for the district of Demmin, which was dissolved and divided into separate pre-existing districts. We thus dropped Demmin from the sample for the entire period.

Our data only contains information on the districts' core budgets. We could not account for public investments by publicly-owned entities with independent legal status that report separate budgets.

Table A.1. Coverage of our data for municipal-level investment by state

State	Data coverage	Note
Baden-Württemberg	1991-2018	
Bavaria	1991-2018	
Brandenburg	1993-2006; 2012-2018	Data for 2007-2011 could not be delivered due to changes in the accounting system.
Hesse	1991-2018	
Mecklenburg-Vorpommern	1996-2018	
Lower Saxony	1991-2018	
North Rhine-Westphalia	1991-2018	
Rhineland-Palatinate	1991-2018	
Saarland	1992-2006; 2012-2018	Data for 2007-2011 could not be delivered due to changes in the accounting system.
Saxony	1992-2018	
Saxony-Anhalt	1995-2018	
Schleswig-Holstein	1992-2018	
Thuringia	1995-2018	

A.2 Information about the political database

The election data was coded manually from the *Kommunales Wahllexikon*, a local election encyclopedia issued annually by the Konrad-Adenauer-Stiftung. Table A.2 includes a detailed list of all the states (and the number of districts within each state) included in the study. In general, the name, the year of the election, the party affiliation, the term of office, and the number of ballots for a particular election were coded.

Voter associations and independent candidates that compete in state-level and local elections are subsumed under "regional voter associations." Other parties were coded based on their positioning on economic matters as either left-wing or right-wing. Figure A.1. shows the party positions of the national parties based on the Chapel Hill Expert Survey from 1999 to 2019 (Bakker et al. 2019). The figure confirms that there are clearly two blocks in German politics, distinguishable according to the economic left-right dimension: three parties on the left (SPD, the Greens, the Left) and four parties on the right (CDU, CSU, FDP, AfD). This pattern is also confirmed by data on parties' position at the level of the German states (Bräuninger et al. 2020). Figure A.2. shows the positions of state-level parties based on manifestos from the latest respective state election. Although there is some variation in the position of parties by state, the pattern shown in Figure A.1. holds. Even in the 2010s, the distinction between a left and a right block (based on economic positions) remained valid in German politics. In some states, the Greens were even more economically left-wing than the SPD.

The number of elections under consideration in the study is affected by changes in the procedural rules for the election of local administrators. Mecklenburg-Vorpommern, Brandenburg, Lower Saxony, Rhineland-Palatinate, and Schleswig-Holstein switched during or shortly before the period of investigation from indirect elections to direct elections. Schleswig-Holstein switched back to indirect elections in 2009, while the local administrator was never directly elected in Baden-Württemberg. Only information about name, party affiliation, and election-year are available for districts with indirect elections. Generally, years for which no investment data is available were not coded (see Table A.2).

Again, a special case is district reforms that affect the population eligible to vote. First, we did not code districts that were dissolved and split into more than one. However, the districts that absorbed small parts of dissolved districts are included in our sample. Second, wherever one district was subsumed into another existing district, we abstained from coding these districts. Finally, wherever two districts were merged into a completely new one, only the new district is coded from the year of its formation onwards. The two original districts that were merged are not coded. This reduces the number of observations available for our political variables.

Table A.2. Coverage of our data for local executive elections by state

State	N	Number of districts	Data coverage	Note
Baden-Württemberg	873	44	1999-2018	
Bavaria	1914	99	1999-2018	
Brandenburg	249	18	1999-2006 2013-2018	Elections not coded from 2007 to 2012 as no investment data available
Hesse	519	26	1999-2018	
Mecklenburg-Vorpommern	81	8	1999-2009 2011-2018	District reform in 2011
Lower Saxony	887	45	1999-2018	
North Rhine-Westphalia	1034	53	1999-2018	
Rhineland-Palatinate	697	36	1999-2018	
Saarland	83	6	1999-2006 2013-2018	Elections not coded from 2007 to 2012 as no investment data available
Saxony	170	13	1999-2018	
Saxony-Anhalt	216	14	1999-2018	
Schleswig-Holstein	298	15	1999-2018	
Thuringia	459	23	1999-2018	

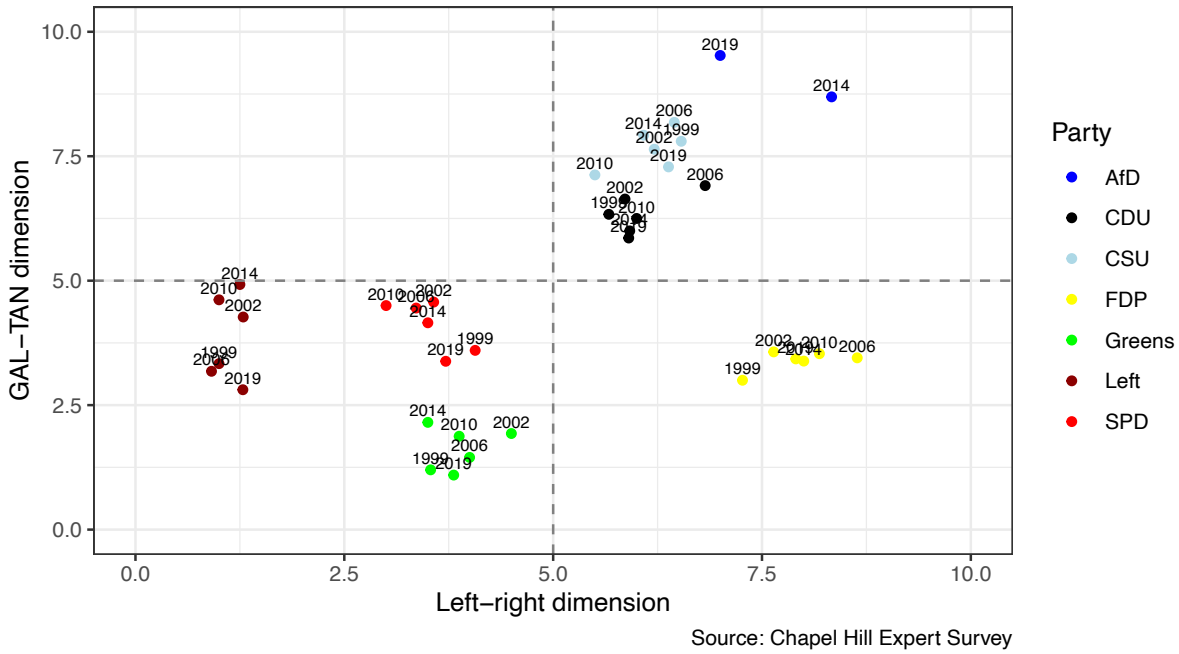

Figure A.1. National party positions according to the Chapel Hill Expert Survey from 1999 to 2019

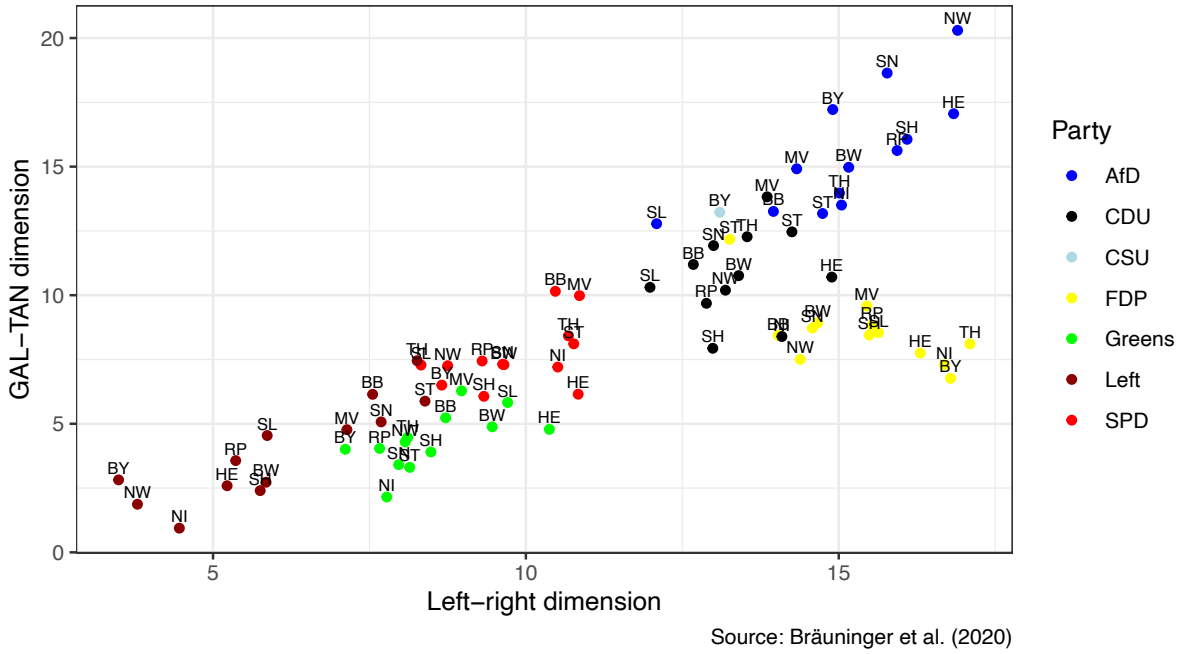

Figure A.2. State party positions according to party manifestos from the latest respective state election

A.3 List of variables and summary statistics

Table A.3. List of key variables used in the regression analysis

	Variable	Coding	Source
		Dependent variable	
1	Investment (pc)	Sum of all investment purposes in EUR, divided by population	State statistical agencies
		Independent variables	
1	lag(Investment (pc))	Lagged version of Investment (pc)	State statistical agencies
2	Business tax revenue (pc)	Revenues from the local business tax in EUR, divided by population	State statistical agencies
3	Liquidity loans (pc)	Liquidity loans in EUR, divided by population	State statistical agencies
4	Administrative capacity (per 1,000 capita)	Number of technical personnel employed in local administration, divided by population times 1,000	State statistical agencies
5	Party: Left (ref.: Right)	0 = district administrator belonging to a right-wing party 1 = district administrator belonging to a left-wing party	*Kommunales Wahllexikon*
6	Party: Regional voter association (ref.: Right)	0 = district administrator belonging to a right-wing party 1 = district administrator belonging to a regional voter association	*Kommunales Wahllexikon*
		Control variables	
1	Investment subsidies (pc)	Federal and state investment subsidies in EUR, divided by population	Local statistical agencies
2	Social security exp. (pc)	Social security expenditures in EUR, divided by population	Local statistical agencies
3	Unemployment (change)	Annual change in the unemployment rate as share of the labor force	Federal Statistical Office
4	GDP (pc)	Gross domestic product in Thousand EUR, divided by population	Federal Statistical Office
5	Net migration (per 1,000 capita)	Out-migration subtracted from in-migration, divided by population times 1,000	*INKAR online*

Table A.4. Summary statistics

Statistic	N	Mean	St. Dev.	Min	Max
Investment (pc)	7,784	321.998	153.187	0.000	2,243.076
Business tax rev. (pc)	7,784	315.951	224.790	-64.243	2,985.287
Liquidity loans (pc)	7,373	404.307	875.424	0.000	8,363.025
Admin. capacity (per 1,000 capita)	7,352	1.308	0.498	0.000	5.083
Party: Left (ref.: right)	7,544	0.327	0.469	0.000	1.000
Party: Regional voter assoc. (ref.: right)	7,544	0.140	0.347	0.000	1.000
Investment subsidies (pc)	7,784	123.304	76.199	-5.511	754.429
Social security exp. (pc)	7,762	368.154	259.171	0.003	1,799.417
GDP (pc)	7,763	29.290	13.630	8.442	182.128
Unemployment (change)	7,749	-0.066	3.022	-16.687	14.506
Net migration (per 1,000 capita)	7,369	2.718	6.285	-40.600	59.300

B Additional results

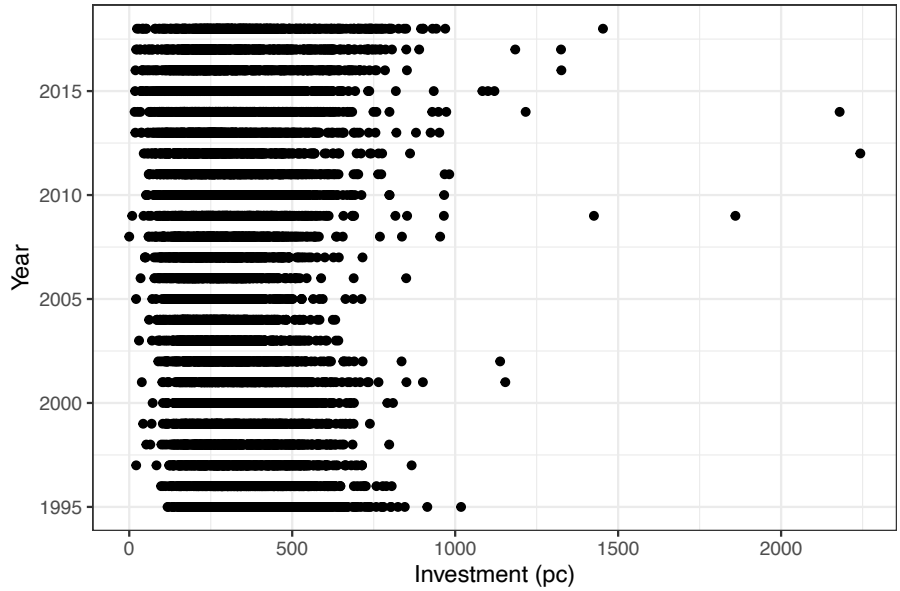

Figure B.1. Investment by year

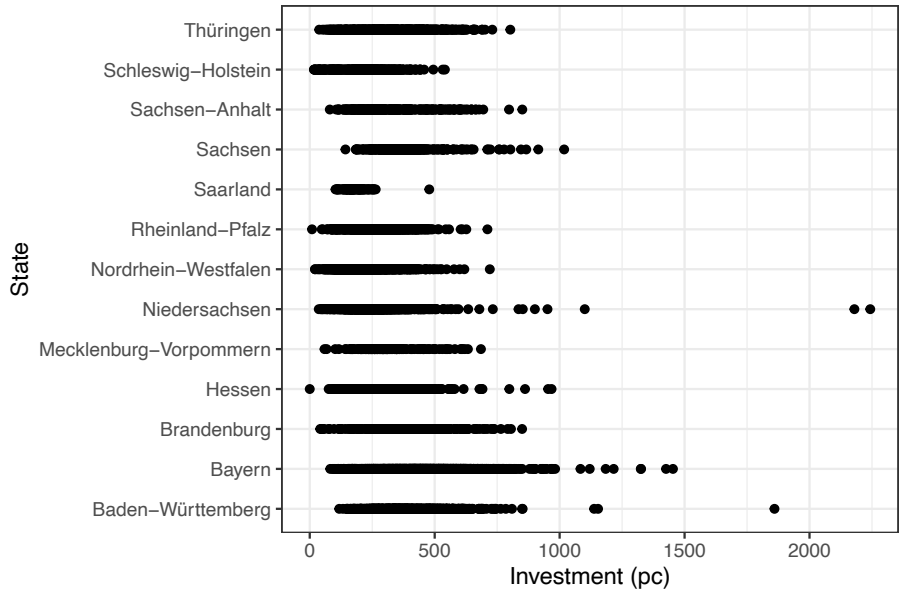

Figure B.2. Investment by state

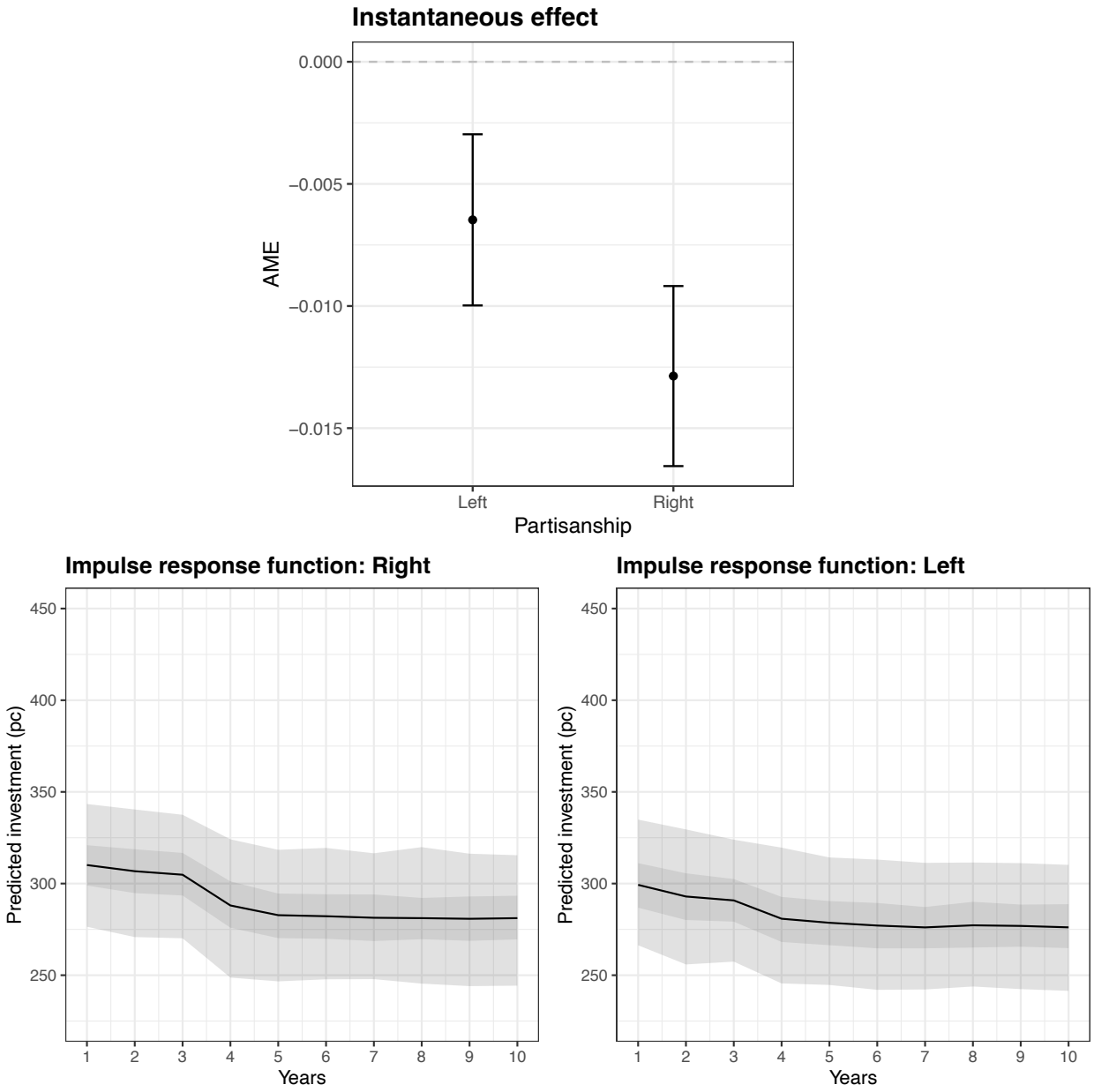

Figure B.3. Interaction effect of liquidity loans and left party

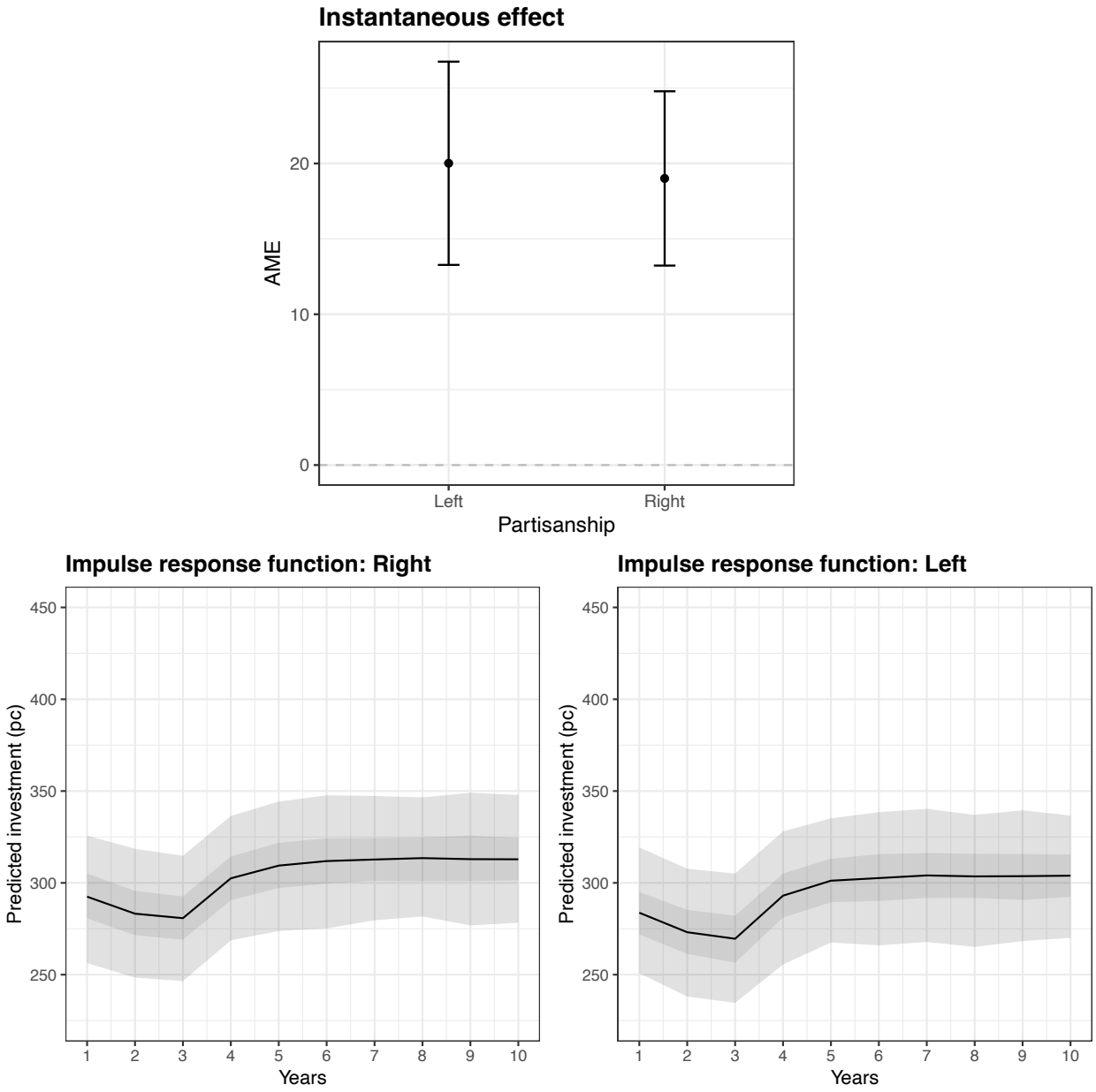

Figure B.4. Interaction effect of administrative capacity and left party

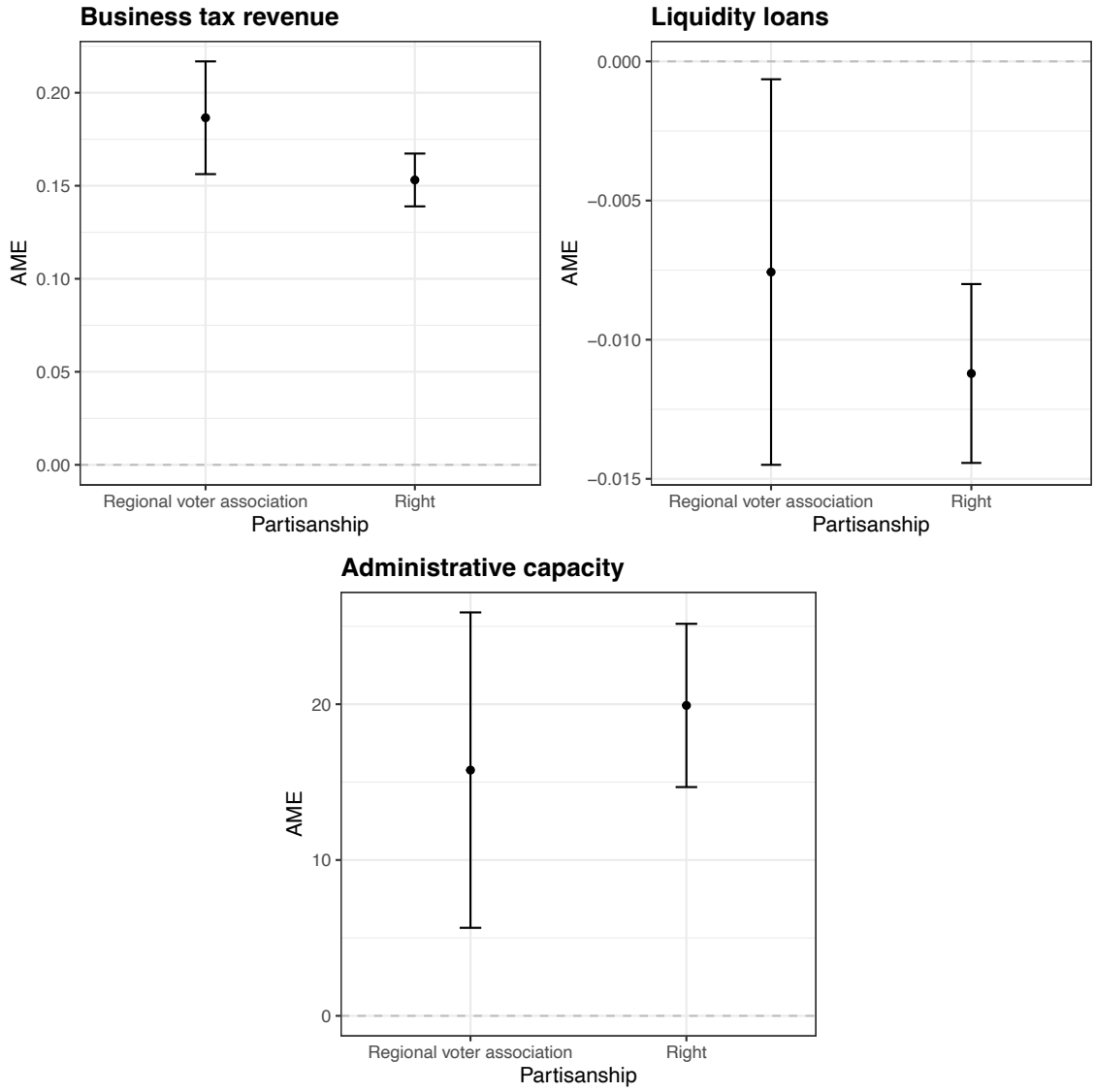

Figure B.5. Instantaneous interaction effects for regional voter association

C Robustness tests

Table C.1. Replicating Table 1 with pooled OLS models (i.e., no fixed-effects)

	Dependent variable: Investment (per capita)		
	(1)	(2)	(3)
lag(Investment (per capita))	0.732***	0.722***	0.715***
	(0.008)	(0.009)	(0.009)
Business tax revenue (per capita)	0.113***	0.119***	0.091***
	(0.008)	(0.008)	(0.010)
Liquidity loans (per capita)	-0.009***	-0.008***	-0.008***
	(0.001)	(0.001)	(0.001)
Admin. capacity (per 1,000 capita)	-5.453**	-3.479	-3.879
	(1.951)	(2.207)	(2.203)
Party: Left (ref.: right)		-12.230***	-26.031***
		(2.370)	(3.920)
Party: Regional voter assoc. (ref.: right)		2.753	-22.834***
		(3.148)	(6.201)
Investment subsidies (per capita)	0.290***	0.304***	0.310***
	(0.016)	(0.017)	(0.017)
Social security expenditure (per capita)	-0.059***	-0.053***	-0.055***
	(0.005)	(0.005)	(0.005)
GDP (per capita)	-0.192	-0.253	-0.182
	(0.126)	(0.135)	(0.136)
Unemployment (change)	0.799*	0.766*	0.740*
	(0.346)	(0.370)	(0.369)
Net migration (per 1,000 capita)	0.947***	0.820***	0.804***
	(0.163)	(0.183)	(0.183)
Business tax revenue x left			0.042***
			(0.009)
Business tax revenue x regional voter assoc.			0.088***
			(0.019)
Constant	50.172***	51.797***	61.058***
	(4.210)	(4.618)	(4.914)
Observations	7,263	6,394	6,394
R^2	0.719	0.707	0.709
Adjusted R^2	0.719	0.707	0.708
Residual Std. Error	80.675 (df = 7253)	82.866 (df = 6382)	82.669 (df = 6380)
F Statistic	2,065.226*** (df = 9; 7253)	1,402.793*** (df = 11; 6382)	1,195.171*** (df = 13; 6380)

*p<0.05; **p<0.01; ***p<0.001

Table C.2. Replicating Table 1 with models that only include unit-fixed effects

	Dependent variable:		
	Investment (per capita)		
	(1)	(2)	(3)
lag(Investment (per capita))	0.392***	0.354***	0.353***
	(0.010)	(0.011)	(0.011)
Business tax revenue (per capita)	0.140***	0.143***	0.115***
	(0.009)	(0.010)	(0.011)
Liquidity loans (per capita)	-0.012***	-0.014***	-0.014***
	(0.002)	(0.002)	(0.002)
Admin. capacity (per 1,000 capita)	19.711***	21.530***	21.003***
	(3.178)	(3.644)	(3.643)
Party: Left (ref.: right)		-6.541	-21.828***
		(3.501)	(5.017)
Party: Regional voter assoc. (ref.: right)		-2.647	-13.266
		(4.440)	(7.539)
Investment subsidies (per capita)	0.711***	0.747***	0.754***
	(0.021)	(0.023)	(0.024)
Social security expenditure (per capita)	0.020**	0.022**	0.021**
	(0.007)	(0.007)	(0.007)
GDP (per capita)	-0.108	0.379	0.397
	(0.213)	(0.248)	(0.247)
Unemployment (change)	0.573	0.606	0.594
	(0.305)	(0.326)	(0.325)
Net migration (per 1,000 capita)	0.512**	0.402*	0.395*
	(0.177)	(0.200)	(0.199)
Business tax revenue x left			0.045***
			(0.011)
Business tax rev. x regional voter assoc.			0.037
			(0.022)
Constant	-11.050	-22.257	-15.452
	(18.528)	(19.474)	(19.514)
Observations	7,263	6,394	6,394
R^2	0.794	0.789	0.789
Adjusted R^2	0.782	0.775	0.776
Residual Std. Error	71.030 (df = 6871)	72.614 (df = 6000)	72.514 (df = 5998)
F Statistic	67.680*** (df = 391; 6871)	57.016*** (df = 393; 6000)	56.930*** (df = 395; 5998)
			*p<0.05; **p<0.01; ***p<0.001

Note: All models include unit-fixed effects, which are omitted from the table.

Table C.3. Replicating Table 1 with GMM models (Arellano–Bond estimator)

	Dependent variable: Investment (per capita)		
	(1)	(2)	(3)
lag(Investment (per capita)	0.221***	0.224***	0.224***
	(0.004)	(0.004)	(0.004)
Business tax revenue (per capita)	0.169***	0.171***	0.123***
	(0.002)	(0.002)	(0.003)
Liquidity loans (per capita)	0.023***	0.023***	0.022***
	(0.001)	(0.001)	(0.001)
Admin. capacity (per 1,000 capita)	10.663***	7.743*	7.784**
	(2.942)	(3.023)	(3.002)
Party: Left (ref.: right)		-6.651**	-35.778***
		(2.250)	(3.513)
Party: Regional voter assoc (ref.:right)		1.042	-7.075
		(3.063)	(4.924)
Investment subsidies (per capita)	0.818***	0.814***	0.816***
	(0.004)	(0.004)	(0.004)
Social security expenditure (per capita)	-0.005	-0.007	-0.016***
	(0.004)	(0.004)	(0.003)
GDP (per capita)	0.655***	0.856***	0.893***
	(0.084)	(0.092)	(0.092)
Unemployment (change)	-0.775**	-0.839**	-1.035***
	(0.269)	(0.273)	(0.275)
Business tax revenue x left			0.081***
			(0.005)
Business tax revenue x regional voter assoc.			0.023*
			(0.011)
Observations	397	397	397

*p<0.05; **p<0.01; ***p<0.001

D Sensitivity analyses

Table D.1. Replicating Table 1 for Western Germany only

	Dependent variable: Investment (per capita)		
	(1)	(2)	(3)
lag(Investment (per capita))	0.344***	0.310***	0.310***
	(0.011)	(0.012)	(0.012)
Business tax revenue (per capita)	0.164***	0.165***	0.144***
	(0.010)	(0.010)	(0.013)
Liquidity loans (per capita)	-0.007**	-0.008***	-0.009***
	(0.002)	(0.002)	(0.002)
Admin. capacity (per 1,000 capita)	14.882***	20.829***	20.940***
	(3.541)	(4.040)	(4.041)
Party: Left (ref.: right)		-5.222	-18.230**
		(3.920)	(5.766)
Party: Regional voter assoc. (ref.: right)		1.539	-3.468
		(4.922)	(8.517)
Investment subsidies (per capita)	0.755***	0.800***	0.804***
	(0.028)	(0.030)	(0.030)
Social security expenditure (per capita)	0.001	0.002	0.001
	(0.009)	(0.009)	(0.009)
GDP (per capita)	0.331	0.337	0.276
	(0.275)	(0.312)	(0.313)
Unemployment (change)	0.675	0.629	0.625
	(0.504)	(0.517)	(0.517)
Net migration (per 1,000 capita)	0.069	-0.084	-0.087
	(0.259)	(0.301)	(0.301)
Business tax rev. x left			0.034**
			(0.011)
Business tax rev. x regional voter assoc.			0.016
			(0.024)
Constant	42.542*	19.635	27.384
	(20.638)	(21.645)	(21.783)
Observations	6,180	5,469	5,469
R^2	0.808	0.803	0.803
Adjusted R^2	0.796	0.790	0.790
Residual Std. Error	70.936 (df = 5829)	72.469 (df = 5120)	72.417 (df = 5118)
F Statistic	70.013*** (df = 350; 5829)	59.987*** (df = 348; 5120)	59.759*** (df = 350; 5118)

*p<0.05; **p<0.01; ***p<0.001

Note: The results are based on linear regression models. All models include district- and year-fixed effects, which are omitted from the table.

Table D.2. Replicating Table 1 for Eastern Germany only

	Dependent variable: Investment (per capita)		
	(1)	(2)	(3)
lag(Investment (per capita))	0.300***	0.299***	0.294***
	(0.024)	(0.027)	(0.027)
Business tax revenue (per capita)	0.115***	0.143***	0.089*
	(0.031)	(0.034)	(0.045)
Liquidity loans (per capita)	-0.024**	-0.025**	-0.024**
	(0.008)	(0.008)	(0.008)
Admin. capacity (per 1,000 capita)	3.924	-0.142	1.552
	(7.334)	(8.370)	(8.380)
Party: Left (ref.: right)		-13.984*	-29.481**
		(6.018)	(10.434)
Party: Regional voter assoc. (ref.: right)		-4.353	-43.273**
		(8.163)	(15.965)
Investment subsidies (per capita)	0.661***	0.696***	0.715***
	(0.032)	(0.036)	(0.037)
Social security expenditure (per capita)	0.034**	0.029*	0.030*
	(0.012)	(0.014)	(0.014)
GDP (per capita)	0.306	-1.709	-2.252
	(1.331)	(1.564)	(1.572)
Unemployment (change)	0.284	0.010	0.031
	(0.658)	(0.781)	(0.779)
Net migration (per 1,000 capita)	-1.246***	-1.388***	-1.458***
	(0.355)	(0.414)	(0.417)
Business tax rev. x left			0.080
			(0.045)
Business tax rev. x regional voter assoc.			0.206**
			(0.074)
Constant	42.876	66.558	78.650*
	(32.936)	(38.275)	(38.512)
Observations	1,083	925	925
R^2	0.829	0.823	0.825
Adjusted R^2	0.813	0.804	0.805
Residual Std. Error	51.596 (df = 992)	52.726 (df = 833)	52.519 (df = 831)
F Statistic	53.411*** (df = 90; 992)	42.594*** (df = 91; 833)	42.099*** (df = 93; 831)

*p<0.05; **p<0.01; ***p<0.001

Note: The results are based on linear regression models. All models include district- and year-fixed effects, which are omitted from the table.

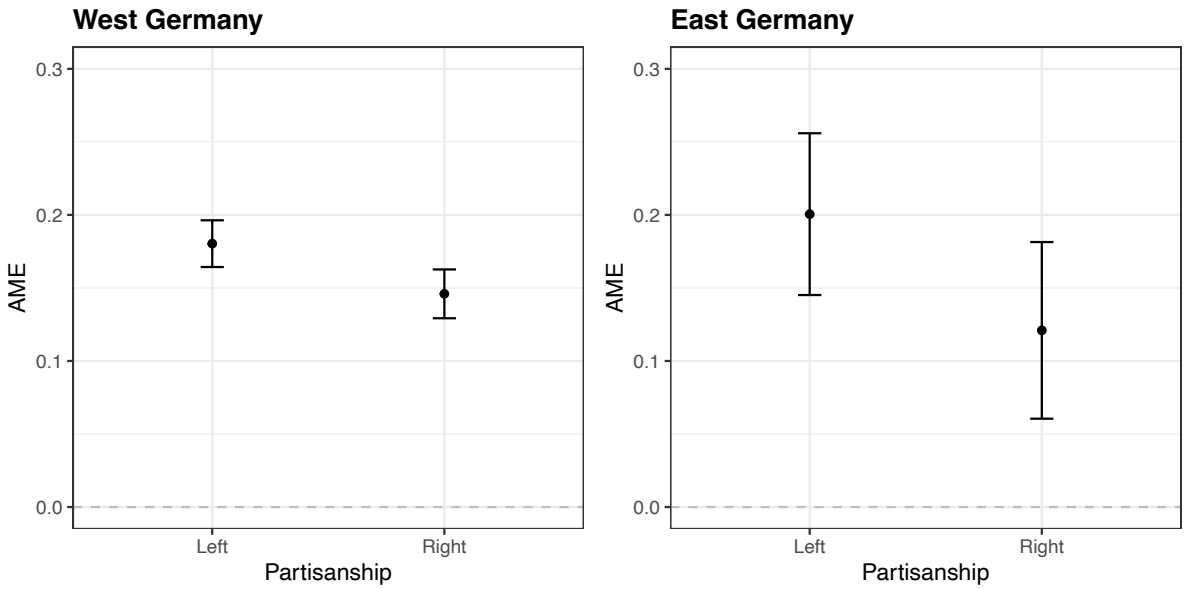

Figure D.1. Average marginal effect of business tax by partisanship and West vs. East Germany

Note: The figure replicates the top panel of Figure 4. It shows the instantaneous average marginal effect (AME) of business tax (per capita) by partisanship (left vs. right) for East and West Germany (based on model 3 in Table D.1 and D.2, respectively).

Table D.3. Replicating model 2 and 3 from Table 1 without Bavaria and Baden-Württemberg

	Dependent variable: Investment (per capita)			
	(1) Without Bavaria	(2) Without Bavaria	(3) Without Bavaria and Baden-Württemberg	(4) Without Bavaria and Baden-Württemberg
lag(Investment (per capita))	0.287***	0.287***	0.318***	0.332***
	(0.013)	(0.013)	(0.014)	(0.014)
Business tax revenue (per capita)	0.196***	0.172***	0.188***	0.144***
	(0.012)	(0.014)	(0.012)	(0.013)
Liquidity debt (per capita)	-0.004*	-0.004*	-0.004*	-0.007**
	(0.002)	(0.002)	(0.002)	(0.002)
Admin. capacity (per 1,000 capita)	25.191***	24.739***	22.231***	20.995***
	(4.412)	(4.414)	(4.309)	(4.565)
Party: Left (ref.: right)	-10.874**	-22.641***	-8.590*	-24.333***
	(3.811)	(5.475)	(3.676)	(5.915)
Party: Regional voter assoc. (ref.: right)	-2.599	-10.851	-0.293	-10.968
	(5.086)	(8.461)	(5.153)	(9.864)
Investment subsidies (per capita)	0.639***	0.643***	0.618***	0.756***
	(0.027)	(0.027)	(0.026)	(0.031)
Social security expenditure (per capita)	0.026**	0.025**	0.035***	0.008
	(0.008)	(0.008)	(0.008)	(0.009)
GDP (per capita)	0.413	0.251	0.581	0.456
	(0.401)	(0.405)	(0.388)	(0.347)
Unemployment (change)	0.413	0.414	0.502	0.597
	(0.397)	(0.397)	(0.377)	(0.507)
Net migration (per 1,000 capita)	-0.421	-0.406	-0.358	0.179
	(0.270)	(0.270)	(0.263)	(0.318)
Business tax rev. x left		0.036**		0.055***
		(0.012)		(0.011)
Business tax rev. x reg. voter assoc.		0.029		0.066*
		(0.026)		(0.031)
Constant	14.997	25.882	1.281	4.965
	(21.798)	(22.084)	(20.827)	(21.927)
Observations	4,573	4,573	4,089	4,173
R^2	0.742	0.743	0.723	0.809
Adjusted R^2	0.723	0.724	0.703	0.796
Residual Std. Error	67.585 (df = 4257)	67.530 (df = 4255)	63.915 (df = 3817)	69.390 (df = 3912)
F Statistic	38.908*** (df = 315; 4257)	38.754*** (df = 317; 4255)	36.775*** (df = 271; 3817)	63.762*** (df = 260; 3912)

*p<0.05; **p<0.01; ***p<0.001

Note: All models include district- and year-fixed effects, which are omitted from the table.

Table D.4. Re-estimating coefficients of interest from Table 1 with a Jackknife approach

	Dependent variable: Investment (per capita)		
	(1)	(2)	(3)
Business tax revenue (per capita)	0.162***	0.165***	0.141***
	(0.001)	(0.010)	(0.012)
Liquidity loans (per capita)	-0.007***	-0.009***	-0.009***
	(0.002)	(0.002)	(0.002)
Admin. capacity (per 1,000 capita)	15.442***	19.455***	19.460***
	(3.346)	(3.815)	(3.814)
Party: Left (ref.: right)		-6.742	-19.010***
		(3.528)	(5.080)
Party: Regional voter assoc. (ref.: right)		-0.646	-9.912
		(4.494)	(7.650)
Business tax rev. x left			0.036***
			(0.001)
Business tax rev. x regional voter assoc.			0.032
			(0.023)

*p<0.05; **p<0.01; ***p<0.001

Note: The table shows results from a Jackknife resampling approach. All models from Table 1 were re-estimated 13 times, each time dropping all observations from one state from the analysis. The average of the coefficients and standard errors across these 13 models was then calculated. The result for all variables of interest are shown above. All models include control variables and district- and year-fixed effects, which are omitted from the table.

Table D.5. Replicating Table 1 with physical investment only

	Dependent variable: Physcial investment (per capita)		
	(1)	(2)	(3)
lag(Physical investment (per capita))	0.463***	0.439***	0.437***
	(0.010)	(0.010)	(0.010)
Business tax revenue (per capita)	0.041***	0.039***	0.026***
	(0.006)	(0.006)	(0.008)
Liquidity debt (per capita)	-0.006***	-0.008***	-0.008***
	(0.001)	(0.001)	(0.001)
Administrative capacity (per 1,000 capita)	9.862***	12.175***	11.997***
	(2.143)	(2.406)	(2.405)
Party: Left (ref.: right)		-3.296	-8.122*
		(2.227)	(3.205)
Party: Regional voter association (ref: right)		-1.873	-16.383***
		(2.835)	(4.822)
Investment subsidies (per capita)	0.549***	0.565***	0.567***
	(0.015)	(0.016)	(0.016)
Social security expenditure (per capita)	-0.002	-0.0003	-0.002
	(0.005)	(0.005)	(0.005)
GDP (per capita)	0.526**	0.509**	0.490*
	(0.175)	(0.196)	(0.196)
Unemployment (change)	0.492*	0.558*	0.548*
	(0.228)	(0.247)	(0.246)
Net migration (per 1,000 capita)	-0.136	-0.191	-0.212
	(0.142)	(0.163)	(0.163)
Business tax revenue x left			0.015*
			(0.007)
Business tax revenue x regional voter assoc.			0.053***
			(0.014)
Constant	4.237	-10.732	-7.672
	(13.064)	(13.443)	(13.512)
Observations	7,263	6,394	6,394
R^2	0.856	0.853	0.853
Adjusted R^2	0.848	0.843	0.843
Residual Std. Error	45.877 (df = 6849)	46.136 (df = 5982)	46.086 (df = 5980)
F Statistic	98.955*** (df = 413; 6849)	84.351*** (df = 411; 5982)	84.162*** (df = 413; 5980)

*p<0.05; **p<0.01; ***p<0.001

Table D.6. Replicating Table 1 with a variable for over-indebtedness

	Dependent variable: Investment (per capita)		
	(1)	(2)	(3)
lag(Investment (per capita))	0.347***	0.315***	0.314***
	(0.010)	(0.011)	(0.011)
Business tax revenue (per capita)	0.162***	0.165***	0.141***
	(0.009)	(0.010)	(0.012)
Over-indebted (ref.: not over-indebted)	-12.596***	-16.617***	-16.986***
	(3.439)	(3.793)	(3.792)
Administrative capacity (per 1,000 capita)	15.963***	20.618***	20.609***
	(3.184)	(3.636)	(3.634)
Party: Left (ref.: right)		-7.606*	-20.030***
		(3.385)	(4.876)
Party: Regional voter association (ref: right)		-0.728	-11.264
		(4.310)	(7.328)
Investment subsidies (per capita)	0.734***	0.763***	0.768***
	(0.021)	(0.023)	(0.023)
Social security expenditure (per capita)	0.001	0.001	-0.00003
	(0.007)	(0.008)	(0.008)
GDP (per capita)	0.371	0.289	0.218
	(0.262)	(0.298)	(0.299)
Unemployment (change)	0.500	0.547	0.546
	(0.341)	(0.375)	(0.375)
Net migration (per 1,000 capita)	-0.346	-0.506*	-0.515*
	(0.211)	(0.247)	(0.247)
Business tax revenue x left			0.037***
			(0.010)
Business tax revenue x regional voter assoc.			0.036
			(0.022)
Constant	49.522*	32.190	40.330
	(19.567)	(20.495)	(20.605)
Observations	7,263	6,394	6,394
R^2	0.808	0.804	0.804
Adjusted R^2	0.797	0.790	0.790
Residual Std. Error	68.590 (df = 6849)	70.142 (df = 5982)	70.077 (df = 5980)
F Statistic	69.973*** (df = 413; 6849)	59.519*** (df = 411; 5982)	59.374*** (df = 413; 5980)

*p<0.05; **p<0.01; ***p<0.001

Note: The variable for over indebtedness is constructed with reference to our data. For each year, observations that are in the upper two deciles of the distribution of liquidity loans are counted as over-indebted (0=20); all other municipalities are counted as not being over-indebted (=0). In the models above, the resulting binary variable replaces the linear variable that measures the precise amount of precise liquidity loans for each observation.

E Additional results

E.1 Analyses that control for alignment between the executive and the legislative

Although our analyses focus on mayors as the most important authorities at the local level, the investment decisions could also be influenced by the local legislative. In Germany, complex political coalitions are possible at the local level because in most states, council members and mayors are chosen in separate elections. However, comprehensive information about these constellations is unavailable over an extended period. As a proxy, we collected information about the vote share that all parties received in local legislative elections. We then compared the size of the left and the right bloc in legislative bodies and created a variable that measures whether the partisanship of the mayor is aligned to that of the largest party bloc in the legislative.

The results are shown below. Table E.1 and Figure E.1 show that the results are robust, even if we control for ideological alignment. Left-wing mayors invest less than right-wing mayors, but the average marginal effect of business tax revenues is higher for the former than the latter. This confirms our results shown in the main text. Interestingly, when we control for ideological alignment, the results suggest that mayors from regional voter associations tend to invest less than right-wing mayors.

Going one step further (Figure E.2), we also include interaction effects between alignment and partisanship. The results show that left-wing mayors invest less under alignment, while this effect is not statistically significant otherwise. Finally, we also include a three-way interaction effect between business tax revenues, partisanship, and alignment. The results again confirm that the partisanship effect primarily exists in cases of alignment. Given that we could only include a proxy for alignment, however, more work is necessary to disentangle the relationship between mayors and local legislative bodies in Germany, and how this relationship influences local (fiscal) policy.

Table E.1. The determinants of public investment across Germany's districts accounting for ideological alignment between the executive and the legislative (OLS regressions)

	Dependent variable: Investment (per capita)				
	(1)	(2)	(3)	(4)	(5)
lag(Investment (per capita))	0.326***	0.303***	0.303***	0.303***	0.304***
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Business tax revenue (per capita)	0.169***	0.166***	0.142***	0.166***	0.171***
	(0.010)	(0.010)	(0.012)	(0.010)	(0.015)
Liquidity debt (per capita)	-0.009***	-0.009***	-0.010***	-0.009***	-0.010***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Administrative capacity (per 1,000 capita)	18.197***	23.055***	22.885***	23.030***	23.293***
	(3.589)	(3.817)	(3.815)	(3.819)	(3.820)
Party: Left (ref.: right)		-6.661	-19.664***	-5.702	-8.647
		(3.483)	(4.980)	(5.625)	(8.030)
Party: Regional voter association (ref: right)		-7.841	-16.828*	-7.402	-7.416
		(4.970)	(7.780)	(5.366)	(5.382)
Ideological alignment	-9.542***	-11.550***	-12.386***	-10.802*	1.973
	(2.639)	(3.147)	(3.153)	(4.665)	(6.779)
Investment subsidies (per capita)	0.738***	0.760***	0.766***	0.760***	0.769***
	(0.023)	(0.024)	(0.024)	(0.024)	(0.024)
Social security expenditure (per capita)	0.006	0.004	0.002	0.004	0.002
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
GDP (per capita)	0.873**	0.660*	0.560	0.664*	0.541
	(0.289)	(0.314)	(0.315)	(0.315)	(0.316)
Unemployment (change)	0.750*	0.676	0.676	0.676	0.684
	(0.373)	(0.377)	(0.377)	(0.377)	(0.376)
Net migration (per 1,000 capita)	-0.237	-0.291	-0.300	-0.294	-0.320
	(0.234)	(0.253)	(0.253)	(0.254)	(0.253)
Business tax revenue x ideo. alignment					-0.041**
					(0.016)
Business tax revenue x left			0.039***		0.009
			(0.011)		(0.019)
Business tax revenue x regional voter assoc.			0.028		
			(0.022)		
Ideological alignment x left				-1.620	-17.711
				(7.456)	(10.768)
Business tax revenue x alignment x left					0.046
					(0.025)
Constant	-0.883	20.616	30.802	19.916	21.364
	(20.965)	(20.919)	(21.084)	(21.167)	(21.474)

Observations	6,588	6,217	6,217	6,217	6,217
R^2	0.811	0.808	0.808	0.808	0.808
Adjusted R^2	0.798	0.794	0.794	0.794	0.795
Residual Std. Error	69.066 (df = 6174)	69.706 (df = 5804)	69.637 (df = 5802)	69.711 (df = 5803)	69.616 (df = 5800)
F Statistic	64.003*** (df = 413; 6174)	59.155*** (df = 412; 5804)	59.018*** (df = 414; 5802)	59.002*** (df = 413; 5803)	58.783*** (df = 416; 5800)

Note: *p<0.05; **p<0.01; ***p<0.001

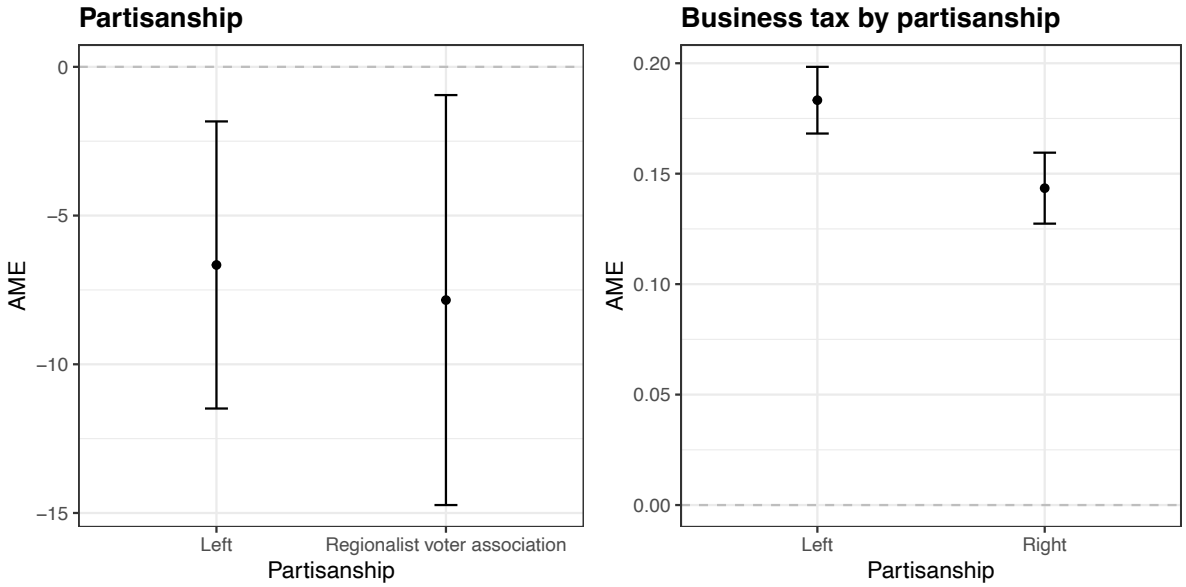

Figure E.1. Average marginal effect of partisanship and business tax revenue by partisanship controlling for ideological alignment

Note: The figure replicates Figure 3 and the top panel of Figure 4. The left panel shows the instantaneous average marginal effect (AME) of partisanship on investment (based on model 2 Table D.5. The right panel shows the AME of business tax revenue (per capita) by partisanship (left vs. right) on investment per capita.

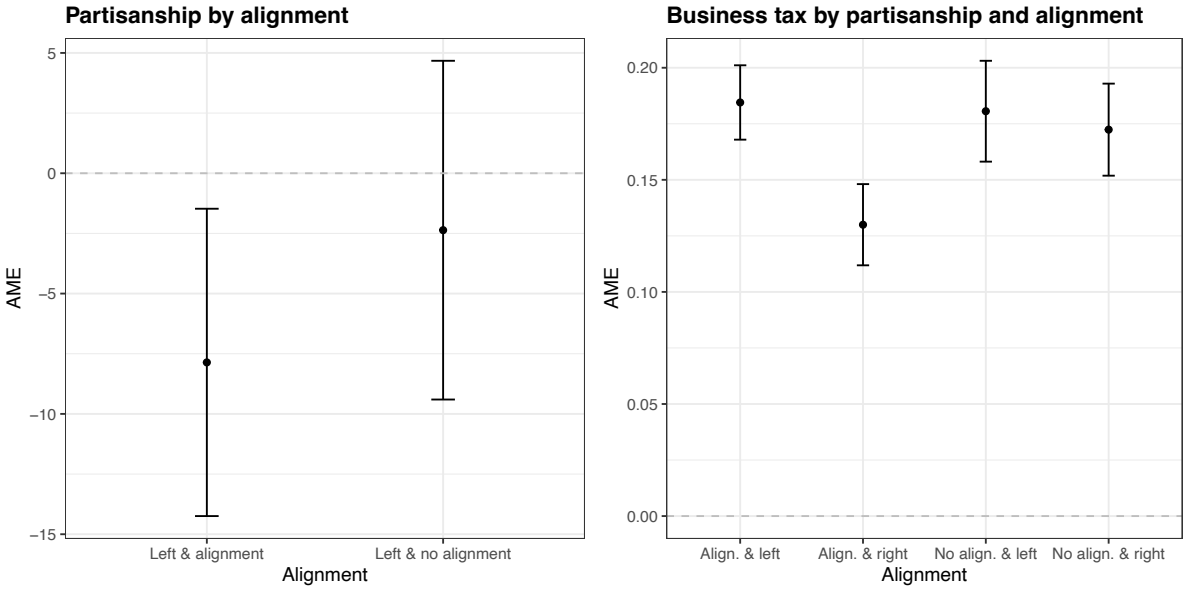

Figure E.2. Average marginal effect of partisanship by alignment and business tax revenue by partisanship and alignment

Note: The left panel figure shows the average marginal effect (AME) of a left-wing executive by ideological alignment based on the interaction effect in model 4 in Table D.5. Ideological alignment is a dummy variable that measures whether the ideology of the executive and the majority in the legislative is aligned based on ideological blocks (left vs. right). To create the dummy variable, the vote shares of all left-wing parties and right-wing parties, respectively, were summed up. The ideological orientation of the majority was then compared with the ideological alignment of the executive. The right panel shows the AME of business tax revenue (per capita) by partisanship and alignment based on the three-way interaction effect in model 5 in Table D.5.

E.2 Analyses with other dependent variables (social security expenditure and the fiscal balance)

Table E.2. The determinants of social security expenditure across Germany's districts (OLS regression)

	Dependent variable: Social security expenditure (per capita)		
	(1)	(2)	(3)
lag(Social security expenditure (per capita))	0.879***	0.860***	0.858***
	(0.007)	(0.007)	(0.007)
Investment (per capita)	0.011	0.010	0.007
	(0.010)	(0.011)	(0.011)
Business tax revenue (per capita)	0.009	0.009	-0.013
	(0.008)	(0.009)	(0.011)
Liquidity debt (per capita)	0.014***	0.014***	0.014***
	(0.002)	(0.002)	(0.002)
Administrative capacity (per 1,000 capita)	-5.806*	-5.944	-6.121
	(2.826)	(3.286)	(3.283)
Party: Left (ref.: right)		-0.828	-10.569*
		(3.055)	(4.398)
Party: Regional voter association (ref: right)		-3.388	-22.327***
		(3.887)	(6.600)
Investment subsidies (per capita)	-0.086***	-0.088***	-0.083***
	(0.020)	(0.022)	(0.022)
GDP (per capita)	0.342	0.527*	0.479
	(0.231)	(0.268)	(0.268)
Unemployment (change)	0.327	0.249	0.241
	(0.302)	(0.338)	(0.338)
Net migration (per 1,000 capita)	-0.225	-0.153	-0.178
	(0.188)	(0.224)	(0.224)
Business tax revenue x left			0.029**
			(0.009)
Business tax revenue x regional voter assoc.			0.068***
			(0.020)
Constant	132.926***	107.898***	113.732***
	(17.274)	(18.453)	(18.536)
Observations	7,263	6,394	6,394
R^2	0.944	0.943	0.943
Adjusted R^2	0.940	0.939	0.939
Residual Std. Error	60.779 (df = 6849)	63.256 (df = 5982)	63.175 (df = 5980)
F Statistic	277.089*** (df = 413; 6849)	240.904*** (df = 411; 5982)	240.397*** (df = 413; 5980)

*p<0.05; **p<0.01; ***p<0.001

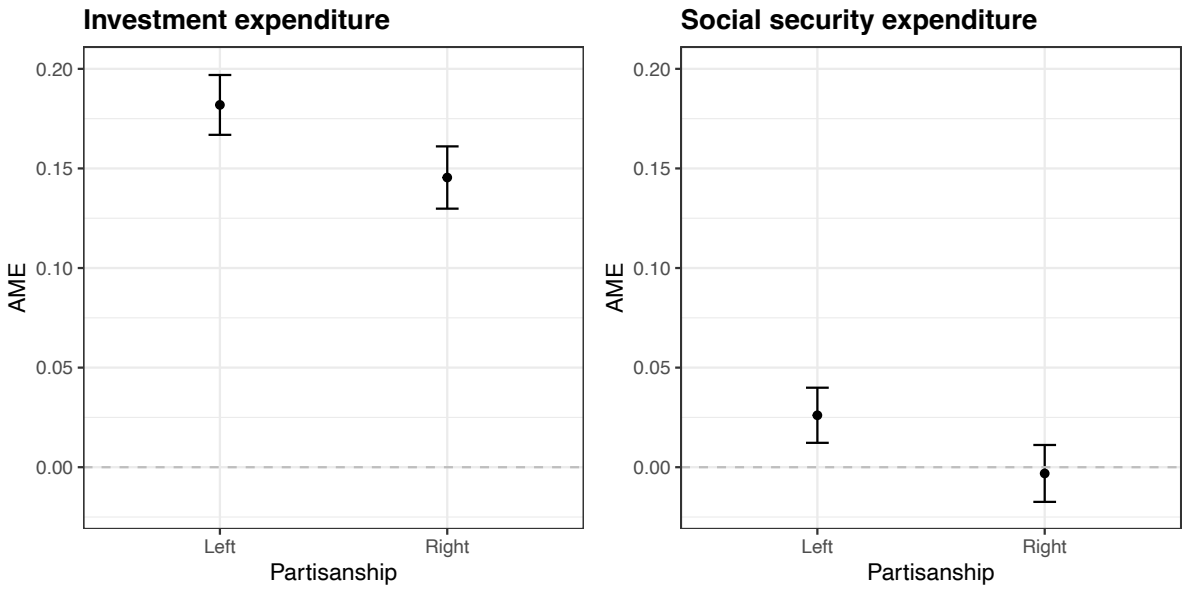

Figure E.3. Average marginal effect of business tax on investment and social security expenditure

Note: The figure replicates the top panel of Figure 4. It shows the instantaneous average marginal effects (AMEs) of business tax (per capita) by partisanship (left vs. right) for investment and social security expenditure (based on model 3 of Table 1 and E.1, respectively). The left panel is the same figure shown in the main text, except that the y-scale is adjusted.

Table E.3. The determinants of the fiscal balance across Germany's districts (OLS regression)

	Dependent variable: Fiscal balance (per capita)		
	(1)	(2)	(3)
lag(Fiscal balance (per capita))	0.430***	0.412***	0.412***
	(0.010)	(0.011)	(0.011)
Investment (per capita)	-0.141***	-0.151***	-0.153***
	(0.031)	(0.034)	(0.035)
Business tax revenue (per capita)	0.794***	0.818***	0.802***
	(0.026)	(0.028)	(0.034)
Liquidity debt (per capita)	0.034***	0.052***	0.052***
	(0.005)	(0.006)	(0.006)
Administrative capacity (per 1,000 capita)	16.907	15.279	15.372
	(8.765)	(10.281)	(10.288)
Party: Left (ref.: right)		0.529	-8.408
		(9.556)	(13.778)
Party: Regional voter association (ref: right)		25.599*	21.354
		(12.156)	(20.688)
Investment subsidies (per capita)	-0.116	-0.144*	-0.139*
	(0.062)	(0.070)	(0.070)
Social security expenditure (per capita)	0.031	0.044*	0.043
	(0.020)	(0.022)	(0.022)
GDP (per capita)	-5.945***	-6.253***	-6.305***
	(0.717)	(0.839)	(0.841)
Unemployment (change)	-0.018	0.032	0.036
	(0.935)	(1.058)	(1.058)
Net migration (per 1,000 capita)	0.608	0.953	0.953
	(0.584)	(0.700)	(0.701)
Business tax revenue x left			0.026
			(0.029)
Business tax revenue x regional voter assoc.			0.014
			(0.061)
Constant	-114.954*	-120.620*	-114.782*
	(53.703)	(57.724)	(58.093)
Observations	7,263	6,394	6,394
R^2	0.697	0.699	0.699
Adjusted R^2	0.678	0.678	0.678
Residual Std. Error	188.395 (df = 6848)	197.839 (df = 5981)	197.858 (df = 5979)
F Statistic	37.993*** (df = 414; 6848)	33.705*** (df = 412; 5981)	33.538*** (df = 414; 5979)

*p<0.05; **p<0.01; ***p<0.001

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