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The Constrained Politics of Local Public Investments under Cooperative Federalism

Björn Bremer, Donato Di Carlo, and Leon Wansleben

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Abstract

Public investment spending declined steadily in advanced economies during the last three decades. Germany is a case in point where the aggregate decline coincided with growing inequality in investments across districts. What explains variation in local investment spending? We assembled a novel dataset to investigate the effects of structural constraints and partisanship on German districts' investment spending from 1995 to 2018. We find that the lack of fiscal and administrative capacity significantly influences local investment patterns. Yet, within these constraints, partisanship matters. Conservative politicians tend to prioritize public investment more than the left. This is especially the case when revenues from local taxes are low. As the fiscal conditions improve, left-wing politicians increase investment more strongly and hence the difference between the left and the right disappears. Our findings are indicative of how regional economic divergence can emerge even within cooperative federalist systems and show that, despite rigid fiscal rules, partisanship matters when parties face trade-offs over discretionary spending.

Keywords: constrained partisanship, fiscal federalism, Germany, local politics, public investment

Zusammenfassung

Über die vergangenen Jahrzehnte sind öffentliche Investitionen in Industrieländern deutlich zurückgegangen. Dies ist auch in Deutschland zu beobachten, wo der Rückgang mit wachsenden Ungleichheiten zwischen Kreisen einherging. Dieser Beitrag untersucht diese interregionalen Diskrepanzen von öffentlichen Investitionen in Deutschland. Zu diesem Zweck nutzen wir einen neuen Datensatz, der strukturelle Bedingungen sowie parteipolitische Aspekte erfasst, die Investitionstätigkeit auf der Kreisebene zwischen 1995 und 2018 beeinflusst haben. Wir zeigen, dass Finanzprobleme sowie fehlendes technisches Personal die Investitionstätigkeit maßgeblich beschränkt haben. Gleichzeitig setzen unterschiedliche lokale Parteien in Anbetracht solcher strukturellen Beschränkungen unterschiedliche Prioritäten in ihren freiwilligen Ausgaben. Konservative Bürgermeister und Landräte tendieren dazu, öffentliche Investitionen mehr zu priorisieren als linke Politiker. Dies ist vor allem der Fall, wenn die Einnahmen aus Gewerbesteuern gering sind. Wenn die Einnahmen steigen, erhöhen linke Politiker ihre Ausgaben für öffentliche Investitionen allerdings stärker als rechte Politiker, sodass der Unterschied verschwindet. Diese Resultate indizieren, dass regionale Ungleichheiten in öffentlichen Investitionen sogar in kooperativen föderalen Systemen auftreten können und zeigen, wie Parteipolitik lokale Ausgabenentscheidungen selbst dann beeinflusst, wenn lokale Entscheidungsträger unter rigiden Regeln operieren.

Schlagwörter: Deutschland, Fiskalföderalismus, Lokalpolitik, öffentliche Investitionen, politische Parteien

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The Constrained Politics of Local Public Investments under Cooperative Federalism

1 Introduction

Public investment spending has declined continuously in advanced economies since the 1970s, from an average of 5 percent of GDP in OECD countries to around 3 percent in 2017, a trend reinforced by cuts following the Global Financial Crisis of 2008 (De Jong, Ferdinandusse, and Funda 2018). By now, policymakers and experts have acknowledged the adverse consequences of this development, as reports about decaying infrastructures have accumulated, and awareness about the enormous challenges posed by climate change, demographics, and technological change has grown (Abiad, Furceri, and Topalova 2015; Mazzucato 2014).

Less recognized is the importance of subnational governments for these aggregate trends. Amongst OECD countries, these authorities are responsible for about 57 percent of public gross capital formation. In federalist countries, this share is as high as 70 percent (OECD 2019). This is particularly true for Germany, where we observe two striking trends. First, the aggregate decline in the country's stock of public investments is driven by a dramatic fall in local-level investments. Second, divergence in public investment spending has increased across subnational governments. Hidden behind the overall decline thus are growing regional differences in the public capital stock.

Scholars might expect such regional inequalities to emerge in competitive federalist settings where economic forces more directly affect local fiscal capacities. But they are surprising for Germany. As a plethora of studies has shown, the country's cooperative type of fiscal federalism aims at smoothening differences in fiscal capacities between the federation's richer and poorer regions through a complex system of fiscal equalization (Spahn and Föttinger 1997). Moreover, national and state-level laws prescribe comprehensive local welfare state provisions. These institutional arrangements reflect the constitutional requirement for the state to ensure equivalent living conditions across the country (Art. 72, *Grundgesetz*). Due to these rigid institutional constraints, scholars have also by and large found few partisan differences in local fiscal outcomes.

On the back of this literature, the variation in local public investments across Germany raises new questions about these purported features of cooperative federalism. Apparently, the system does not have equalizing effects in all domains. What then explains variation in the provision of local public goods within a least likely case like Germany? To answer this question, we draw on the framework of constrained partisanship (Beramendi et al. 2015) and extend it to the local politics of fiscal policymaking, analyzing the relationship between political agency and institutional structures within multi-level

polities. We leverage novel data collected through a comprehensive research effort conducted in collaboration with Germany's thirteen state statistical agencies. Our original dataset thus comprises unique information on public investments, fiscal, economic, and demographic variables. Moreover, we coded the partisanship of local mayors and district administrators from the late 1990s until 2018 and combined this information with our public investment dataset. We then test the conditional effects of our independent variables on local public investments with time-series-cross-section (TSCS) analyses.

Our models' results confirm that local governments are strongly influenced by the interacting constraints of Germany's fiscal federalism and regional economic structures. Districts *(Kreise)* invest more when they can generate greater disposable resources from local taxes; when they have a low level of debt; and when they possess the administrative capacity to implement investment (i. e., technical personnel). Most surprisingly, however, despite the constraints imposed on subnational governments by Germany's fiscal rules and political institutions, we find that local-level partisanship matters. Right-wing mayors in local governments tend to invest significantly more than left-wing ones. A significant interaction effect between left-wing mayors and business tax revenues reveals, however, that left politicians invest less than conservatives at low levels of revenue but accelerate investments faster as revenues rise.

Our results entail two key insights of relevance for research on public investments, comparative federalism, and the political economy of local finances. First, multi-level systems like Germany's cooperative federalism inhibit strong divergences in highly salient welfare state expenditures (e. g., unemployment insurance); these are protected by laws and fiscal rules that create leveling effects. But in these systems, public investments are treated as a discretionary type of local expenditure that varies significantly with the unequal distribution of disposable funds (i. e., business tax revenues), discretionary subsidies, debt burdens, and administrative capacities. An asymmetry is thus built into the fiscal rules of federalism, which particularly hurts those regions that are already disadvantaged by weak economic structures and low growth.

Second, we show that, when concentrating on discretionary spending items like public investment, partisanship matters even within highly constraining multi-level state structures. Right-wing parties prioritize public investments under similar budget conditions when compared to left-wing parties. We explain this in terms of conservative parties' close ties with local business communities (e. g., chambers of commerce or business associations), who lobby for greater investment in the physical infrastructure needed to underpin their competitiveness. By contrast, left-wing mayors tend to prioritize social spending catered to more vulnerable constituencies, but they are willing to spend on public infrastructures when disposable funds increase. More generally, these findings suggest that the framework of constrained partisanship (Beramendi et al. 2015) is particularly pertinent for the analysis of subnational fiscal policies, where partisan competition unfolds in contexts of biting fiscal as well as economic-structural constraints.

Finally, our results suggest that, while there is much to recommend in national and transnational efforts to address shortfalls in public investments, decision-makers should pay greater attention to subnational governments' fiscal and administrative capacity to tackle regional inequalities. Unless new programs find ways to support the most disadvantaged regions, there exists a real risk of reinforcing dynamics whereby already privileged regions can reap most of the benefits offered by new programs while poorer regions are further left behind.

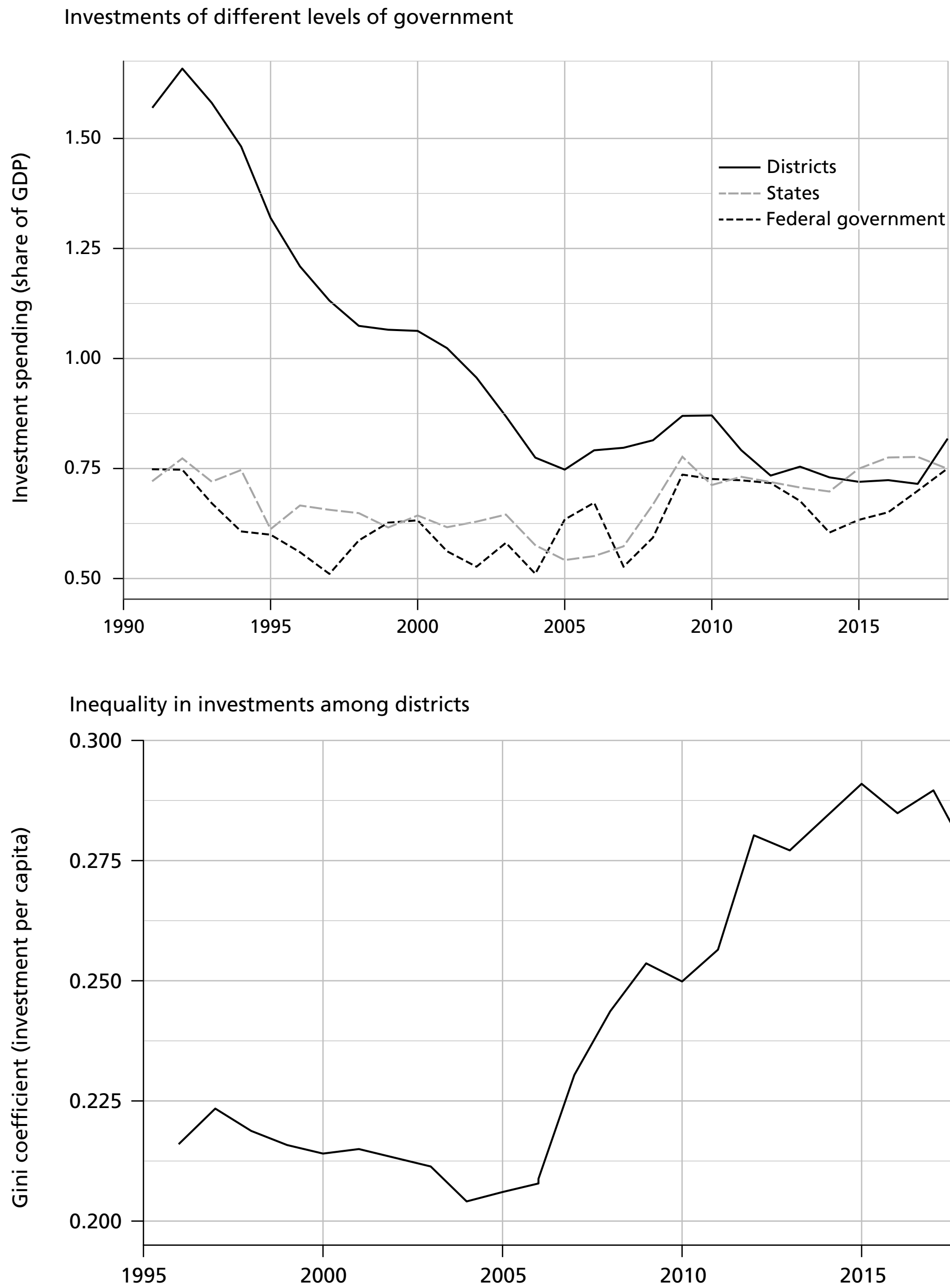
The paper proceeds as follows. In Section 2, we present data to show the increasing inequality in investment patterns across Germany's subnational governments and discuss it with reference to the literature on subnational fiscal policymaking. In Section 3, we introduce our theoretical framework of constrained partisanship and lay out our hypotheses. In Section 4, we explain our data and methodology before we present our empirical results in Section 5. We conclude by summarizing the key findings and discussing the central implications of our study.

2 Germany's divergent local investments and the political economy of local public finances

Germany's poor record of public investments over the past thirty years is largely a local phenomenon (Roth and Wolff 2018). As the top panel of Figure 1 indicates, local governments were historically responsible for the bulk of investment spending. However, their reduced expenditures are mainly to blame for the negative aggregate trend. Accordingly, surveys and economic studies indicate a significant gap between the demand and supply of infrastructures at local levels (Bardt et al. 2019; KfW 2019). This gap has particularly arisen in the maintenance of roads, schools, public offices, childcare facilities, as well as digital infrastructures. There is now growing awareness of these deficiencies and the need for more local infrastructure spending (Expertenkommission des BMWi 2016).

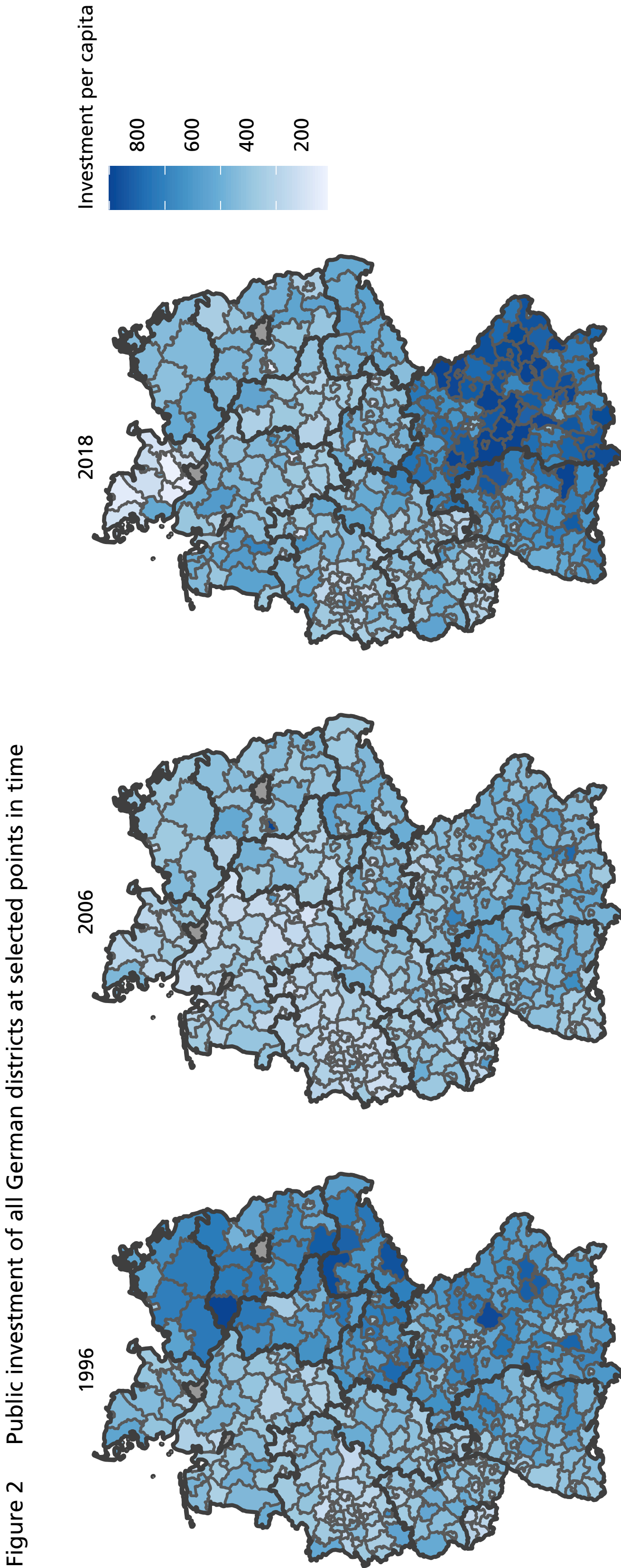
However, most scholars and policymakers still overlook that the overall decline in local investment developed alongside mounting variation (Arnold et al. 2015). Figure 1 (bottom panel) documents this divergence by showing the Gini coefficient of per capita gross investment spending among Germany's districts, which has markedly increased since 2005. Figure 2 reinforces this finding by visualizing the per capita investments of German districts at three different points in time (1996, 2006, 2018). The maps indicate that public investments were initially high in Southern and Eastern Germany's districts during the mid-1990s. In the East, this was a catch-up phenomenon following reunification, which involved large federal support programs *(Aufbau Ost)* for economic reconstruction (Gunlicks 2003, 184). The severe fiscal crisis at the turn of the century (Streeck 2007) then induced austerity measures and widespread cuts in investment spending.

Figure 1 The development of public investment in Germany over time



Note: The top panel of the figure shows gross public investment for all districts (sum), states (sum), and the federal government. Each time series is presented as a share of German GDP from 1991 to 2018. Source: Federal Statistical Office of Germany, own calculations. The bottom panel of the figure shows the Gini coefficient in investment per capita among all German districts. Source: Statistical Offices of the States (see Online Appendix A), own calculations.

Figure 2 Public investment of all German districts at selected points in time



Note: The figure shows the gross per capita investment of all German districts in 1996, 2006, and 2018. The scale goes from 0 to 800 euro and all outliers with per capita investment above 800 euro are assigned the highest value. Data for Germany's city-states (Berlin, Bremen, and Hamburg), which do not have districts, are missing and marked as grey.

To provide but one example, mayors and local treasurers reportedly bemoaned that they barely had the means to maintain existing streets to ensure traffic safety.[1] But, over the last decade, with the improvement of Germany's fiscal conditions after the financial crisis, patterns of local investment spending have increasingly diverged. Today, per capita spending for public investments is particularly high in Southern districts, while it remains worryingly low in the Western and Northern districts. For instance, the districts with the highest average per capita investments are in Bavaria (e. g., in and around Munich) while the highest concentration of low investments is around the *Ruhrgebiet* area. How can we explain this variation in local public investment spending despite Germany's cooperative federalism?

The political economy of local public finances suggests two main explanatory factors: *structural constraints* and *partisan politics.* Among the former, scholars highlight the importance of both institutional and economic factors constraining local governments' policymaking capacity. On the one hand, fiscal rules and political institutions beyond the control of subnational governments curtail the room for maneuvering (Beramendi and Jensen 2019; Peterson 1981; Yinger and Ladd 1989). On the other, entrenched regional economic inequalities and shifting economic geographies (e. g., processes of regional deindustrialization) can selectively hamper local governments' tax-raising capacity and incapacitate them to provide public goods. Country-specific analyses propose different mechanisms through which state structural constraints interact with economic forces to produce inter-regional differences in public finances. For instance, literature on American competitive federalism suggests that local authorities significantly depend on their own tax-raising capacity (Peterson 2012). Changing economic geographies, e. g., induced by de-industrialization in the Rust Belt, thus selectively hamper local governments' tax-raising capacity, creating an unequal distribution of fiscal resources (Hobor 2013; Reese, Sands, and Skidmore 2014). Communities that depend more on fiscal support are more severely impacted by the retrenchment of federal support programs for "place-based" grants-in-aid (Kincaid 2011). This latter mechanism is even more important in unitary state systems, where disadvantaged communities are more severely impacted by the retrenchment of national fiscal support (Beatty and Fothergill 2014; Toubeau and Vampa 2020). However, Germany has a cooperative federalist system centered on fiscal equalization aimed at reducing differences in fiscal capacity to ensure equivalent living conditions across the country (Börzel 2002; Hepp and Von Hagen 2012). This raises the challenge of explaining how such marked variation in public investments can occur.

A second scholarship focuses on the role of *partisan politics* in shaping both the size and composition of local budgets (de Benedictis-Kessner and Warshaw 2016; Ferreira and Gyourko 2009). These works explore the relevance of party affiliations among local executive or legislative decision-makers. A key assumption in this literature is that left-wing politicians are more resistant to expenditure cuts than right-wing politicians (Toubeau and Vampa 2020). Recent studies also explore partisan choices on the composition

1 "Der Kämmerer bremst den Reparatur-Eifer," *Kölner Stadt-Anzeiger,* 8th August 2002.

of budgets by looking at how parties decide among alternative items under conditions of budgetary restraint (Jacques 2020b). Findings suggest that left-wing parties prioritize social expenditures (Gouvêa and Girardi 2021) while conservative parties tend to earmark funds for core state functions (police; prisons) (Gerber and Hopkins 2011). Whether these findings travel to the German case is unclear, though. Most scholars find that, because of Germany's rigid institutional constraints (Schmidt 1996), partisanship does not explain differences in key fiscal outcomes, like local levels of indebtedness (Bogumil et al. 2014; Galli and Rossi 2002; Wagschal 2018).[2] However, the effect of local partisanship on local public investment decisions has so far remained unexplored. The German case provides an opportunity to fill this gap because public investments are a voluntary spending item subjected to local political discretion.

3 Constrained partisanship: The politics of public investments in a multi-level polity

This paper aims to investigate how Germany's cooperative federalism produces inequalities in public investment spending and test whether partisanship affects budgetary choices on such discretionary spending within a framework of rigid fiscal rules and economic constraints. For developing our hypotheses on these structural and partisan determinants, we draw on the theory of constrained partisanship (Beramendi et al. 2015). This approach provides a twofold way to frame our case study. First, it emphasizes the importance of partisan competition over fiscal policies within fiscal and institutional constraints. Existing studies drawing on this framework mostly focus on constraints arising from the coalition-building effects of past policy choices, as prominently theorized by Paul Pierson (1996). But Beramendi et al. (2015, 13) also acknowledge the importance of institutional constraints that affect "administrative, fiscal, and legal capabilities" to execute policy. This provides an opportunity to integrate political economy scholarship on state structures and fiscal federalism (Benz 1999; Hassel 2017; Katzenstein 1987; Scharpf 1988) into the constrained partisanship framework.[3] We argue that this is crucial for understanding subnational fiscal choices in a multi-level context like Germany, where national fiscal rules and political institutions structure subnational governments' policy choices, limiting the scope for partisan competition (Di Carlo 2019; Lehmbruch 2002; Renzsch 2004). Second, the framework directs us to the study of how politicians adopt policies based on electoral coalitions' preferences over *investment*- or *consumption*-oriented spending. Consumption spending has direct,

2 For a contrasting view see the works by Junkernheinrich and Wagschal (2014), Rösel (2017), Seuberlich (2016), and Timm-Arnold (2011).

3 Along similar lines, recent works in political economy scholarship have investigated the interaction effects of the polity's institutional structures and local partisan preferences on education spending within multi-level systems. See in particular Kleider, Roth, and Garritzmann (2018) and Garritzmann, Roth, and Kleider (2021).

short-term, redistributive implications (e. g., welfare transfers). By contrast, investment policies, broadly conceived, generate long-term, but somewhat uncertain, returns with the aim of enhancing productivity.[4] We follow these intuitions and try to reconcile an analysis of structural constraints with partisan priorities over public spending items to explain local public investments.

Fiscal and administrative constraints for local public investments

German local governments operate within a highly constraining, relatively cooperative, fiscal framework. On the revenue side, they rely largely on fixed contributions that they receive from tax sharing arrangements from the federal income, corporate, and value-added taxes.[5] These redistributive tax arrangements are coupled with large burdens of mandatory expenditures (Benz 1999) arising from obligatory tasks *(Pflichtaufgaben)*. The power of the federal government and states to delegate tasks to local authorities goes hand in hand with fiscal responsibilities. When districts overspend, states are responsible for addressing these budgetary problems; this is why Jonathan Rodden theorized German federalism in terms of "soft budget constraints" (Rodden 2006). What we argue, though, is that, notwithstanding these cooperative features of the German system, inequalities in local fiscal and administrative capacities can emerge that have significant impact on discretionary spending, particularly on public investments.

We firstly focus on the selective sources of independent revenues that districts can generate. Business taxes are the most important of these revenues and account for around half of districts' average incomes (WOFI 2019).[6] Crucially, business taxes generate revenues that are not already earmarked for mandatory expenditures; such revenues can be used to finance voluntary activities, like public investments. However, not all districts have the same capacity for local tax-raising due to Germany's large regional inequalities. The driver behind these inequalities is the clustering of industries (Dauth, Fuchs, and Otto 2018). Sectors located in some regions, most notably the *Ruhrgebiet*, but also Bremerhaven and parts of Saarland, have experienced a dramatic loss of international competitiveness followed by deindustrialization (e. g., iron and steel; textiles; electronics), while areas in the South, hosting automotive and machinery plants as well as new high-end services, have profited from structural change (Dauth and Suedekum 2016). These unequal economic conditions directly feed into unequal business tax-raising ca-

4 For instance, social investment policies are intended to raise an economy's productive capacity and efficiency in the long run (Hemerijck 2017).

5 These tax sharing arrangements, including fiscal equalization *(Finanzausgleich)*, are negotiated between the federation and the states but are difficult to change due to multiple veto points and high consensus requirements (Scharpf 1988).

6 Districts also receive property taxes *(Grundsteuer)* but these are minimal compared to other countries.

pacities, which are the key determinants of local disposable revenues. While other types of local spending are protected (i. e., mandated by law) and supported with institutionally entrenched revenue-sharing rules, public investments are not. In consequence, differences in business tax revenues strongly affect local levels of public investments. This translates into our first hypothesis:

(H1) *Local disposable revenues hypothesis: The more business tax revenues a local government collects, the more it will invest.*

A second structural constraint arises from the unequal accumulation of local public debt. Of particular concern here is the rise in loans to bridge districts' short-term liquidity needs *(Kassenkredite)* which, since the early 2000s, have increasingly been used to cope with shortfalls of revenues to cover current expenditures (Bogumil et al. 2014). Local authorities mostly accumulate liquidity loans when they face increasing obligatory expenditures which they fail to meet with their fixed revenues from the general taxation system. For instance, depending on differences in local living costs (e. g., housing and heating costs) and demand for social protection (e. g., due to differences in the number of unemployed or disabled people), mandatory social expenditures weigh differently on districts' budgets (Arnold et al. 2015; Bertelsmann Stiftung 2014; Goerl, Rauch, and Thöne 2014). The chronic underfunding of local budgets has been worsened by further cuts in transfers where the *Länder* have been confronted with their own fiscal difficulties. This has often led them to underfund local obligatory as well as voluntary expenditures (e. g., via reduced subsidies). The resulting debt overhang creates problems for district governments due to the increasing burden of interest repayments and the risk of falling under the state's budgetary supervision (Diermeier 2020). In fact, districts with high liquidity debt enter into consolidation programs imposed by the states' budget surveillance institutions *(Kommunalaufsichten)*. These institutions particularly constrain voluntary expenditures. Consolidation requirements, or their anticipation by local politicians (who want to maintain budget autonomy), thus lead to cuts in public investments.

(H2) *Indebtedness hypothesis: The more liquidity loans a local government has accumulated, the less it will invest.*

Moreover, to plan and execute investments, local authorities need administrative personnel. While financially well-endowed authorities can – over the mid-term – expand administrative capacity through recruitments, financially weak subnational governments are under pressure to cut employment and wages and contain the growth of their large wage bills (Di Carlo 2019). Insufficient personnel can thus become a crucial constraining factor for some local governments who may be able to earmark funds for public investments while remaining unable to execute them due to insufficient administrative capacity (KfW 2019; Sachverständigenrat 2019). The case of Cologne illustrates the problem. It earmarked more than €1.5bn for investment spending over the years

2016–18 but only managed to execute investments for around €660 million due to a lack of administrative capacity.[7] This leads us to formulate our third hypothesis:

(H3) *Administrative capacity hypothesis: The more administrative capacity a local government has, the more it will invest.*

Local partisanship, voluntary spending priorities, and responsiveness to different constraints

The interaction of fiscal and political institutions with unequal economic conditions and debt problems shapes the different fiscal capacities for local public investments; lack of administrative capacity becomes an additional constraint as a result of austerity's long shadow, which has induced many districts to reduce technical staff. However, *within* these constraints, we expect partisan priorities to shape public investment policy. This is because German local authorities maintain some room for discretion over the choice of spending items. As indicated, amongst all social expenditures by districts, two-thirds consist in implementing measures in the context of legally binding social policies (Bertelsmann Stiftung 2014).[8] Yet, local authorities fulfill these welfare functions with some discretion. For instance, they have some choice over how to implement integration measures for disabled persons or the provision of youth support. Studies indicate that these local choices over the implementation of social policy have significant budgetary implications (Bertelsmann Stiftung 2014; Goerl, Rauch, and Thöne 2014). Moreover, local authorities provide voluntary social services (e. g., support for young people, counseling for groups at risk) and make other discretionary expenditures (e. g., for cultural institutions, civic associations, etc.).

Thus, we expect political competition to shape local governments' choices over various voluntary expenditures. Under budgetary constraints, local authorities must make trade-offs on the policies to pursue, and political parties differ in the extent to which they prioritize public investments over other voluntary expenditures, particularly for social welfare (Adolph, Breunig, and Koski 2020; Breunig and Busemeyer 2012; Jacques 2020b). Such differences primarily reflect allegiances with different local constituencies that benefit from one type of voluntary spending over the other. Political pressure on incumbent parties is rather direct at the local level for there is a closer relationship of accountability and a relatively high degree of transparency over politicians' fiscal choices.

7 These calculations are based on data from the City of Cologne's annual financial reports.

8 The three important legal frameworks that govern obligatory local welfare spending are the social security code II for the unemployed; social security code XXII for groups in need; and social security code VIII in support of children and youth.

Historically, left-wing parties have been supported by vulnerable constituencies that benefit from and support the welfare state (Esping-Andersen 1985). In the last few decades, social democratic parties increasingly appealed to middle-class voters (Gingrich and Häusermann 2015; Kitschelt 1994). Following a decline in class voting (Evans 1999; Knutsen 2008), we have witnessed a process of electoral realignment (Oesch and Rennwald 2018). Despite these changes, left parties are still more likely to support expenditures for social protection than right-wing parties, also at the local level (Jacques 2020b; Toubeau and Vampa 2020). To be sure, local voters of left parties would also benefit from the provision of public investments. Since they are more likely to constitute the more vulnerable segments of society, however, these groups benefit more directly from social protection when compared to the prospect of future and uncertain returns from public investments (Gouvea and Girardi 2021; Jacques 2020a). Therefore, under conditions of limited fiscal capacity, we expect left-wing mayors to prioritize public spending for voluntary welfare measures rather than public investments.

This should be different for right-wing parties due to their links to the local business community. The literature on US municipalities suggests that Republicans prioritize investment spending to expand highways as a response to their suburban voters' demands (Adolph, Breunig, and Koski 2020). Instead, we advance two other reasons for why pro-business parties can be expected to prioritize local public investments, namely firms' interest in the efficiency of local public infrastructure and their need to attract skilled labor. Business groups are interested in the economic success of the firms they represent. Regional economies' infrastructural endowment is among the key factors conferring competitive advantages to firms (Camagni 2002; Martin and Simmie 2008). Thus, it is no surprise that the Federation of German Industries (BDI, *Bundesverband der Deutschen Industrie*) openly urges governments to "no longer spend the majority of public money on welfare state benefits" and, instead, "invest strongly in public infrastructures such as schools, roads, broadband networks and modern electricity networks" to sustain the competitiveness of German firms in the era of digitalization (BDI 2014). Within Germany's export-oriented economic model (Baccaro and Pontusson 2016; Hassel and Palier 2021), the business community demands the upgrading of physical infrastructures to ensure the efficient logistics and transportation services necessary to export German goods to the rest of the world (Grömling and Puls 2018). Moreover, German employers need highly skilled employees (Diessner, Durazzi, and Hope 2021). These groups of workers derive their incomes and wealth from markets and prefer investment expenditures (e. g., schools, roads, public services) – rather than social protection – to improve the quality of public services in the community where they live with their families (Beramendi et al. 2015). Local investment spending thus contributes to making local communities more attractive to these producers' coalitions. We thus formulate the following hypothesis:

(H4) Constrained partisanship hypothesis: Investment spending is higher when pro-business parties are in government.

However, parties can be expected to interact differently with changing fiscal conditions. While under fiscal constraints left parties prioritize social protection, any government will face pressures to maintain and improve public infrastructure when deficiencies become increasingly visible. Therefore, one can expect that, when local governments' fiscal space improves and the trade-off among scarce resources weakens, left parties will try to catch up with past public investment shortfalls and expand investments at a faster pace than right-wing governments. This leads to the following hypothesis:

(H5) Catch-up hypothesis: Left-wing parties invest more when fiscal capacity increases and the trade-off weakens.

4 Data and methodology

Data

To test our hypotheses, we assembled two novel datasets. First, we collected a unique dataset on local governments' investment in Germany from 1995 until 2018. The data was collected in liaison with the statistical agencies of all German *Länder*. This allowed us to disaggregate public investments to the level of Germany's 401 districts.[9] We then merged this information with additional data on other fiscal, economic, and demographic variables to investigate the determinants of public investment spending by local governments since the 1990s.

The dataset includes information on districts from all federal states except the three city-states (Berlin, Hamburg, and Bremen) that do not have districts. Moreover, the dataset for the other thirteen states is unbalanced. For some districts, the data was unavailable for individual years due to changes in the accounting system or other reforms, primarily in Eastern Germany. Overall, however, the data gives a comprehensive and extremely detailed overview of the development of local public investments in Germany. More fine-grained information on the data can be found in Online Appendix A.

Furthermore, to test the effect of partisanship, we coded the partisanship of local governments from 1999 to 2018. Mayors are powerful decision-makers in German local politics and their importance has increased after various constitutional reforms establishing their direct appointment via local elections (Banner 1987; Bogumil et al. 2014). Hence, we focus on the most important elected authority – mayors and district administrators – and analyze their partisan affiliation along a left–right spectrum. However, information on the partisanship of Germany's local governments has hitherto been unavailable in a single dataset. Thus, we leveraged the annual reports by the Konrad

9 The German districts (*Kreise)* consist of 107 cities and 294 rural districts that group together several municipalities. The districts were the lowest level of aggregation for which the data was available.

Adenauer Foundation *(Kommunales Wahllexikon)*, which include electoral information about all districts. Our resulting dataset includes information about the party affiliation of local mayors *(Bürgermeister)* and district administrators *(Landrat)*. It provides a unique overview of which party was in control of Germany's district-level governments over the period 1999–2018.

Independent and dependent variables

To analyze the constrained politics of public investment in Germany we merged both datasets. The main dependent variable used in our analysis is districts' gross public investment spending per capita. We construct a variable for total investments undertaken by local governments by taking the sum of investment funds earmarked for both the construction of physical infrastructure and all other purposes. We then calculate investment per capita by combining our data on local-level investments with data on the population of each district, as provided by Germany's federal statistical agency.

To test our main expectations as outlined above, we use several independent variables. First, we investigate the effect of fiscal revenues by focusing on the per capita tax revenues that districts collect from the local business tax *(Gewerbesteuer)*. This item constitutes the single largest local tax, making up about half of the districts' own revenue. Since it is the major source of revenue that gives local governments disposable funds, the local business tax is particularly relevant for providing the financial resources necessary for investment spending.

Second, considering local governments' structural underfunding, we test the effect of public debt. We focus on the districts' liquidity loans, which local governments increasingly used to cope with shortfalls of revenue in the last few decades. They make up the largest share of districts' government debt and, as explained above, they constrain voluntary spending for fiscal and political reasons.

Third, we test the effects of administrative capacity on investment spending. A district's administrative capacity is difficult to operationalize. However, since we are interested in policy implementation here, we use the number of technical personnel employed in local administration (per 1,000 capita) as a proxy. These are the employees responsible for planning, coordinating, and executing public investments in construction, directly influencing the ability of local governments to implement investments.

Fourth, we created a categorical variable that measures the party affiliation of local mayors and district-level administrators.[10] It indicates which party controls the local execu-

10 In the following, we use the term mayors to refer to both mayors (elected representatives in cities) and district-level administrators (elected representatives in rural districts).

tive. Historically, three party groups have dominated local elections in Germany: the conservative Christian Democratic Union (CDU) and its Bavarian sister party (CSU), the Social Democratic Party (SPD), and regional voter associations. Until recently, there have been very few instances of smaller parties winning local-level elections. To include these parties in the analyses, we merge all left-wing parties (SPD, Greens, *Die Linke*) and both right-wing parties (CDU/CSU, FDP) into two categories. We are thus left with three categories (left, right, regional voter associations), and we use the right-wing block as our reference category.

Finally, we use several control variables to account for additional variation in investments. First, we control for the district's expenditures on social protection *(Sozialhilfe)*. They are one of the main items of local governments' mandatory spending. Second, higher levels of government often directly subsidize investment projects. To control for the level of these subsidies, we measure the size of purpose-specific subsidies by the *Bund* and the *Länder* to individual districts. Due to Germany's fiscal constitution, most of these subsidies come from the states within which districts are subsumed.[11] Finally, we also control for local economic and demographic developments that can influence public investments by including GDP, the change in the unemployment rate, and net migration as control variables.

Similar to the dependent variable, we use per capita (business tax revenue, liquidity loans, investment subsidies, social security expenditure, GDP) or per 1,000 capita (capacity, net migration) measures for all our independent variables. Further information about the measurement and the summary statistics of all variables is included in Online Appendix A.

Methods

Ideally, we would have implemented a compositional-dependent variable analysis to test the effects of partisanship on alternative budgetary items under conditions of fiscal constraints (Adolph, Breunig, and Koski 2020; Breunig and Busemeyer 2012; Jacques 2020b). However, districts' balance sheets do not differentiate neatly between mandatory and discretionary expenditures, which makes the operationalization of a compositional analysis difficult. We, therefore, focus solely on public investments per capita as our dependent variable and assume that variations in such spending reflect allocational choices over discretionary funds.

11 In this paper, we treat subsidies from higher levels of governments as a control variable for theoretical and methodological reasons. These subsidies are purpose-specific and often only pass through local governments' budgets. Yet, local governments need to commit to spending some of their own resources on specific investment projects under co-financing agreements. This introduces endogeneity concerns, as districts that invest more may be more likely to apply for subsidies in the first place.

We use time-series-cross-section (TSCS) analysis to estimate the relationship between our independent variables and the dependent variable. Unit root tests show that all our data are stationary, which allows for time series analysis. Our dependent variable has an autoregressive component, indicating that current levels of investment depend on previous levels. We thus use a first-order autoregressive model that includes one lagged dependent variable (AR(1)). We then use ordinary least squares (OLS) regression to estimate the following model:

$$Y_{it} = \beta_0 Y_{(it-1)} + \beta_k X_{kit} + controls + \alpha_i + \gamma_t + \varepsilon_{it} \quad (1)$$

where investment *Yit* is regressed on k independent variables X, unit αi and time γt fixed effects, and an error term. This two-way fixed effects research design is commonly used by economists to control for unobserved confounders across time and space (Allison 2009; Wooldridge 2010). While it does not address all concerns related to causal identification (Imai and Kim 2020), it goes a long way in limiting selection bias and reducing concerns about omitted variables.

Due to the inclusion of the lagged dependent variable (LDV) in our models, the effect of all independent variables on Y is dynamic. The initial impact exerts itself in a contemporaneous fashion with delayed effects accumulating over time, at a rate dictated by the coefficient for the LDV (De Boef and Keele 2008). While the short-term effect of an independent variable k is given by β_k, the long-run effect is thus given by $\frac{\beta_k}{1-\beta_0}$. To estimate the long-run effects, we use dynamic simulations (King, Tomz, and Wittenberg 2000). Specifically, we follow Williams and Whitten (2011) by simulating the predicted long-term value (and its confidence intervals) for different scenarios over a given number of time intervals based on our autoregressive models, as explained below.

The inclusion of a lagged dependent variable and fixed effects can potentially bias our estimation (Nickell 1981). The Nickell bias is particularly large for time series with very short time periods, but it becomes negligible as T increases. To check the robustness of our estimates, we include several alternative model specifications in Online Appendix C where: we drop the fixed effects and use pooled OLS regression; we drop the year-fixed effects and only control for district-fixed effects; and we estimate differenced GMM (Generalized Methods of Moments) models suggested by Arellano and Bond (1991). To avoid misspecifications (Keele and DeBoef 2008), we also tested whether our results are robust to alternative model specifications, including autoregressive distributed lag models with varying lag lengths (Gerber et al. 2011; Plümper and Troeger 2019). Overall, these estimations do not change our results.

To show that our results are not biased by observations from specific regions (Online Appendix D), we rerun the analysis separately for East and West Germany. Moreover, we use a Jackknife resampling approach, which systematically drops districts from a given state from the analysis and then calculates the average regression coefficient from the thirteen different samples. The results again show that our results are robust.

5 Empirical results

The constraining effects of Germany's semi-sovereign state on local public investments

Table 1 shows the results of our regression analysis. In all the models there is a positive correlation between investment at *t* and investment at *t-1*, as indicated by the lagged dependent variable. This suggests that local investment expenditure is a cumulative, slow-moving process and that public authorities do not abruptly increase or decrease investment from one year to another (Wildavsky 1964).

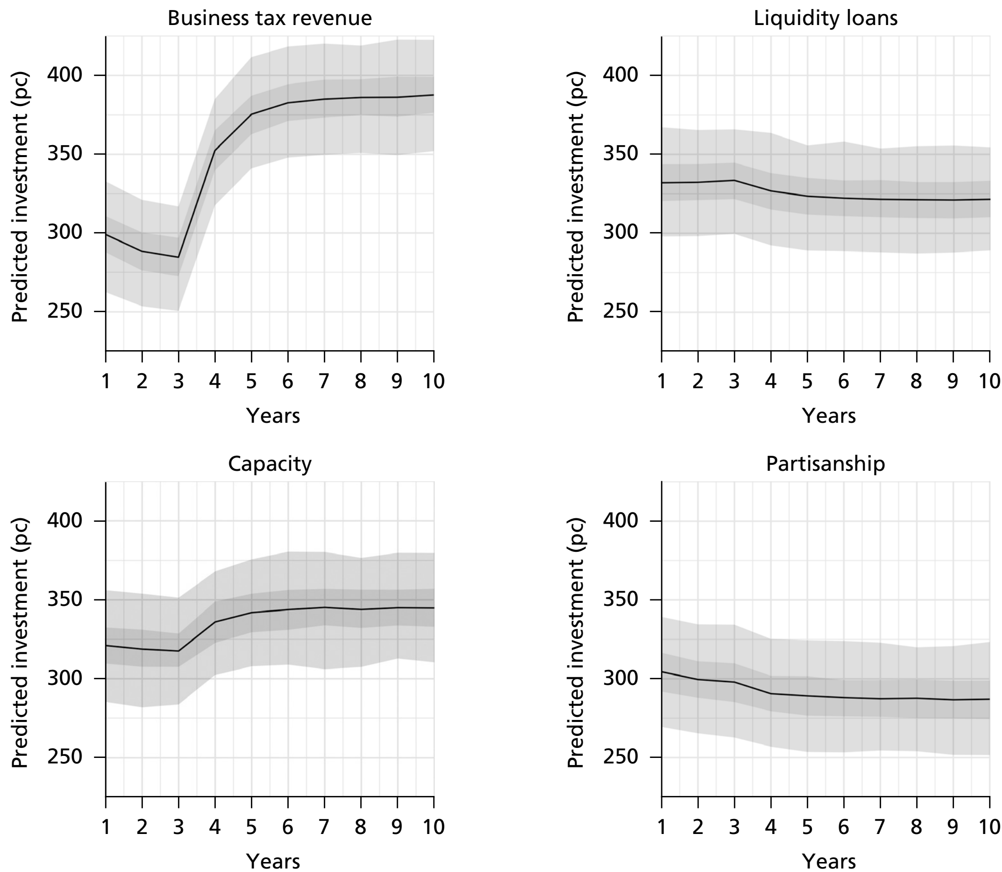
Model 1 tests the association between investments and business tax revenue, liquidity debt, and administrative capacity, respectively. In line with Hypothesis 1, it shows that investment decisions are strongly influenced by the size of revenues from the local busi-

Table 1 The determinants of public investment across Germany's districts (OLS regression)

	Dependent variable: Investment (per capita)		
	(1)	(2)	(3)
lag(Investment (per capita))	0.346*** (0.010)	0.314*** (0.011)	0.314*** (0.011)
Business tax revenue (per capita)	0.162*** (0.009)	0.164*** (0.010)	0.141*** (0.012)
Liquidity loans (per capita)	–0.007*** (0.002)	–0.009*** (0.002)	–0.010*** (0.002)
Admin. Capacity (per 1,000 capita)	15.290*** (3.197)	19.493*** (3.653)	19.488*** (3.651)
Party: Left (ref.: right)		–6.813* (3.386)	–19.147*** (4.873)
Party: Regional voter assoc. (ref: right)		–0.667 (4.310)	–10.418 (7.331)
Investment subsidies (per capita)	0.733*** (0.021)	0.762*** (0.023)	0.767*** (0.023)
Social security expenditure	0.002 (0.007)	0.004 (0.008)	0.002 (0.008)
GDP (per capita)	0.383 (0.262)	0.303 (0.298)	0.234 (0.299)
Unemployment (change)	0.516 (0.341)	0.578 (0.375)	0.579 (0.375)
Net migration (per 1,000 capita)	–0.276 (0.213)	–0.399 (0.248)	–0.406 (0.248)
Business tax rev. x left			0.036*** (0.010)
Business tax rev. x regional voter assoc.			0.033 (0.022)
Constant	45.744* (19.548)	27.467 (20.454)	35.443 (20.561)
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	68.591 (df = 6849)	70.142 (df = 5982)	70.078 (df = 5980)
F Statistic	69.971*** (df = 413; 6849)	59.520*** (df = 411; 5982)	59.371*** (df = 413; 5980)

Note: *p<0.05, **p<0.01, ***p<0.001.

Figure 3 Impulse response functions of independent variables on per capita investment over time



Note: The impulse response functions are based on models 1 (business tax revenue, liquidity loans, capacity) and 2 (partisanship), respectively. The graphs for business tax revenue, liquidity loans, and capacity simulate the evolution of the dependent variable over time in response to an increase of the respective variable from the 10th to the 90th percentile between time periods *t* 3 and 4. The graph for partisanship simulates a change from a right- to a left-wing party. All other variables are kept at their mean.

ness tax levied by districts. In the short-run, a €100 increase in per capita tax revenues leads to a €16.2 increase in per capita investments. The model specification, however, is dynamic. This implies that the estimated coefficients of the independent variables merely serve to indicate the immediate response while the total impact over time is augmented by the long-run multiplier — provided by the coefficient of the lagged dependent variable. In the case of business tax revenues, the total effect accumulates to €24.8. To estimate how this effect gradually accumulates over time, we perform dynamic simulations. The upper-left quadrant of Figure 3 shows how per capita investment changes when business tax revenues increase from the 10th to the 90th percentile between year 3 and year 4. The simulation suggests that there is an immediate effect in response to the shock in year 4, but that the total effect accumulates over time until year 8.

Model 1 further suggests that liquidity loans are negatively correlated with investment spending, as suggested by Hypothesis 2. The association, however, is much smaller. In the short-run, a € 100 increase in per capita liquidity loans only leads to a € 0.7 decrease in per capita investments. In the long run, this accumulates to € 1.07. The upper-right quadrant of Figure 3 again visualizes the response function over time. It shows that investment decisions are somewhat influenced by the amount of debt that districts have but that this effect pales in comparison to the effect of the business tax revenue. By implication, underinvestment occurs less often due to problems of over-indebtedness and is more strongly driven by the lack of disposable funds for discretionary spending.

Finally, model 1 also includes administrative capacity as an independent variable, proxied by the number of technical employees (per 1,000 capita) in each district. The results show that administrative capacity is positively related to investment (Hypothesis 3): one additional employee per 1,000 capita is associated with an instantaneous increase of € 15.3 in investment spending. Given that the average district has 192,656 citizens, this effect is sizable. All other things equal, in an average-sized district, one additional employee is correlated with an increase in investment spending of € 2,947 in any given year. In the long run, this effect is even larger as the effect accumulates over time, which is again visualized by the response function in the lower-left quadrant of Figure 3. Overall, model 1 suggests that local policymakers first and foremost need enough resources to finance investment spending but that, ceteris paribus, an increase in the administrative capacity is also associated with higher investments.[12]

The constrained partisanship of investment spending

To analyze the constrained politics of partisanship, we turn to model 2 in Table 1. It adds two dummy variables from our dataset on the partisanship of local mayors and district administrators to the analysis (which now covers the period from 1999 to 2018). Mayors from the right, primarily from the CDU/CSU, are used as the reference category. They are compared to mayors from the left and regional voter associations. The results indicate that left-wing mayors, on average, reduce public investments compared to the right. Controlling for all other variables, the instantaneous effect of left-wing mayors leads to a decline in per capita investments by € 6.8. For the average German district in our data, this means that left-wing mayors reduce investments by € 1.31 million. Since the models are again dynamic due to the lagged dependent variable, the total effect is larger: over time, it increases to € 1.70 million for the average-sized district.

12 All control variables are insignificant except the investment subsidies. By design these subsidies are strongly correlated with investments across all model specifications. A € 1,000 per capita subsidy is associated with an instantaneous € 733 increase in investment.

This is in line with Hypothesis 4 according to which mayors from the right, that tend to be more pro-business, spend more on investments than mayors from the left. Although we cannot test this directly with our data, it seems that left-wing mayors are more likely to reduce investments under fiscal stress to preserve other non-mandatory consumption spending, particularly voluntary local welfare services. Left-wing mayors draw their support from voters who are more likely to benefit from these kinds of expenditures, while the right is more likely to be influenced by local businesses. These businesses commonly demand the reorientation of public expenditures towards spending on public infrastructures to improve the capital stock in support of German industry (BDI 2014).[13]

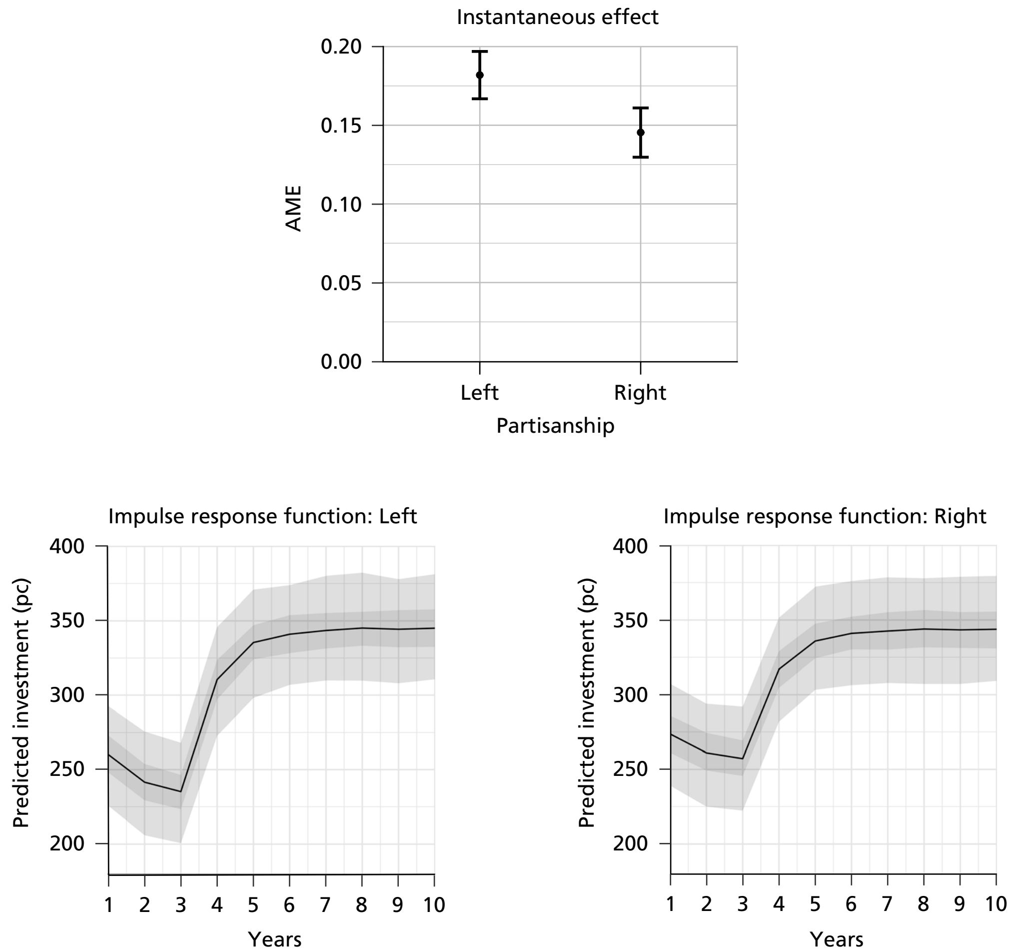
The unconditional effect of partisanship may, however, hide important contextual differences. Do parties invest differently depending on the fiscal situation of a given district? To answer this question, we include an interaction effect in model 3. Based on our theoretical expectations, the analysis focuses on interactions of partisanship with business tax revenues (as a strong predictor of local fiscal capacity). The coefficient on the interaction term for the left indicates that mayors from these parties, indeed, respond differently to increases in business tax revenues. To interpret this interaction effect, we plot the average marginal effect (AME) of business tax revenues for the left and the right in the upper panel of Figure 4. It shows that both party blocs increase investments in response to an increase in revenues but that the left increases investment spending more. The AME for the left is 0.181 compared to 0.145 for the right.

The dynamic simulations used to visualize the long-run effect over time confirm that the left increases investments more in response to increases in the business tax revenue than the right. The bottom panel of Figure 4 shows that the left invests less than the right at low levels of tax revenues (year 1 to 3); at high levels of revenues (year 4 to 10), however, there is no difference between the left and the right in terms of investment. Left-wing mayors, therefore, increase investments more strongly in response to an increase in tax revenues, which is also indicated by the steeper slope in the response function for the left than the right.

Overall, our results suggest that parties respond differently to the constraints imposed by Germany's fiscal federalism. The right is more willing to prioritize public investment than the left, and hence it invests more at low levels of revenues. As revenues increase, however, left mayors increase spending more strongly than right-wing mayors, and consequently, the difference between the left and the right vanishes at high levels of revenues.

13 The results also hold when we exclude the southern states of Bavaria and Baden-Württemberg, which have historically been dominated by the right and have recently seen relatively high increases in investment (Online Appendix D).

Figure 4 The effect of business tax revenues conditional on partisanship



Note: The top panel of the figure shows the instantaneous average marginal effects (AMEs) of business tax (per capita) by partisanship (left vs. right) based on model 3 in Table 1. The average marginal effects for the regional voter associations are shown in the Online Appendix. The bottom panel of the figure shows the impulse response functions based on model 3 in Table 1. They simulate the evolution of the dependent variable over time in response to an increase in business tax revenue from the 10th to the 90th percentile between time periods *t* 3 and 4 for the right and left, respectively. All other variables are kept at their mean.

6 Concluding discussion

Hidden behind negative aggregate trends in public investment spending among OECD countries are the budgetary decisions of numerous subnational governments, who are chiefly responsible for planning and financing investment in local infrastructures, such as streets, schools, and hospitals. This holds especially true for federalist systems like Germany where the significant drop in public investments has been driven mostly by reductions in local expenditures as well as growing divergence across local governments. Germany's unequal spending patterns have a distinct geography, with high levels of public investments in the South and low spending in the North and the West.

Our paper has shown that this variation is explained by a combination of structural constraints and partisan choices. First, we have gone into some depth to explain how Germany's fiscal federalism can create sizable differences in subnational investment spending, despite comparative research highlighting its equalizing virtues. Three factors affect local capacities for public investment spending. First, since such spending is voluntary, local authorities need disposable revenues that are not earmarked for mandatory spending. Such revenues primarily come from local business taxes, which represent the bulk of disposable funds. Capacities to generate such revenues are distributed unequally across the country, due to the clustering of "winning" versus "losing" industries. As a result, some districts find themselves capable of investing in the provision of local public goods while others do not. Second, Germany's fiscal federalism creates endemic pressures for poorer districts as they carry larger burdens of welfare spending. The result is a steep rise in short-term liquidity loans which, in turn, reduces space for voluntary spending through direct (fiscal) and indirect (budget surveillance) mechanisms. We show that debt burdens affect levels of public investment, even though this effect is considerably smaller than that resulting from variations in disposable tax revenues. Third, administrative capacities matter independently of fiscal conditions. The reason for this is that such capacities cannot be altered in the short term. We interpret this independent capacity effect in terms of austerity's long shadow: reductions in capacity in times of fiscal stress durably prevent the expansion of public investment spending even as budget conditions improve. In all, despite Germany's cooperative federalism and constitutional provisions to ensure equivalent living conditions across the federal territory, institutional constraints intersect with socio-economic developments to create divergent developments across regions.

Although the bulk of variation in investment spending can be explained by the constraints imposed by Germany's fiscal institutions and economic geography, our results further show that local partisanship matters for local public finances. This is because public investment is a discretionary type of spending that competes with other, especially local welfare-related, voluntary expenditures. Parties, which need to make fiscal trade-offs, decide differently on these expenditures in reflection of their constituencies' priorities. In particular, we find that, when controlling for structural constraints, left-wing mayors, on average, reduce public investments more compared to mayors from

the right. The latter tend to be more pro-business and, therefore, they are more likely to prioritize infrastructure spending. But left-wing mayors increase investments more strongly than pro-business mayors in response to increases in local tax revenues, an interaction effect that reinforces our trade-off interpretation: when more disposable funds become available, left authorities increase infrastructure spending more, compensating for the shortfall under adverse budget conditions. These results challenge predominant views of Germany as a country with weak party-political competition over local fiscal issues.

Showing how public investments have evolved among Germany's subnational governments since the 1990s is the main empirical contribution of this paper. Relying on new and comprehensive data, we have also offered tentative explanations for the observed trend of increasing variation across districts. Relatedly, we see three broader implications of our paper. First, while the existing literature theorizes how structural constraints reduce local spending capacities, and how public investments are often deprioritized due to the delayed benefits they produce, our paper emphasizes how a system geared towards fiscal equalization can support some types of expenditure (e. g., legally binding welfare state provisions) at the expense of others. This is particularly visible in Germany with its comprehensive welfare state and elaborate system of fiscal redistribution. Public investments are not included in these institutional mechanisms to ensure relative equality and thus are dependent on local disposable funds. Regions with weak local economies are not capable of generating such disposable revenues and thus are at a structural disadvantage in the provision of important public goods. They rely on discretionary subsidies from higher levels, the determinants of which we plan to study in future work.

Second, we extend the constrained partisanship approach by Beramendi et al. (2015) to the subnational level and, in line with the growing literature on budget trade-offs, our paper reinforces the idea that partisanship matters for budgetary choices when authorities need to decide on spending priorities in the context of fiscal constraints. While we concur with most existing scholarship on the sets of priorities that determine the choices of left-wing parties, we add a new argument for why local conservative parties prioritize investments over discretionary social spending. Business interests often have a direct purchase over local politics, and conservative parties are more responsive to these demands – a finding that is particularly relevant for cases like Germany with strong producer coalitions (Gourevitch 1986; Swenson 1991). Operationalizing these partisan priorities empirically is not easy, though, as it requires precise knowledge about which types of spending are up for political discretion in a given budgeting context. For instance, disaggregated data to distinguish between mandatory and voluntary components of German local welfare spending is unavailable. But what we *can* show is that the relevance of partisanship becomes more visible than in existing works when we concentrate on a voluntary type of expenditure as our dependent variable.

Finally, our study has important policy implications. Leading politicians in several advanced capitalist countries have promised to address the shortfalls in public investments that have accumulated during the past decades. Citizens in the left-behind regions struggle with deficient infrastructure and the under-provision of important public goods, like high-quality public infrastructures and schooling. As a matter of fact, inter-regional and inter-metropolitan economic divergence has been on the rise in Western Europe (Storper 2018), and it is no coincidence that populism has become ever more rooted in these disadvantaged areas. Heightened political and social conflicts due to increasing regional inequality thus risk undermining the stability of our political systems (Rodríguez-Pose 2018). Our study suggests the need for national governments to pay greater attention to the fiscal and administrative capacity of subnational governments to provide local public goods. Targeted policies providing fiscal, technical, and administrative support to less-endowed local governments are likely to play a crucial role in counteracting the increasing regional inequalities in existing public capital stocks. If investments continue to be treated as residual spending items under local responsibility, districts with stronger local economies and more capacities will further enhance their competitive advantage vis-à-vis areas that are already left behind.[14] When left to themselves, policymakers in the latter regions do not seem to have the administrative or fiscal capacity to realize investments and face difficult trade-offs between welfare transfers versus infrastructure improvements, with the risk that one type of spending will crowd out the other. Such local fiscal dilemmas are likely to be reinforced by the COVID-19 pandemic, which has further reduced local governments' revenues while burdening them with new tasks. Moreover, over time, regional inequalities and the politics of hard fiscal choices in disadvantaged areas will threaten economic as well as political stability and undermine the progressive potential inherent in ideas like the Green New Deal.

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14 Studies find that place-based investment policies in Germany have positive effects on growth and redistribution in disadvantaged areas (Ehrlich and Seidel 2018).

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