The Role of Media in Hard Times: How Local Newspapers Affect Policy Responses to Economic Crises*

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September 1, 2022

Abstract

How does local media shape policy responses to economic crises? Amidst a shift away from traditional outlets, prior work documents how changes in the media landscape affect constituents' attitudes and behavior, but we know less about the downstream consequences for tangible policy outcomes. In this paper, I present new and comprehensive evidence on the relationship between local government responses to economic crises and the availability of local news. Theoretically, local news may (i) increase accountability, increasing congruence between voter preferences and policy outcomes, but also (ii) change constituents' preferences by exposing them to information on the negative repercussions of a crisis. To study these mechanisms, I compile a fourteen-year panel of key fiscal policy outcomes for 2,193 German municipalities, focusing on the critical areas of business and property taxation. Using a difference-in-differences design, I first show that local governments in areas more strongly affected by the crisis respond by enacting tax cuts for local businesses. I then utilize overlapping media coverage areas to obtain exogenous variation in newspaper availability, demonstrating that business tax cuts are largest in areas with a greater local media presence. Finally, I present survey evidence that is consistent with a mechanism where newspaper reporting on the crisis induces economic anxiety, increasing popular demands for responses that benefit the struggling local economy. These results have implications for research on the interplay between media and policy outcomes, as well as for work on democratic accountability more broadly.

1 Introduction

The shift towards non-traditional news sources, particularly online news, has been a defining development of the last decades (Prior 2013). This has come at the expense of traditional news outlets – a prominent symptom has been the decline of an institution that is viewed as essential for democracy: the local press (Dahl 1971; Dreze and Sen 1990; Mondak 1995). Research in the social sciences has produced considerable evidence that the media can alter political perceptions (Kayser and Leininger 2015), political preferences (Zaller 1992; Barnes and Hicks 2018) and, ultimately, political behavior (Gentzkow, Shapiro and Sinkinson 2011; Cagé 2019). The decline of local news has led to concerns about the nationalization of politics, political polarization, as well as a loss of local accountability (Darr, Hitt and Dunaway 2018; Martin and McCrain 2019; Moskowitz 2021). Despite (i) concerns about local news decline and (ii) evidence on the attitudinal effects of changing media landscapes, there is comparatively little evidence on whether changes in local news presence tangibly affect government policy.[1]

In this paper, I ask whether variance in the local informational environment – i.e. the presence of local newspapers – affects local fiscal policy decisions. In particular, I study what constituted one of the most salient challenges in recent decades – the Great Recession. I ask whether local news availability influences how local governments respond to revenue declines during and after the Great Recession. To answer this question, I compile a large-scale panel of fiscal policy decision for 2,193 large German municipalities, covering the all years between 2006-2019. My outcome is a critical dimension of fiscal responses to the economic crisis: business and property tax rates. By explaining variance in taxation, I examine an essential function of the government that has repercussions for state capacity, income redistribution, and inequality (Tilly 1982; North and Weingast 1989; Bates 2001; Alesina and Glaeser 2004).

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[1] For research on the relationship between media and policy outcomes, see e.g. Snyder and Strömberg (2010); Galletta and Ash (2019); Gao, Lee and Murphy (2020); Trussler (2022)

Theoretically, I argue that variance in local newspaper presence can affect crisis responses through (i) an accountability mechanism and (ii) changes in individual-level policy preferences. First, a greater media presence may make constituents better informed, thereby increasing monitoring of politicians (Snyder and Strömberg 2010; Gao, Lee and Murphy 2020). Through this accountability mechanism, a greater media presence may induce politicians to enact crisis responses that are closer to voter preferences (Ashworth 2012). As evidenced by an auxiliary analysis and additional data, a pure accountability mechanism would induce the governments to respond in a more procyclical manner – by reducing spending and by refraining from tax cuts for businesses. Second, a larger media presence may also affect perceptions of the crisis itself, thus altering policy preferences (Barnes and Hicks 2018; Bakaki, Böhmelt and Ward 2020). Given evidence that local newspapers frequently cover the repercussions of the crisis (see section 3), a greater media presence may lead to a heightened awareness of the adverse economic situation among constituents. Faced with coverage of the crisis, individuals may evaluate their own economic prospects more negatively (Boomgaarden et al. 2011). This may then lead to demands for policies that decrease the strain on the local economy, as individuals prefer a response that lowers their own economic risk. In addition to increasing accountability, the media may therefore serve as a "warning system" (Dreze and Sen 1990), inducing politicians to address the adverse economic effects of the crisis by cutting taxes to aid the struggling local economy.

To test my theoretical expectations, I assemble a new, fourteen-year panel of about 2,200 German municipalities and employ two identification strategies. In doing so, I bring together fine-grained data on fiscal policy outcomes, local newspaper coverage areas, perceptions of economic risk and individual preferences for fiscal policy. In a first step, I use a difference-in-differences design to estimate unconditional fiscal responses to crisis-induced declines in government revenue. I find that governments respond to revenue declines primarily by borrowing more, while also cutting spending. Most importantly, I find that, on average, more affected governments enact relative tax cuts for local businesses.

Based on a comprehensive data set on the coverage areas of all local newspapers in Germany, I then interact the crisis-induced revenue shock with a binary measure of local media presence. I find that the negative effect on business tax rates is largest in municipalities that are covered by a greater number of local newspapers. To bolster the validity of this finding, I employ an additional identification strategy that exploits plausibly exogenous variation in the number of local newspapers that stems from overlapping newspaper market coverage areas (for similar designs, see e.g. Ansolabehere, Snowberg and Snyder 2006; Snyder and Strömberg 2010), and find that my substantive conclusions remain unchanged.

My results are consistent with the second proposed mechanism. News reporting on the repercussions of the economic crisis induces economic anxiety, and therefore changes policy preferences – constituent increasingly demand policies that benefit the local economy. To provide evidence for the mechanism, I draw on a large-scale individual-level panel data set. I examine whether respondents in regions that were hit harder by the crisis are more likely to be concerned about both their personal and the general economic situation. I find that the crisis increased such concerns, particularly in regions where there is a greater presence of local outlets. Using additional cross-sectional survey data, I further demonstrate that the interaction between the Great Recession and a larger media presence predicts lower levels of debt aversion among constituents. I argue that this is consistent with a "warning system" mechanism – the media makes constituents more acutely aware of the repercussions of the crisis (Dreze and Sen 1990), increasing demands for policies that help the local economic base, even if this means taking on more debt.

I further discuss and test an alternative mechanism – elite position-taking. Politicians may use local newspapers to persuade constituents of the need to enact pro-business policies, particularly since local newspapers are viewed as most likely to affect local policy preferences (Amann, Dohle and Raß 2013). Through additional content data on 5,251 newspaper articles, I show that this unlikely to be the case. In section 6.4, I show that newspapers in more affected areas are not more likely to cover politicians' positions on local tax policy.

My study makes several contributions to the literature on media and politics, account-ability, preference formation, and the decline of local news (Gourevitch 1986). I demonstrate that the local media affects fiscal responses, holding constant the actual extent of the crisis. In line with prior work on the connections between media reporting and voter perceptions (Kayser and Leininger 2015; Barnes and Hicks 2018; Garz and Martin 2021), my findings emphasize that reporting on economic conditions may be more relevant for policy decisions than the underlying economic situation. Strikingly, I document a case where the media affects policy to a greater extent than government partisanship. As I discuss in section 6, the moderating effect of the local media on business tax cuts is more than twice as large as differences between left- and right-leaning municipal councils.

Further, my results suggest an unexpected link between individual perceptions of economic hardship and pro-business policies at the local level. A common finding in the literature on preference formation is that experiences of economic hardship shift voters' social policy preferences to the left (Alesina and Giuliano 2011; Margalit 2013; Ansell 2014). In particular, this means that voters prefer greater levels of redistribution and welfare spending. In contrast, I show that municipalities where perceptions of economic hardship are strongest tend to enact *pro-business* policies in the form of tax cuts. To explain this, I argue that in the absence of available social policy instruments, municipal governments can best address individual economic risk by strengthening the local economic base. In doing so, I highlight that the connection between crisis-induced preferences and policy outcomes can vary strongly between different levels of government.

Finally, my argument relates to a large literature on the effects of a declining presence of local media outlets (Mondak 1995; Gentzkow, Shapiro and Sinkinson 2011; Hayes and Lawless 2017; Cagé 2019; Martin and McCrain 2019). While the majority of studies on variance in local media presence has focused on repercussions for political attitudes as well as behavior, the link between local media and fiscal policy outcomes has received relatively less attention. To my knowledge, my study is the first to assess whether variance in local

media presence affects municipal fiscal responses to economic crises.

2   Theoretical Framework

Government responses to economic crises hinge on both (i) constituents knowledge about the repercussions of economic crises and (ii) constituents' ability to monitor policymakers, in particular through information about the actions of policymakers. I therefore argue that policy responses are inextricably linked to the local informational environment. Hence, I focus my argument on an institution that is often viewed as essential for democracy: the local press. A large body of research assesses how local media, or the lack thereof, affects political outcomes, such a turnout or polarization (see e.g. Gentzkow, Shapiro and Sinkinson 2011; Darr, Hitt and Dunaway 2018; Moskowitz 2021). A common assumption in this literature is that a lower presence of local media outlets results in diminished exposure to local news, including news on local politicians or economic conditions (Martin and McCrain 2019). Based on prior research, I expect that greater local media presence should (i) result in constituents that are better informed about the decisions of their elected representatives and (ii) are more exposed to reporting on local economic conditions. To formulate expectations about how local media moderates responsiveness to economic crises, I now consider these two points separately.

Regarding information on elected officials, local news may increase congruence between public preferences and political decisions, as proposed by, for example, Snyder and Strömberg (2010). If this is the case, responses to economic crises in regions with a greater local media presence should be more congruent with voter preferences. As an example, consider the scenario where voters are indeed strongly in favor of fiscal consolidation, but politicians are hesitant to raise taxes due to concerns about competitiveness. In this case, I would expect that relative tax increases after economic crises are more likely in regions where the local media presence is greater. However, the precise direction of this effect depends on voter

preferences.

In addition to providing information about officials, media reporting may also directly affect attitudes towards government policy (Barnes and Hicks 2018; Bakaki, Böhmelt and Ward 2020). I argue that greater exposure to the *local* economic repercussions of economic crises may lead individuals to be less supportive of higher business taxes. In response to reporting about economic crises, individuals may form more negative perceptions about both their own economic prospects, but also about the economic situation at the local level (Boomgaarden et al. 2011 provides evidence for this). This could then induce individuals to espouse policies that benefit rather than strain the local economy, and therefore reject higher taxes for businesses.

I argue that media-induced changes in policy preferences may then lead to changes in how governments respond to economic crises. In the framework of causal mediation, this can be expressed as follows: the effect of a greater local news presence on governments' crisis responses is transmitted through changes in public preferences – public preferences mediate the effect of local news outlets on crisis responses (Pearl 2014). In the German context, prior work confirms the assumption that local governments' policy choices track public preferences – I elaborate on this point in more detail in section A.1 of the SI. In sum, a greater local media presence not only provides citizens with information about political decisions, but may also draw attention to pressing economic matters. This, in turn, may shift policy preferences, resulting in changes in policy response to the crisis. As such, local news may serve as what Dreze and Sen (1990 p. 264) call a "warning system", putting pressure on politicians to address the negative repercussions of economic crises.

3 Institutional background

To analyze how local news presence affects fiscal responses to economic crises, I study the case of Germany during and after the Great Recession.[2] I draw on data from about 2,200 German municipalities between 2006–2019, which enjoy a relatively high level of fiscal autonomy. In particular, I focus on the critical areas of business and property taxes. To measure the structure of the local informational environment through data on the coverage areas of all German local newspapers. Below, I provide additional contextual information on both municipal finances and fiscal policy, as well as on the role of the local press.

3.1 Municipal finances

As the lowest level of government, German municipalities are tasked with providing a number of public goods and services. These include local transportation infrastructure, utilities, kindergartens and primary schools, cultural and sports facilities as well as certain social benefits for the unemployed and the poor (Foremny and Riedel 2014). While municipalities have to finance some social policy instruments[3], they cannot alter the specific amount of unemployment benefits or other transfer payments that are provided to beneficiaries (Bundesbank 2007). Redistributive policies are decided at higher levels of government, and municipalities can therefore not provide additional direct benefits to, for example, those who become unemployed due to the economic crisis.

Municipal revenue derives from two main sources – fiscal transfers from federal and state governments, as well as direct revenues from local business and property taxes. All major municipal finance decisions are made via majority votes in elected municipal councils. While

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[2]For the remainder of the paper, "the economic crisis" always refers to the Great Recession.

[3]As an example, a 2005 unemployment insurance reform shifted some costs of providing accommodations to unemployed individuals from the federal to the municipal level.

the administrative structure varies between states, elected mayors generally have little or no influence on municipal finance policy (Garmann 2017).

3.2 Business and property taxes

Local governments derive their revenue from two main sources, fiscal transfer from higher levels of government, as well as direct revenue from two local tax instruments. These are property and business taxes, of which business taxes constitute a relatively larger share of municipal incomes than property taxes – local business taxes account for about three-quarters of total local tax revenues (see also table 1). In my sample, combined local taxes account for about one-third of total municipal incomes.

Local business taxes are levied on firm profits and account for between 60%-70% of all taxes levied on firm profits (Fuest, Peichl and Siegloch 2018). Local business taxes only apply to profits derived from economic activity within the boundary of the municipality that levies the tax. For firms that are located in more than one municipality, profits are apportioned to each respective municipality based on payroll shares. Tax rates at the municipal level are set based on a national base rate (*Steuermesszahl*), which was 5% prior to 2008, and 3.5% afterwards.[4] Municipalities can then set a percentage multiplier on this base rate, which averaged 352% in 2007. The final tax rate is then the product of the base rate and the multiplier, which results in a rate of 17.6% in 2007 in my sample.[5]

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[4]While this base rate change coincides with the economic crisis, it does not vary across municipalities, since the base rate is set on the national level. Feasibly, the base rate change may have affected local tax rate decisions. However, this should not introduce bias into my empirical estimates, as the base rate change affected all municipalities equally, and does not correlate with either the revenue decline or media presence variables.

[5]Throughout the rest of the paper, I use the terms 'business tax rate' and 'business tax multiplier' interchangeably, since across–municipality variation in local business tax rates is determined entirely by the multipliers.

Local property taxes are similarly determined by a national base rate and a local multiplier, which is determined by municipal councils. Local property taxes consist of two components, *Grundsteuer A* and *Grundsteuer B*. The former only applies to agricultural properties, while the latter applies to all residential and commercial properties in a given municipality. Since the former is only a marginal component of the total property tax incidence (Asatryan, Baskaran and Heinemann 2017), I focus on the latter. National base rates for properties depend on housing types. All properties except for single-family and two-family properties are subject to a base rate of 0.35% of the assessed value, while the two aforementioned property types are subject to slightly lower base rates. Löffler and Siegloch (2018) estimate that the average base rate in West Germany is 0.32%. Given an average multiplier of 332%, the annual average property tax rate in my sample is about 1.06% of the assessed value of the property.

Local property taxes do not track property value increases. This is caused by strict assessment rules – assessed property values are based on land and building values in 1964, and therefore do not represent price increases after that year (Löffler and Siegloch 2018). Properties are assessed by federal states rather than municipalities, and reassessments are only conducted after 'significant changes' are made to a property – property sales do not lead to reassessments. As a result, Löffler and Siegloch (2018) estimate that assessed values were about 80% lower than actual property values in 2013.

Both property and business tax multipliers are decided by municipal councils, which are elected every four to six years, depending on the federal state. Both business and property tax multipliers can be changed every year, such that tax rates in year t are set in year $t-1$. Even if tax rates are kept constant, all municipalities have to conduct an annual vote on the issue of tax rate changes. Over the period between 2006–2019, about 80% of municipalities raised property tax multipliers at least once, while about 75% of municipalities raised business tax multipliers at least once. Multipliers for both taxes are increasing over time throughout the period covered by my sample, as I show in figures A.5 and A.6 in the

SI.

3.3   Local media presence

The core question of my paper is whether government responses to the crisis are structured by the local media landscape. Although the relative importance of local newspapers has declined over time (Vogel 2014), local newspapers remain a key source of information about local politics. In general, the German media landscape is characterized by relatively high levels of newspaper circulation, strong professionalization among journalists and the early development of mass-circulation outlets (Hallin and Mancini 2004).

Local newspapers in particular remain a trusted and widely-used source of information. In 2011, local newspapers reached about 55.8% of all German adults (Bundesverband Deutscher Zeitungsverleger 2011; Vogel 2014). Local newspapers are generally considered to be one of the most reputable types of media – in a representative survey from 2018, local newspapers are viewed as more trustworthy than either national outlets or public television news. In the same survey, respondents report that local news about their region is the main reason for subscribing to local newspapers, edging out national and international news (Nic et al. 2018 p. 81). Accordingly, local newspapers form what Leupold, Klinger and Jarren (2018 p.960) term the "informational backbone of what people know about social life in their city".

In my theoretical argument, I focus on two aspects of local reporting – coverage of local politics and local economic conditions. Local newspapers frequently cover issues related to economic conditions and the labor market. I use additional data from the German Longitudinal Election Study (GLES, see also Roßteutscher et al. 2017) to show this. Between 2010–2013, the GLES included a large-scale content analysis of 14 German local newspapers. Based on data, I find that about one in five articles dealt with either the economic situation or the labor market between 2010–2012, with this number dropping to about one in ten in

2013.[6] The fact that economic coverage decreased as the economy recovered suggests that economic reporting after 2008 mainly focused on the repercussions of the crisis.

In addition to reporting on local economic conditions more, local outlets provide citizens with information on the actions of their elected officials. Prior research suggests that local politicians are acutely aware of the fact that local newspapers inform citizens about policy decisions. Based on a survey of local politicians, Amann, Dohle and Raß (2013) find that local politicians rate local newspapers as the medium most likely to affect public perceptions about local politics. In a related survey of local politicians, 90% of respondents rate local newspapers as 'relevant' or 'highly relevant" for their work (Fawzi, Baugut and Reinemann 2018). In addition, 85% of surveyed local politicians report that they make statements in local outlets "to increase the transparency of the political process" (p. 36). Taken together, prior evidence, therefore, suggests that (i) local newspapers frequently report on the actions of local politicians and (ii) local politicians recognize that local newspapers provide information about local politics to citizens.

4   Data

I combine data from different sources to construct an annual panel of about 2,200 municipalities in West Germany, covering all years between 2006–2019. This data includes information on municipal revenues, spending, taxation, voting behavior, and local media presence. Given frequent changes of administrative boundaries and municipality mergers in East Germany during this time period, I do not use East German data. This decision is in line with a number of rigorous prior studies using similar municipal data, such as Fuest, Peichl and Siegloch (2018) or Löffler and Siegloch (2018). In addition, I also exclude the city-states of Bremen, Hamburg, and Berlin. Since municipal finance data is available primarily for municipalities with more than 5,000 inhabitants, my final sample comprises about 2,200 municipalities or

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[6]For more information, see the discussion in section A.2.3 in the SI.

about 25% of all West German municipalities. In sum, these municipalities had about 50.5 million inhabitants in 2007, which translates to about 75% of the West German population at the time.

My research design requires that I define appropriate indicators for (i) the local extent of the Great Recession and (ii) local media presence. In the following, I first discuss the municipal finance data, and then describe how I define the two indicators.

4.1   Municipal panel data

To measure municipal taxation, spending, revenue, and debt, I draw on data collected by the Bertelsmann Foundation. Specifically, I use data from the *Wegweiser Kommune* ("municipality guide", see also https://www.wegweiser-kommune.de/) project, which collects and combines data on municipal finances from a multitude of sources, such as state statistical offices and private data providers. The Bertelsmann Foundation does not collect data on all municipalities, but rather only on municipalities with more than 5,000 inhabitants. I focus on four fundamental measures of municipal finances: property and business taxes, municipal revenues, spending, and new debt.[7] Following Fuest, Peichl and Siegloch (2018), I add two control variables from the Federal Statistical Office, which are both measured on the county level: unemployment rates and GDP/capita, which I observe annually.

To measure how strongly municipalities are affected by the Great Recession, I use year-on-year declines in municipal revenues. Based the per-capita revenue measure from the Bertelsmann data, I first calculate the relative per-capita revenue decline between 2008 and 2009, and then dichotomize this variable through a mean split. Formally, the relative revenue decline is defined as $\Delta r_i = (r_{i2009} - r_{i2008})/r_{i2008}$ for per-capita revenues r_{it} in municipality i in year t. As I discuss in more detail in section A.3, these revenue declines primarily stem

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[7]More specifically, I use data on liquidity loans or *Liquiditätskredite*, which are the main form of borrowing that municipalities use to remedy short-term budget shortfalls.

from reduced tax income from local businesses. Accordingly, more affected municipalities experience larger increases in both long- and short-term unemployment rates than less affected municipalities (see section A.3 for evidence on this point). The revenue decline variable discussed above therefore measures a shock to the local economy, which is accompanied by rising unemployment and a drop in firm profits.

While the Great Recession began already in 2008, the 2008–2009 revenue change is the most sensible way to code the crisis shock indicator. The reasons for this are as follows: first, the crisis reached its climax in late 2008, which means that the repercussions likely became most apparent in 2009. I provide additional evidence for this in figure A.2, where I show that year-on-year revenue declines were most pronounced between 2008-2009. As is shown in table 1, the median municipality experiences are revenue decline of 5.65% between 2008 and 2009. In total, about 70% of municipalities in my sample experienced some revenue decline after the crisis (see also figure A.3). Second, this definition implies that the first post-treatment period is 2010. As discussed in section 3, municipal fiscal and tax outcomes observed in year t are usually based on decisions made in the previous year. Given that the revenue effects of the crisis became most apparent in 2009 and given the one-year lag in policy decisions, it makes sense to consider 2010 to be the first year in which fiscal and tax responses would take effect.

4.2   Local newspaper coverage data

To measure local media presence, I rely on comprehensive data on the coverage area of all local newspapers in Germany in 2011.[8] I source this proprietary data set from the market research firm *Zeitungsmarktfoschung Gesellschaft* (ZMG, see also https://www.zmg.de/ for

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[8]I note that the coverage data was measured shortly after the economic crisis. It could therefore be subject to post-treatment bias if the crisis shock led to large-scale newspaper closures. However, I argue that this is likely negligible, as the number of newspapers in Germany decreased by only about 1% between 2007 and 2011 (*Tageszeitungen - Deutschland 2018* 2018).

more information). ZMG is owned by the "Federation of German Newspaper Publishers" (BdZV), which is the trade organization of German newspaper publishers. To my knowledge, this data set contains the most accurate information on newspaper coverage areas, since it (i) stems directly from the newspaper trade organization and (ii) is normally employed for purposes of targeted advertising, which requires high standards of data reliability. This data allows me to measure the number of local newspapers that cover a given municipality. As shown in table 1, the median municipality is covered by two newspapers – there are no municipalities where there are no local newspapers at all.

Table 1: Summary statistics

Variable	Mean	Median	SD	Min	Max	N
Background characteristics						
Population (1000s)	23.22	11.58	55.68	3.87	1302.07	2,177
Population density	432.74	266.55	450.23	29.80	4181.15	2,177
Unemployment rate	6.77	6.19	2.36	2.42	18.22	2,177
GDP/capita (1000s)	28.32	25.83	9.75	14.71	87.55	2,177
Voting						
Turnout	68.47	69.81	7.23	48.45	84.62	2,207
CDU/CSU vote share	37.67	36.29	7.31	19.32	66.29	2,207
Fiscal measures						
Revenue / capita	1382.93	1278.00	511.24	168.00	10582.00	2,208
Spending / capita	1145.81	1071.00	381.28	116.00	5577.00	2,208
Liquidity loans / capita	121.68	0.00	376.36	0.00	4990.00	2,208
Property tax / capita	105.54	103.00	30.44	0.00	326.00	2,208
Business tax / capita	337.73	250.00	404.29	0.00	7467.00	2,208
Property tax multiplier	332.13	330.00	57.17	140.00	600.00	2,164
Business tax multiplier	352.56	340.00	40.02	240.00	490.00	2,177
Revenue change due to crisis (%)	-6.05	-5.65	15.53	-91.34	130.65	2,208

Notes: The table presents summary statistics for the municipalities that constitute the sample used for all main results. The sample is West German municipalities for which there is municipal finance data available, which is a total of 2,193 municipalities. The quantities presented in this table are all measured in 2007, except for the voting outcomes (measured for the 2009 federal election) and the number of local outlets (measured in 2011). All variables are measured at the municipality level, except for unemployment rates and GDP/capita, which are measured at the county level.

4.3 Individual-level data on economic anxiety and policy preferences

To assess attitudinal mechanisms, I employ two data sets. First, I use panel data from the German Socio-Economic Panel Survey (SOEP, see also Liebig et al. 2021). The SOEP is a large-scale annual panel survey that covers the same time period (2006–2019) as my main municipal data. It primarily focuses on demographic and economic indicators. I use the SOEP survey to obtain data on individual perceptions about the economy, both before and after the crisis. In particular, I measure (i) how respondents evaluate the economy in general and (ii) how they assess their own economic situation. I provide more details on these two items in section A.6 in the SI. Since the SOEP contains information on the municipalities that respondents reside in, I can link it to both the municipal and the newspaper coverage data.

To measure fiscal policy preferences, I rely on a cross-sectional survey data that was collected in 2019/20 by the survey company *CIVEY*. The survey asked respondents whether they support using government surpluses to reduce public debts, rather than to invest or cut taxes. I use this survey item as an indicator for preferences for an expansionary fiscal policy, as it measures respondents' preferences for debt reductions as opposed to tax cuts. I provide more information on the data and the survey item in section A.9 in the SI.

5 Empirical Strategy

I employ a longitudinal analysis, in which I assess whether government responses to crisis-induced revenue shocks are affected by local newspaper presence. To identify the effect of local media on crisis responses, I rely on a difference-in-difference specification, as well as an additional identification strategy that utilizes overlapping newspaper coverage areas to

gain exogenous variation in newspaper presence. My main results stem from an interaction specification, in which I interact the effect of the local-level crisis shock on tax policy with an indicator for local media presence.

In a first step, I assess *unconditional* government responses to the Great Recession. This means that I estimate whether government spending, debt, and taxation change after municipalities experience revenue shocks brought on by the Great Recession, independent of local newspaper presence. Since I have annual panel data, I rely on a standard difference-in-differences model of the following form:

$$Y_{ijt} = \mu_i + \delta_{jt} + \tau(\text{Post}_{it} \times T_i) + \varepsilon_{ijt} \tag{1}$$

Here, Y_{ijt} is a given fiscal policy outcome, measured for municipality i in year t and state j. The indicator variable T_i is equal to one if a municipality experiences revenue loss between 2008 and 2009 that are greater than the average revenue loss across all municipalities.[9] In the results section, I also present results using the continuous measure of relative revenue decline rather than the binary measure. However, I prefer the binary measure, since (i) it is not subject to large outliers and (ii) it results in fewer assumptions about the functional form of the relationship between government responses and the crisis. In all specifications, I always include municipality fixed effects, as well as year*state fixed effects. In addition, I also present additional results where I include two time-varying covariates, county-level GDP/capita and unemployment rates. The key assumption behind the difference-in-differences design is that, in the absence of the crisis-induced revenue decline, outcomes in treated and control municipalities would have evolved in parallel. In section 6, I provide evidence that trends in business and property taxes evolve in parallel prior to the crisis.

The crisis-induced revenue shock is correlated with a number of municipality charac-

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[9]Formally the relative revenue loss is defined as $\Delta r_i = (r_{i2009} - r_{i2008})/r_{i2008}$ for per-capita revenues r_{it} in municipality i in year t. Then, the indicator variable $T_i = 1$ if $\Delta r_i < \overline{\Delta r_i}$. Additional information on Δr_i is given in table 1, where it is listed as "Revenue change due to crisis".

teristics, as I show in figure A.4 in the appendix. On average, revenue losses are greater in municipalities that are wealthier, where local governments spend more money, where unemployment is lower, and population densities are higher. Such level differences are in itself not an issue for my difference-in-differences design, since the design only requires that *changes* in the outcome would evolve in parallel in the absence of the revenue decline. In addition, observed pre-crisis differences are relatively small, and never exceed ~0.2 standard deviations.

The main results of this paper derive from an interaction specification. Through this specification, I examine whether responses to the crisis, particularly with response to business taxes, differ when there is a greater local media presence. To facilitate this, I interact the media presence indicator M_i with the $\text{Post}_{it} \times T_i$ term, which results in the following specification:

$$Y_{ijt} = \mu_i + \delta_{jt} + \tau(\text{Post}_{it} \times T_i) + \gamma(\text{Post}_{it} \times M_i) + \lambda(\text{Post}_{it} \times T_i \times M_i) + \varepsilon_{ijt} \qquad (2)$$

Accordingly, the parameter of interest is λ, which measures how the effect of the crisis is mediated by a greater local media presence. The variable M_i is defined similarly as T_i – it is equal to one if the number of available local newspapers in a given municipality is larger than the mean number of newspapers in all municipalities. In additional specifications, I demonstrate that the results are comparable when I instead use the number of available local newspapers, rather than the binary indicator. As is standard, I also include the $\text{Post}_{it} \times M_i$ interaction. The constituent terms M_i, T_i and Post_{it} are perfectly correlated with the municipality and times fixed effects, and are therefore not included in the specification.

While I cannot directly measure newspaper readership, the number of outlets is a proxy for news consumption. Based on the ZMG data, per-capita local newspaper circulation is about 0.4 standard deviations higher in municipalities for which $M_i = 1$, i.e. where there are an above-average number of local outlets. An additional advantage of using the number

of outlets rather than readership figures is that problems of endogeneity are likely harder to address for readership figures. As I discuss in section 5.1, using the number of outlets enables me to employ an additional identification strategy to decrease the likelihood that the moderator is correlated with potentially unobserved municipal characteristics.

5.1   Overlapping markets design

While the difference-in-differences strategy can account for unmeasured confounding that is constant over time, the interaction specification is more susceptible to differences between municipalities with a larger or smaller local media presence. To address the fact that local media presence likely correlates with other factors, I present additional results that utilize plausibly exogenous variation in media presence that stems from overlapping newspaper coverage areas, and is thus less vulnerable to confounding. This design is very similar to the one implemented in Hilbig and Riaz (2021), and is partially based on similar empirical designs in, for example, Ansolabehere, Snowberg and Snyder (2006) or Snyder and Strömberg (2010).

In essence, I compare municipalities that are similar with respect to a variety of observable characteristics and are situated in regions where the coverage regions of two or more newspapers overlap. As an example, I compare a municipality that is covered by newspapers A and B with a neighboring municipality that is covered by newspapers A, B, and C – this scenario is visualized in figure 1. The boundary of the coverage area of newspaper C intersects with the coverage area of newspapers A and B. As a result, municipalities in the vicinity of the boundary of newspaper C's coverage area are covered by one additional outlet if they fall just within newspaper C's coverage area. In this setting, the key identification assumption is that the greater media presence in the municipality that is covered by A, B, and C is as good as randomly assigned close to the boundary of the coverage area of newspaper C. I provide more details on the veracity of this assumption, as well as on the

Figure 1: Visualization of the overlapping markets design
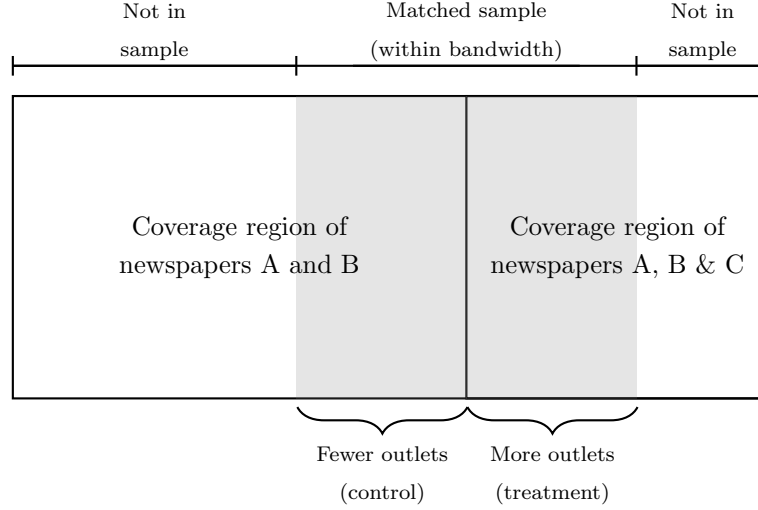
Notes: The figure visualizes the overlapping markets strategy. The rectangles represent newspaper coverage areas. The shaded areas represent the matched sample, i.e. the region surrounding the boundary of the coverage area of newspaper C, which is denoted by the solid vertical line. I note that this figure appears also in Hilbig and Riaz (2021), which uses the same empirical strategy.

implementation of the overlapping markets design in section A.5 in the SI. Here, I discuss (i) the precise geographic matching algorithm (ii) balance before and after matching and (iii) the determinants of newspaper coverage areas.

6   Results

To recap, my empirical strategy proceeds in two steps. I first assess unconditional fiscal responses to crisis-induced revenue declines. My main results follow in the next step, in which I present results on whether these responses differ according to local newspaper presence.

In table 2, I present the first set of results. In municipalities that are more affected by the crisis, I observe a significant decline in overall spending. In addition, there is a concurrent increase in debts of similar magnitude (however, this effect is not precisely estimated). Regarding tax responses, I find that business taxes decrease in affected municipalities, while I do not observe significant changes in property taxes. In supplementary specifications in

Table 2: Fiscal and tax responses to revenue declines

	Spending per capita	Liquidity loans per capita	Business tax multiplier	Property tax multiplier
Crisis shock * post	−0.028*	0.049	−0.075***	−0.024
	(0.015)	(0.035)	(0.023)	(0.022)
State*year FE	Yes	Yes	Yes	Yes
Covariates	Yes	Yes	Yes	Yes
N	28,131	28,132	28,132	28,132
R^2	0.897	0.712	0.871	0.867

Notes: The table presents estimates from the base specification. The crisis shock indicator is equal to one if the percentage decline in government revenues between 2008 and 2009 is greater than the average decline in revenues across all municipalities. All outcomes are standardized. The sample includes all years between 2006 and 2019. Standard errors clustered at the municipality level are given in parentheses. ***$p < .01$; **$p < .05$; *$p < .1$

figure A.17 in the SI, I further show that these effects do not vary with the partisan composition of local councils. Municipal councils dominated by right-wing parties are not more likely to lower business taxes or curtail spending than councils where left-wing parties are stronger.

I now turn to my main specification, in which I interact the crisis-induced revenue decline with the indicator for a larger local media presence. In doing so, present evidence based on the specification described in equation 2. In addition, I also present evidence from the overlapping markets strategy, which I employ to ensure that potential heterogeneity is not an artifact of unmeasured confounding. In figure 2, I show that the revenue shock has a larger negative effect on business tax rates in municipalities where there is a greater local media presence. In an additional specification (see section 6.5), I show that this result also holds when I use the number of available local newspapers instead of the binary indicator.Local governments in municipalities that are strongly affected by the crisis are less likely to raise business tax rates when their municipality is covered by a larger number of newspapers.

Through the overlapping markets design described in section 5.1, I verify that this result does not stem from other factors that correlate with local newspaper presence. In the

Figure 2: Effect of revenue shock on business taxes conditional on local media presence

Notes: The figure presents estimates from the interaction specification described in section 5. The crisis shock indicator is equal to one if the percentage decline in government revenues between 2008 and 2009 is greater than the average decline in revenues across all municipalities. I interact this variable with an indicator that is equal to one if a given municipality is covered by more newspapers than the average municipality. The sample includes all years between 2006 and 2019. The left-hand side panel shows results from the base specification. The right-hand side panel is based on the overlapping market designs, where I exploit variation in the number of newspapers that stems from the intersection of overlapping newspaper coverage areas. Standard errors are clustered at the municipality level.

second panel of figure 2, I find similar effects when I limit the sample to municipalities that are geographically close and similar with respect to a number of covariates. In this sample, variance in media presence stems primarily from the fact that some municipalities are just inside the coverage areas of a given newspaper, which results in a greater local media presence than in the case of neighboring municipalities just outside the coverage area. While this leads to a much smaller sample, my main conclusions remain unchanged – a greater newspaper presence leads to larger tax cuts for local businesses.

Finally, I utilize the fact that I have annual data to estimate dynamic treatment effects.[10]

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[10]The specification used for this analysis is

$$Y_{ijt} = \mu_i + \delta_{jt} + \sum_{k=-4}^{9} \beta_k \big(T_j \times \mathbf{1}_{t=k}\big) + \varepsilon_{ijt}$$

Figure 3: Effect of revenue shock on business taxes over time, conditional on local media presence
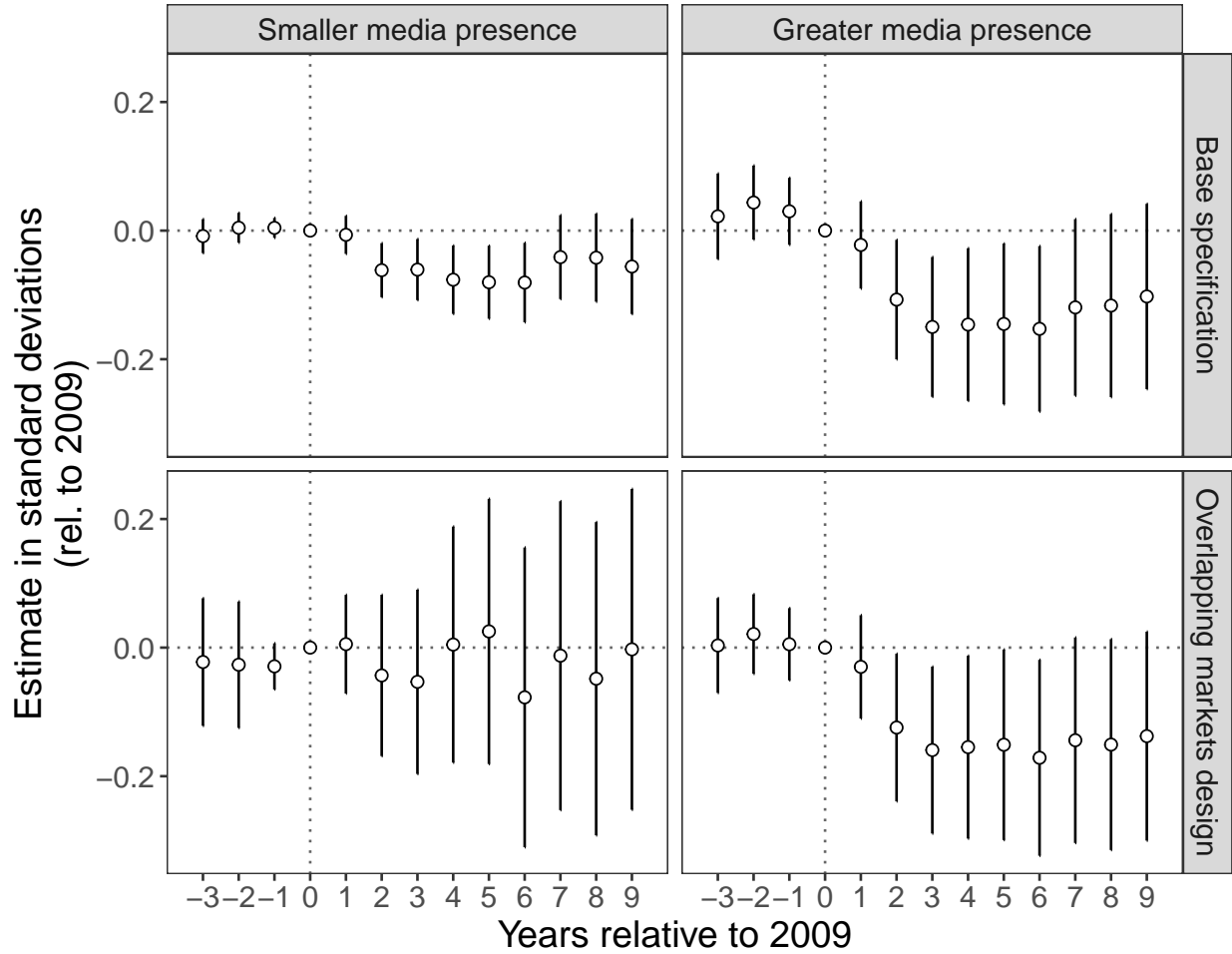
Notes: The figure contains lags and leads estimates of the effect of the 2008 revenue shock on business tax multipliers. The outcome is standardized. The crisis shock indicator is equal to one if the percentage decline in government revenues between 2008 and 2009 is greater than the average decline in revenues across all municipalities. The sample includes all years between 2006 and 2019. Coefficients are differences relative to 2009. For raw trends, see figure A.7 in the appendix.

In figure 3, I estimate the effect of the revenue shock, separately for municipalities with a smaller and larger presence of local media outlets. The results confirm what I find in figure 2 – business tax cuts are larger in municipalities that are covered by a greater number of local newspapers. Again, this result holds both for the base sample and for the sample that

where β_k is the difference-in-differences estimate relative to 2009, which is omitted. For the definition of the other terms in the specification, see section 5.

derives from the overlapping market design. Further, I observe that this effect persist until 2019, which is the last year in my sample. This means that business tax rates in areas with a greater media presence remain persistently lower than in areas with a smaller media presence. Finally, the results from this specification provide evidence for the veracity of the parallel trends assumption. Independent of the local media presence, I never observe evidence for diverging trends prior to the crisis when comparing municipalities in which revenue declines are larger or smaller.

6.1   Mechanism: economic anxiety and fiscal policy preferences

To test my theoretical expectations, I now examine how the crisis shock affects individual attitudes about (i) economic risk and (ii) fiscal policy preferences. In figure 4, I show that the crisis increases worries about the economic situation among constituents, both for their assessments of the general economic situation and their own economic prospects. Importantly, this is only the case for individuals in areas where there is a greater local media presence, where there is more exposure to news about the crisis.

In addition to perceptions of economic risk, I present suggestive evidence that the crisis shock led to more counter-cyclical preferences among constituents. In doing so, I rely on cross-sectional data from a survey conducted in 2019/20, which asked respondents whether they support using government surpluses to reduce public debts. In the table 3, I show that exposure to the crisis is associated with lower support for debt reduction. Through an inter-action model, I then demonstrate that this negative effect on preferences for debt reduction is most pronounced in regions with a larger local media presence. Exposure to information about adverse shocks can have downstream consequences for fiscal policy preferences, as my evidence suggests that constituents become more willing to indulge government debts.

These results are consistent with a mechanism whereby greater exposure to reporting about the repercussions of the crisis induces individuals to evaluate the economic situation

Figure 4: Effect of revenue shock on individual-level attitudes, conditional on local media presence

Notes: The figure presents estimates from the interaction specification described in section 5. The crisis shock indicator is equal to one if the percentage decline in government revenues between 2008 and 2009 is greater than the average decline in revenues across all municipalities. I interact this variable with an indicator that is equal to one if a given municipality is covered by more newspapers than the average municipality. The sample includes all years between 2006 and 2019. The outcomes are (i) whether individuals are more concerned about the general economic situation and (ii) whether they are more concerned about their own economic situation. For the survey items, see section A.6 in the SI. Additional information on the results is given in table A.6 in the SI. Standard errors are clustered at the municipality level.

more negatively. This, in turn, may then lead individuals to demand policies that help the struggling local economy, such as lower business tax rates, even if such policies mean taking on more debt.[11]

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[11]Regarding perceptions of the local economy, I note that about two-thirds of the total employment in Germany is in small or mid-sized enterprises (Eurostat 2021). Therefore, my results should be viewed as indicative that constituents may demand actions to assist smaller enterprises that make up the local economic base, rather than large, multinational companies.

Table 3: Cross-sectional evidence on debt preferences using survey data

	DV: Preferences for debt reduction			
Crisis shock	−0.007	−0.007	0.0004	0.002
	(0.005)	(0.005)	(0.006)	(0.005)
Crisis shock * greater media presence			−0.032**	−0.038***
			(0.013)	(0.013)
Mean of DV	0.23	0.23	0.23	0.23
SD of DV	0.238	0.238	0.238	0.238
Main effect in SD	-0.03	-0.028	0.002	0.008
Interaction effect in SD			-0.134	-0.16
State FE	No	Yes	No	Yes
Covars	No	Yes	No	Yes
N	8854	8854	8854	8854
R^2	0.0002	0.007	0.001	0.008

Notes: The table presents estimates for preferences for debt reduction. The outcome is a survey item that asks whether respondents support using surpluses to lower government debts. The specification is cross-sectional, and is based on 2019/20 survey data. The crisis shock indicator is equal to one if the percentage decline in government revenues between 2008 and 2009 is greater than the average decline in revenues across all municipalities. I interact this variable with an indicator that is equal to one if a given municipality is covered by more newspapers than the average municipality. I additionally include state fixed effects and controls for GDP/capita, unemployment rates and party ID. Standard errors clustered at the municipality level are given in parentheses. I provide more details on this analysis in section A.9 in the SI. ***$p < .01$; **$p < .05$; *$p < .1$

6.2 Partisan differences & electoral incentives

Before moving on, I discuss additional results on whether crisis responses differ with (i) the partisan composition of local councils and (ii) electoral competitiveness.[12] Regarding the partisan composition of local councils, I find no evidence that partisan differences matter strongly for how local governments respond (see figure A.17 in the SI). For business taxes, property taxes and spending, the differences between left- and right-wing councils is not significantly different from zero. The only outcome for which I observe differences is municipal borrowing. Here, I find that right-leaning councils tend to respond to the revenue shock with larger amounts of new debt than left-leaning councils. In figure A.18, I explore whether

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[12]I provide more details on this analysis in sections A.8.3 and A.8.4 in the SI.

electoral competitiveness effects fiscal responses to the crisis-induced revenue loss. I find relatively pronounced moderation effects: in municipalities where council elections are not competitive, business tax cuts are larger, municipal governments borrow more. One possible explanation is that a secure electoral position allows municipal governments to enact a set of relatively more unpopular policies, such as taking on more debt while cutting taxes for businesses.

6.3   Assessing the accountability mechanism

Do my results constitute evidence for increased accountability through newspaper presence? The second set of result in the previous section – pronounced effect heterogeneity for more competitive municipalities – sheds light on the relationship between news coverage and accountability. Electoral closeness should induce governments to enact policies that are more in line with constituent preferences. Consequently, if newspaper presence mainly serves to increase accountability, the interaction results presented in figures 2 and 3 should be similar to the ones that derive from the electoral closeness measure. However, this is not the case. If anything, media presence and electoral closeness have opposite effects. The former induces relatively higher tax rates for local businesses, while the latter induces higher tax rates. Consequently, the comparison of the electoral closeness results (see figure A.18) with the media presence results (figure 2) suggests that the effect of local newspapers does not operate primarily by making politicians more accountable to voters. This conclusion is also consistent with evidence for the second proposed mechanism – preference changes due to increased media presence (see the discussion in section 6.1). Importantly, my results do not completely exclude the possibility that local newspapers lead to increased political accountability. However, I argue that my evidence is most consistent with a mechanism whereby the effect of local news reporting on crisis responses is transmitted through changes in constituents' preferences.

6.4 Alternative explanation – elite position-taking

In addition to main mechanism discussed in section 6.1, a larger local media presence may allow politicians to move public preferences towards a pro-business response. Prior research suggests that congruence between preferences and policy may not stem from electoral accountability, but rather from a mechanism where citizens adopt the policy positions of politicians (Schattschneider 1975; Lenz 2009; Broockman and Butler 2017). As discussed in section 3, local politicians in Germany view local news as the medium that is most likely to affect public perceptions (Amann, Dohle and Raß 2013). In contexts where the local media is more prominent, local politicians may have more opportunities to persuade citizens that pro-business policies rather than consolidation are the best repose to the economic crisis. An observable implication of this mechanism is that, in areas that are more affected by the crisis, there are more newspaper articles that mention both local business tax and local politicians.

To assess this mechanism, I draw on additional data on how newspaper cover local business taxes. I obtain this data from *Nexis Uni*, a service that allows users to conduct keyword searches in the archived of several large German local newspapers. Based on this data, I use a similar a difference-in-differences specification to establish two results, which I discuss in more detail in section A.11 in the SI. First, in areas with larger revenue shocks, newspaper become more likely to report on business taxes. This result is consistent with the fact that revenue shocks primarily stem from declines in business tax rates – business taxes likely receive more media attention in municipalities with larger revenue declines. However, I do not find evidence that there is a larger growth in articles that mention both local tax rates and local politicians. Put differently, my evidence does not support a mechanism whereby politicians use local newspapers to persuade constituents to support tax reductions for local businesses.

6.5 Robustness

In addition to the main results, I conduct four robustness checks.

First, I provide evidence for parallel trends prior to the Great Recession. Since my empirical strategy relies on a difference-in-differences design, I have to assume that trends between municipalities that were more or less strongly affected by the crisis would be parallel in the absence of the crisis. I provide several pieces of evidence towards this. In figure A.14 in the SI, I show that for both business and property taxes, there is no evidence for diverging trends prior to the crisis. I extend this evidence with pre-crisis data on tax rates that goes back until 1992 in figure A.15. Here, I again find no evidence for diverging trends for all years between 1992 and 2008. Further, I show that there is similarly no evidence for diverging pre-crisis trends when splitting the sample into areas with greater or smaller media presence, as shown in figure 3. Finally, the results presented in figures A.10 and A.11 show that, in addition to parallel pre-crisis trends in tax rates, there is also no evidence for diverging trends in local-level unemployment rates prior to the crisis. In sum, I observe that diverging trends after the crisis are unlikely to be an issue in my case.

Second, I rely on the overlapping markets design described in section 5.1 to address potentially unobserved confounders that correlate with my measure of local media presence. As discussed in section 5.1 and shown in figure A.13, this design greatly improves balance on observables between municipalities with greater or smaller media presence. In figure 2 (right-hand side panel), table A.4 (final two models) and table A.5, I show that the results in the overlapping markets sample are similar to the interaction results that I obtain from the full sample. If anything, the interaction results in the overlapping markets sample lead to stronger results, although I do not want to over-interpret this evidence.

Third, I present additional evidence that the findings from the overlapping markets design are not sensitive to the choice of the maximum allowed distance between matched munici-

palities. In figure A.16 in the SI, I show that the interaction results shown in figure 2 are stable across alternative distance calipers.

Fourth, I assess whether the main results presented in figure 2 are robust to an alternative definition of the local media presence measure. Instead of the binary media presence indicator described in section 5, I use the number of local newspapers, which ranges from one to eight. In present the results in table A.5 in the SI, and find similar results as in the main specification – the negative effect on business tax rates is stronger as the number of available outlets grows. In a last step, I also re-run these specifications with the logarithm of the number of local newspapers. The reason for this is that the effect of one additional local newspaper likely declines as the number of available outlets grows.[13] Using the logarithm of the number of local outlets allows me to incorporate a non-linear relationship. In the final two models in table A.5, I again find results that are consistent with the main finding. What is more, I find that the logarithm of the number of local outlets results in a more precisely estimated interaction effects, suggesting that the relationship between local media presence and crisis responses is non-linear.

7 Discussion

How does local media shape policy responses to economic crises? In this paper, I provide new causal evidence on how local media can shape public preferences and have downstream effects on fiscal policy. To do so, I rely on a newly assembled fourteen-year panel of 2,193 German municipalities and two identification strategies. I show that (i) municipalities that are more exposed to the Great Recession enact relative business tax cuts, and (ii) these tax cuts are most pronounced in municipalities where the local media presence is larger. Through a series of robustness checks, I demonstrate that these results are unlikely to be driven by

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[13]Put differently, moving from one to two outlets likely has a larger effect than moving from three to four.

differential trends or by unobserved differences that correlate with local media presence. Further, I present additional evidence to show that a potential alternative mechanism – elite position-taking – cannot explain these findings.

My results highlight the crucial role of the local media for tax policy decisions. I propose that a larger local media presence exposes constituents to more information about the negative repercussions of the crisis. As a result, constituents experience heightened perceptions of economic risk, and politicians respond by enacting larger relative business tax cuts to aid the struggling local economy. To substantiate this argument, I provide evidence from a large-scale individual panel survey, where I analyze respondents' concerns about the economic situation. In doing so, I show that the crisis shock has a particularly strong positive effect on both individual and general economic concerns in municipalities that are covered by a larger number of outlets. Finally, I rely on cross-sectional survey data to show that a larger media presence is associated a greater willingness to take on new debt in areas hit harder by the crisis – voters are more willing to support increased government borrowing, which follows from lowering taxes for businesses. In sum, my results suggest that the media can make voters more acutely aware of the negative consequences of the crisis. In turn, voters change their preferences regarding appropriate policy responses, resulting in pro-business policy responses.

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A Supporting information

Contents

## A.1 Evidence on government responsiveness to public preferences

My argument assumes that local fiscal policy is a function of public preferences. While I do not provide direct evidence on this, prior work in the German context has demonstrated that elections induce congruence between preferences and policy. Geys, Heinemann and Kalb (2010) use data from German municipalities to show that greater voter turnout and the presence of organized voter interest organization increases the efficiency of local governments, which the authors measure through cost effectiveness. The authors conclude that voter involvement improves government performance, as more involved voters are more likely to electorally punish politicians for sub-optimal governance.

In addition to voter involvement, two related papers assess electoral cycles in local policy decisions. Foremny and Riedel (2014) show that local governments are less likely to increase business taxes right before an election. Similar to the argument made by Geys, Heinemann and Kalb (2010), Foremny and Riedel (2014) claim that politicians do not increase business tax rates to signal that they can provide the same level of public goods in a more cost-effective manner, which is in line with voter preferences. Relying on a similar design, Garmann (2017) shows that local governments issue more buildings licenses in election years, which is another indicator of government performance.

Finally, I present original results that suggest that electoral incentives change policy outcomes. More specifically, I interact the crisis shock indicator with a measure of electoral closeness. I present the results in table A.18, where I show that that policy responses to the crisis shock are substantively different in municipalities where elections are closer. If policy outcomes were completely detached from local preferences, we would not expect that electoral closeness affects how governments respond to the crisis. Since we do observe that electoral incentives matter, I conclude that there is a link between public preferences and government policy.
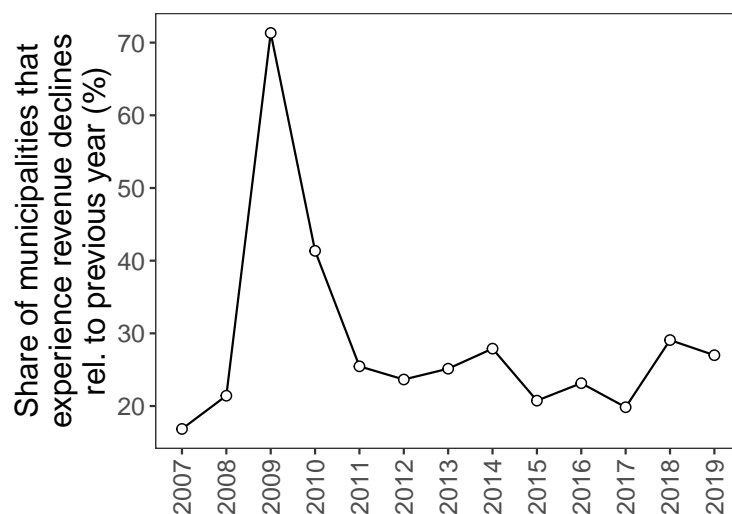
A.2 Additional descriptive information

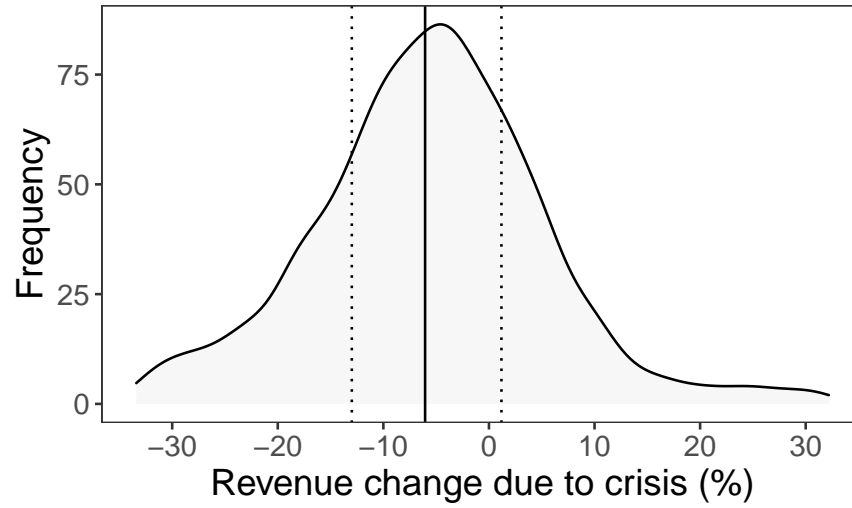Figure A.1: Distribution of municipality population
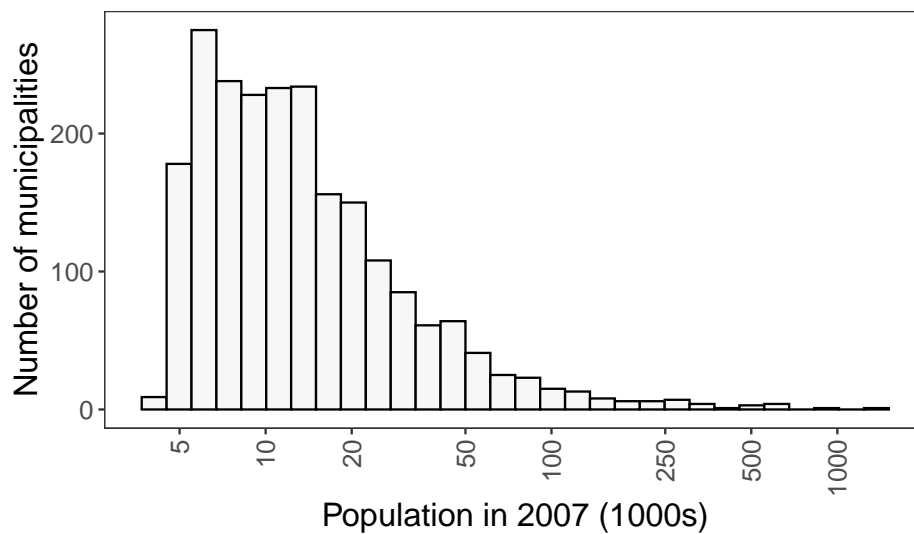
Note: The figure shows the distribution of the population (in 1000s) of all municipalities in the sample, measured in 2007. The x-axis is on a log scale.

Figure A.2: Share of municipalities that experience revenue declines per year

Note: The figure shows the percentage share of municipalities in a given year that experiences revenue declines relative to the previous year.

Figure A.3: Distribution of relative municipal revenue changes between 2008–2009

Note: The figure shows the distribution of percentage changes in municipal revenues between 2008–2009. Negative values mean that a given municipality has lost per-capita revenue in 2009 relative to 2008. The solid vertical line is the mean while the dotted vertical lines indicate the first and fourth quartiles of the distribution. For presentation purposes, I exclude the most extreme 5% of observations.

## A.2.1 Correlates of revenue losses

Figure A.4: Standardized differences between municipalities with smaller and greater revenue losses
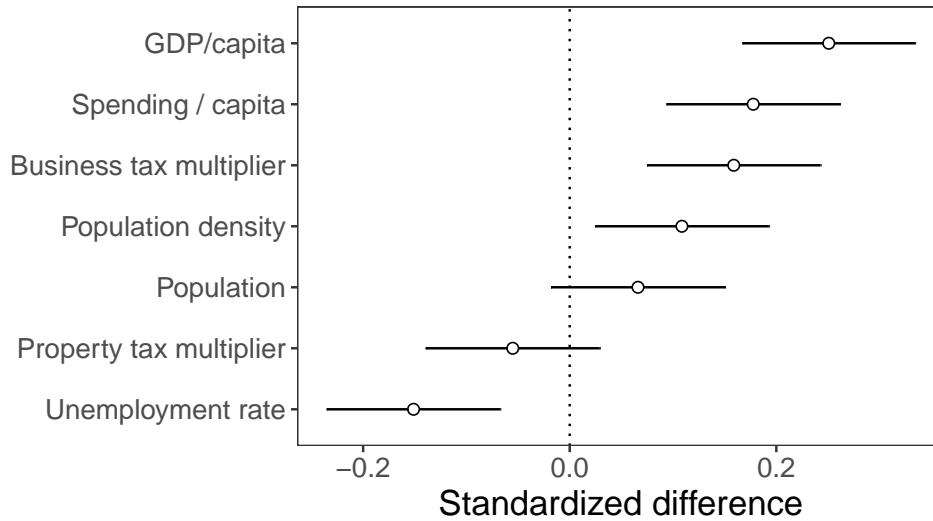
Note: The figure presents standardized differences between municipalities that experience greater or smaller revenue losses between 2008 and 2009. All variables are measured in 2007.
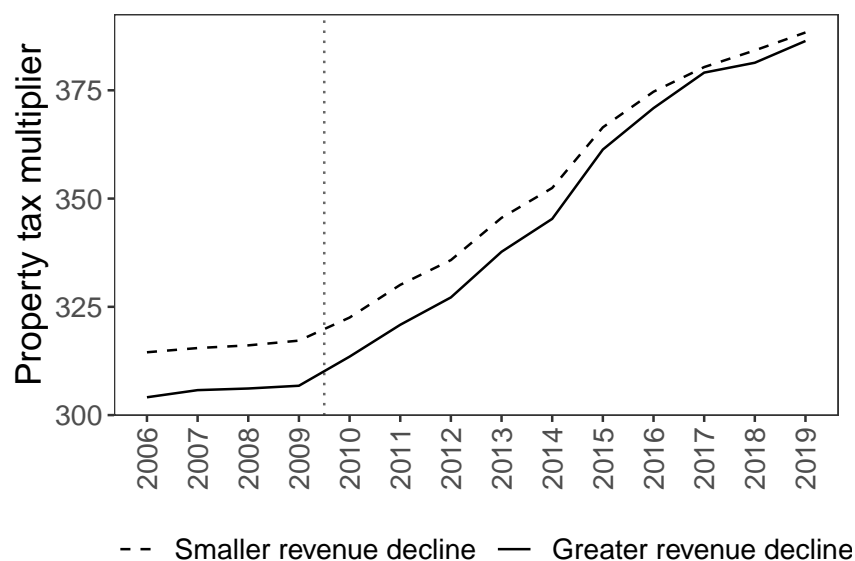
A.2.2 Local tax multiplier trends

Figure A.5: Business tax multipliers conditional on year and revenue decline

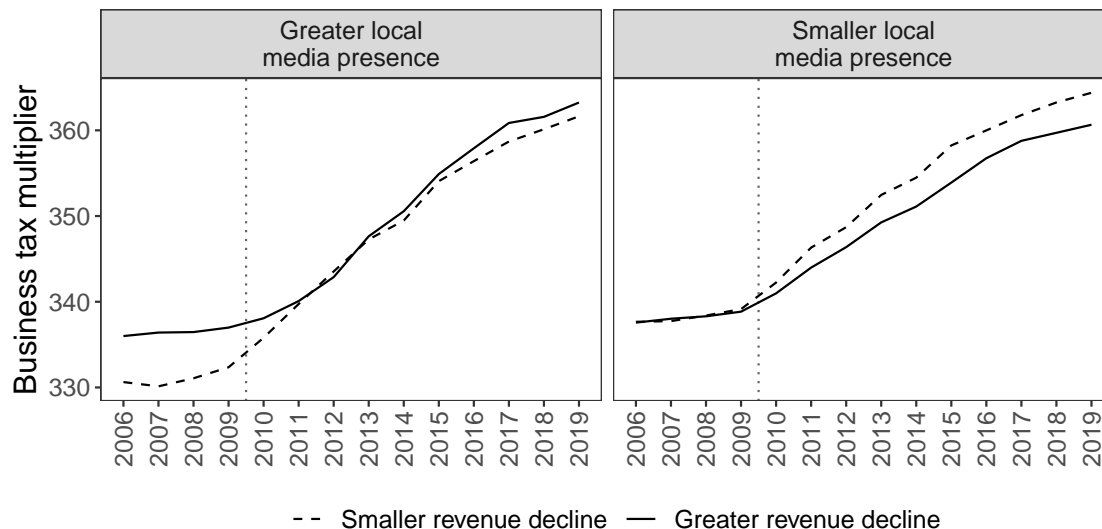- - Smaller revenue decline — Greater revenue decline
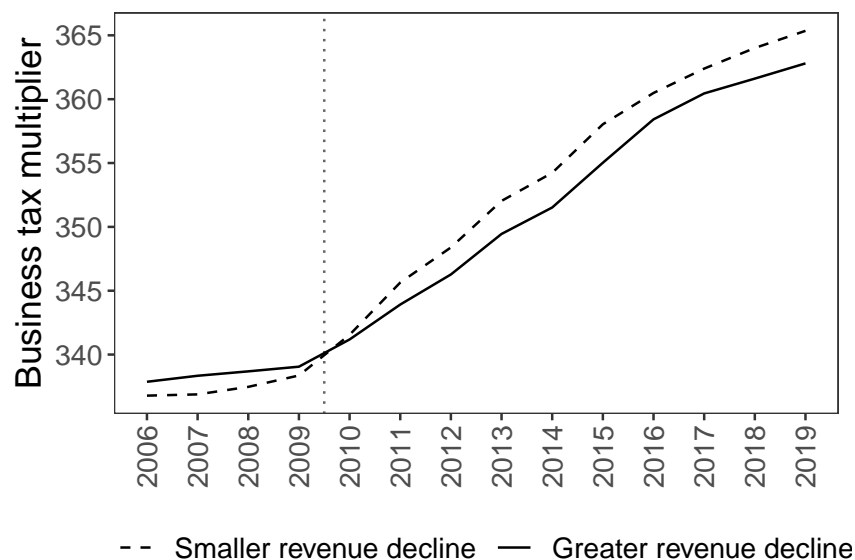
Note: The figure presents average business tax rates by year and revenue decline. See section 4 for the definition of the revenue decline indicator. In accordance with the main specification, I de-mean business tax rates by state before calculating conditional means.

Figure A.6: Property tax multipliers conditional on year and revenue decline

- - Smaller revenue decline — Greater revenue decline

Note: The figure presents average property tax rates by year and revenue decline. See section 4 for the definition of the revenue decline indicator. In accordance with the main specification, I de-mean property tax rates by state before calculating conditional means.

Figure A.7: Business tax multipliers conditional on year, revenue decline, and media presence


Note: The figure presents average business tax multipliers by year, revenue decline and local media presence. See section 4.1 for the definition of the revenue decline indicator. In accordance with the main specification, I de-mean business tax rates by state before calculating conditional means.

A.2.3 Local newspaper reporting

To assess how frequently local newspapers cover topics related to the economic situation or the labor market, I draw on data from the German Longitudinal Election Study (GLES, see also Roßteutscher et al. 2017), which includes a large-scale content analysis for 14 local newspapers between 2009–2013. I use this data to assess the frequency of reporting on economic or employment topics. To do so, I first select all articles that talk about the following sub-issues, as defined in the original GLES data: the general economic situation, economic crises, firm bankruptcies, the export economy, tax policies, the labor market in general, unemployment insurance, precarious work conditions. I then calculate the total share of content on economic or labor market issues as follows: I calculate the weighted share of articles on the above topics, using the total number of articles as the denominator, and using the length of each article as the weights. This means that longer articles receive more weight relative to shorter ones. In the figure A.8, I present the weighted share of articles on economic conditions or the labor market, separately for all four years that are included in the data.

Figure A.8: Share of local newspaper content that deals with economic conditions or the labor market
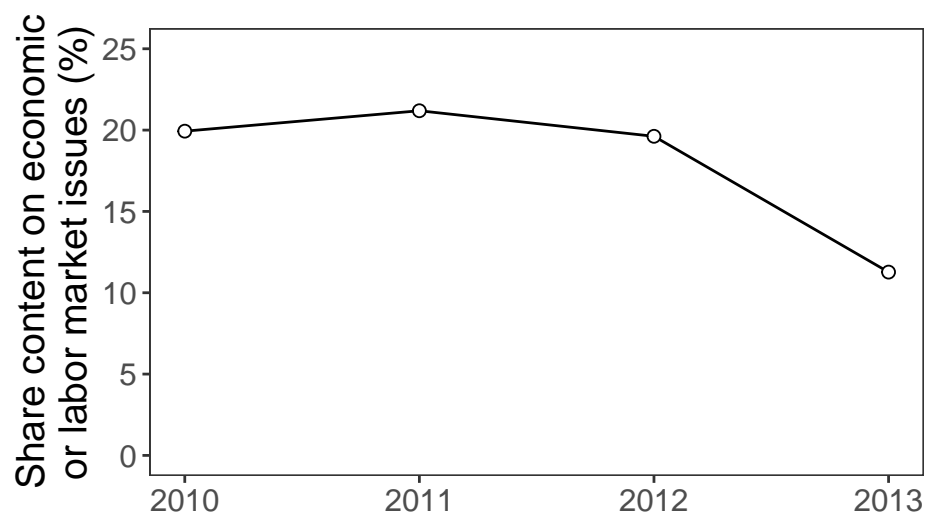
Notes: The figure shows the share of local newspaper content that deals with either the economic situation of the labor market. I discuss the construction of this measure in more detail above.

A.3 Details on the revenue decline indicator

Figure A.9: Itemized changes in local government revenue, 2008–2009
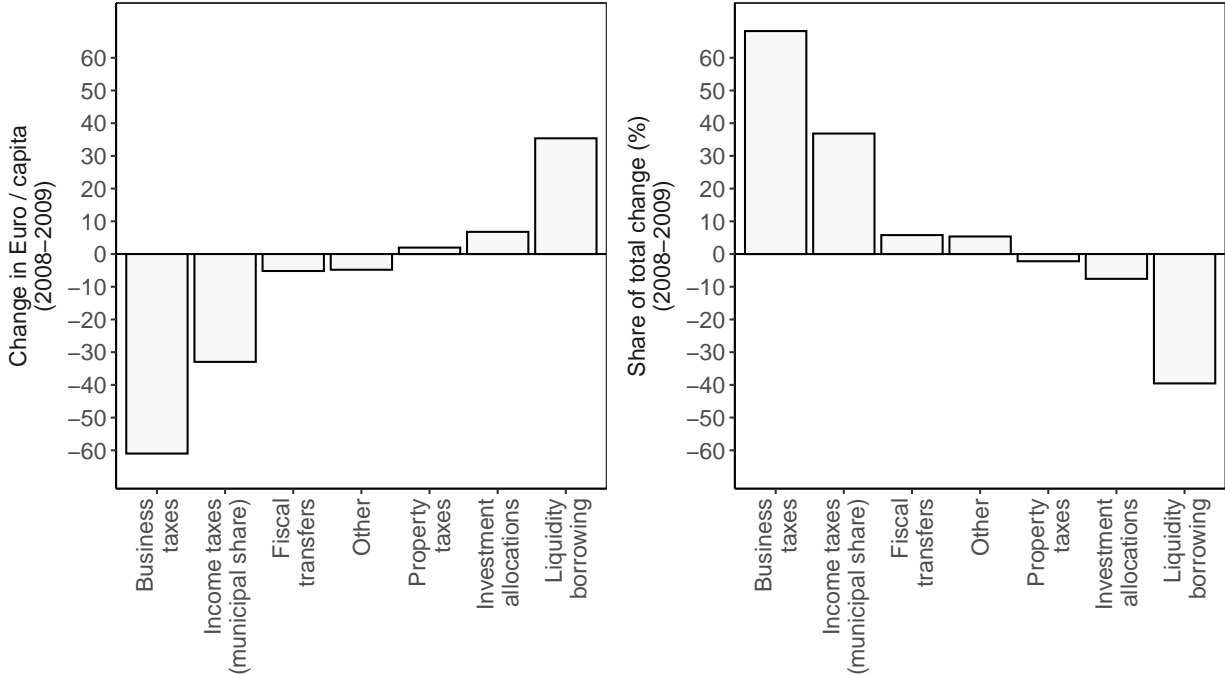
Note: The figure shows changes in the different sources of municipal revenue between 2008 and 2009. The left-hand side panel shows changes in Euro/capita. The right-hand side panel shows changes as a percentage of the overall change in revenues between 2008 and 2009 (a decline of ~ 90 Euro/capita.).

I now present descriptive information on changes in different components of municipal revenues. These are shown in figure A.9. As demonstrated by figure A.9, declines in business tax incomes account for the largest share of the overall government revenue declines in the early stages of the Great Recession. Since the source of these taxes are firm profits, the municipal revenue decline variable measures the degree to which the local economy is hit by the economic crisis. As a result, it appears likely that the revenue decline variable is also correlated with increases in unemployment rates – struggling firms often have to let some employees go. To assess whether this is the case, I examine the correlation between the 2008–2009 revenue declines and three measures of unemployment. These are the unemployment rate, the share of long-run unemployed (this is people unemployed for longer than one year), and the number of employed people as the share of the population. I estimate lags-and-leads models, which track changes in these indicators, comparing municipalities with larger and smaller revenue shocks. I present the results in figure A.10. In municipalities with greater revenue declines, I show that (i) unemployment rates increase by 4.1%, the share of long-run unemployed increases by 2.2%, and the population share of employed people declines 2.6%.

For the two unemployment measures, these effects are present particularly in 2009 and 2010, but mostly dissipate by 2011.[14] In sum, these results demonstrate that the municipal revenue decline variable is not merely a shock to government finances – rather, I measure a more general shock to the local economy, which results in rising unemployment and drop in firm profits, at least in the short run.
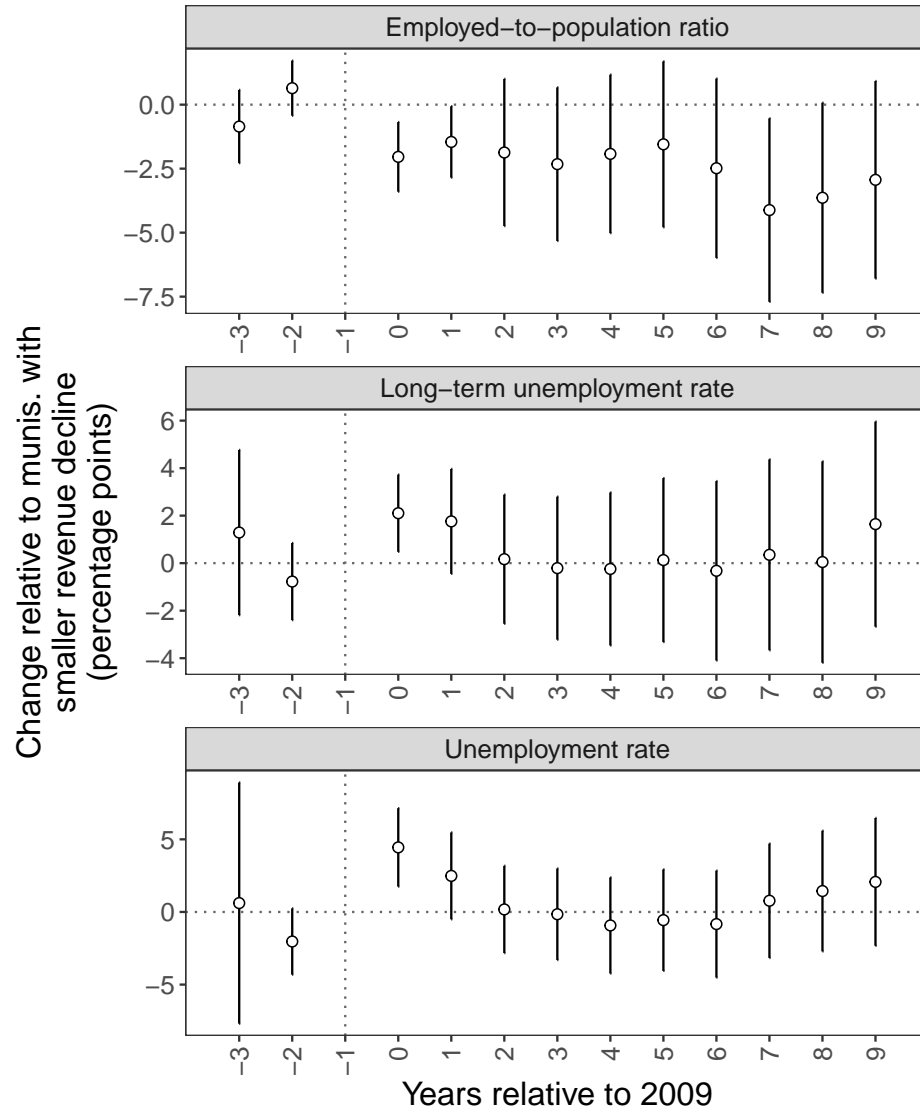
Figure A.10: Revenue shocks and changes in employment
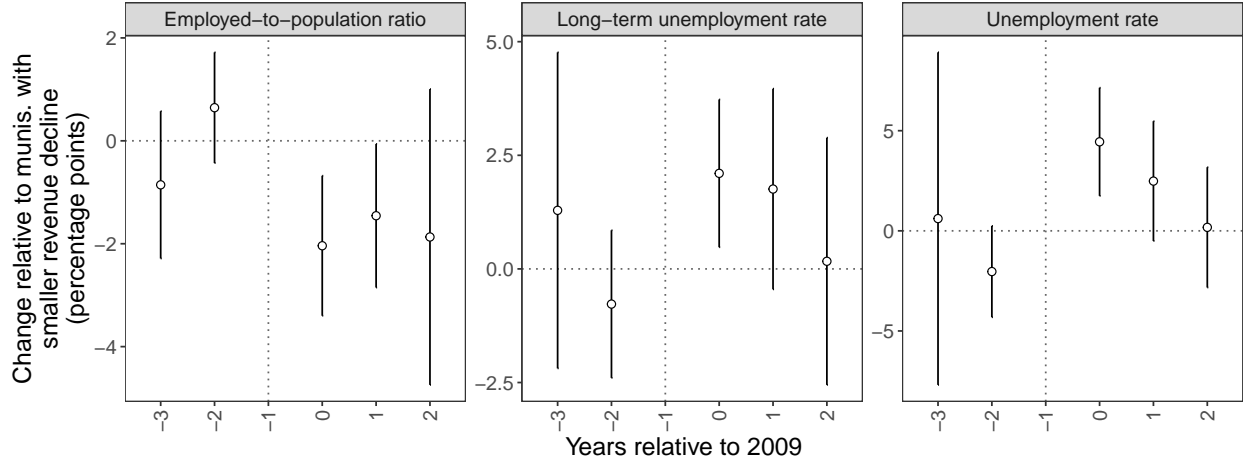
Notes: The figure contains lags and leads estimates of the correlation between the revenue shock and three measures of employment. The crisis shock indicator is equal to one if the percentage decline in government revenues between 2008 and 2009 is greater than the average decline in revenues across all municipalities. The sample includes all years between 2006 and 2012. Coefficients are differences relative to 2008.

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[14]In figure A.11, I show that the revenue shock correlates with a persistent decline in the employment share of the population. Together with the fact that the unemployment rate effect disappears after two years, this suggests that some people permanently leave the labor market in areas where the revenue shock is more pronounced.

Figure A.11: Revenue shocks and changes in employment – additional periods


Notes: The figure contains lags and leads estimates of the correlation between the revenue shock and three measures of employment. The crisis shock indicator is equal to one if the percentage decline in government revenues between 2008 and 2009 is greater than the average decline in revenues across all municipalities. Coefficients are differences relative to 2008.

A.4 Descriptive trends for local finance measures

In this section, I present descriptive evidence on changes in several fiscal indicators around the onset of the Great Recession. In figure A.12, I subset the sample into municipalities according to the main binary definition that I employ – greater or smaller revenue losses between 2008–2009. Confirming the patterns in figure A.9, overall revenue declines closely track declines in local business tax revenues. In conjunction with the evidence shown in figure A.4, this suggests that larger revenue declines primarily occur in municipalities that have a strong local economic base, i.e. where business taxes are a major source of government revenue. When the crisis hits, these municipalities experience larger drops in income, as the firm-level repercussions of the crisis result in a decline in tax revenue.

Figure A.12: Municipal finance measures conditional on year and revenue decline
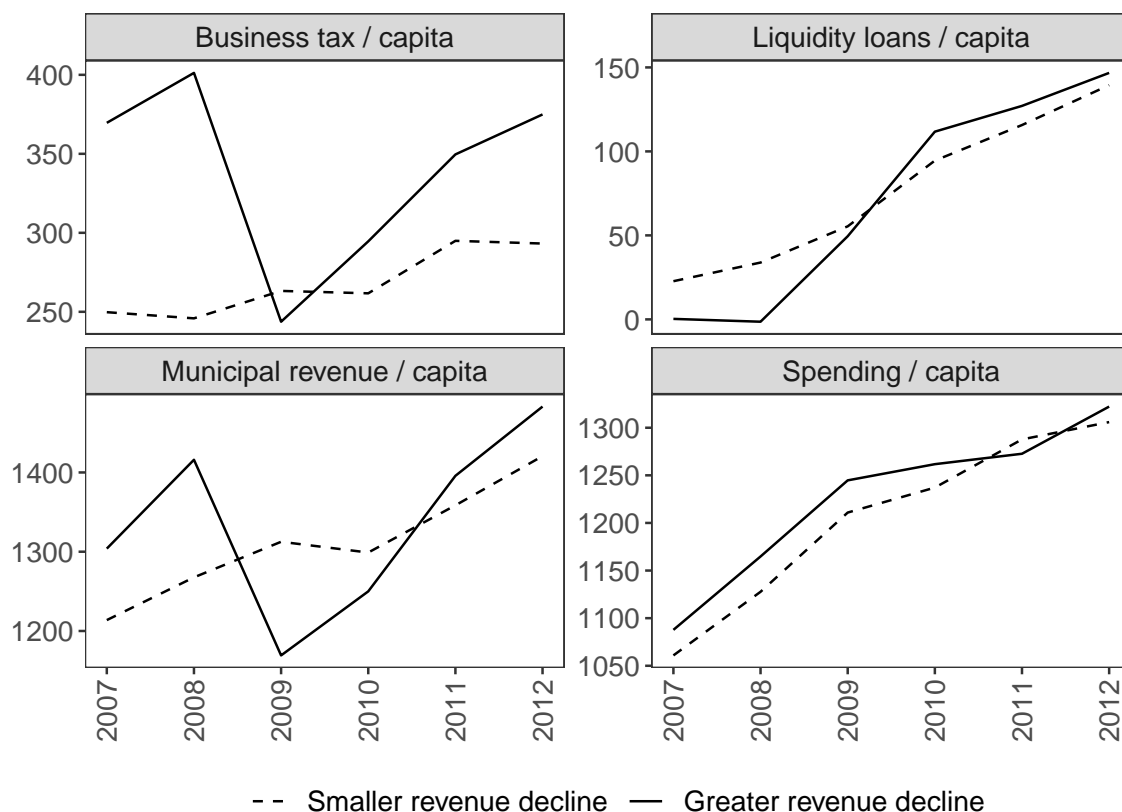
Note: The figure presents averages for four variables by year and revenue decline. See section 4 for the definition of the revenue decline indicator. In accordance with the main specification, I de-mean business tax rates by state before calculating conditional means. Note that figure A.9 is not based on state-demeaned data, which means there are small discrepancies between the quantities given in figure A.9 and this figure.

Moving on to municipal borrowing and spending, figure A.9 shows that the considerable

decline in municipal revenue in some municipalities does not translate into an equally-sized decline in spending. Rather, these municipalities rely on new debt to finance most of their outlays. However, spending does grow slower in municipalities that are hit harder, but only after 2010. Summarizing these results, I observe that (i) revenue declines primarily stem from a negative shock to firm profits in areas that heavily rely on business taxes and (ii) revenue declines are primarily compensated for through additional borrowing, although there is some evidence for decreased municipal spending.

A.5 Details on the overlapping markets design

As discussed in section 5.1, I employ an additional empirical strategy to analyze whether government responsiveness is moderated by local media presence. At the core of this strategy is the comparison between adjacent municipalities that are located in areas where the coverage regions of multiple local newspapers overlap. This overlap creates plausible exogenous variation in the number of outlets, which I then exploit to estimate whether a greater presence of local newspapers affects government responses. This empirical strategy is similar to prior designs in, for example, Ansolabehere, Snowberg and Snyder (2006) or Snyder and Strömberg (2010). In particular, I use a very similar design as Hilbig and Riaz (2021), who employ the same newspaper coverage data, and implement the design in a similar manner.

To implement the overlapping markets design, I rely on a matching algorithm, which consists of the following steps. For each treated municipality, I first select all control municipalities that are located within z kilometers of that municipality.[15] I then impose an additional condition: the control municipality has to be covered by at least one local news outlet that also covers the treated municipality, with the treated municipality being covered by at least one additional outlet. I visualize this restriction in figure 1, where the control municipalities are covered by newspaper A and B, while the treated municipality is additionally covered by newspaper C. From the resulting set of control municipalities, I then select the one that is most similar to a given treated municipality, as measured by the Mahalanobis covariates distance. To sum up, my design matches on control unit to each unit – the machted control municipality is subject to three requirements: (i) it has to be geographically close, (ii) it has to share at least one outlet with the treated municipality and (iii) it has to be similar in terms of pre-treatment characteristics.

To ensure comparability, I match on unemployment rate, population density, spending /

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[15]In this discussion, I use 'treated' and 'control' to refer to values of the binary moderator variable, local media presence. Municipalities are 'treated' if they are covered by more than two outlets.

capita, revenue / capita, property taxes / capita and business taxes / capita, all measured prior to the treatment. I present balance before and after the matching procedure in figure A.13, separately within levels of the municipal revenue decline variable. I also show results for different values of z, the maximum permitted distance between matched municipalities. The final sample does not include treated municipalities for which no match within a given radius of z kilometers can be found. I also match with replacement – a given control municipality can be matched to multiple treated units. Similar to treated municipalities for which no match can be found, unused control municipalities are also not included in the final sample. For the $z = 25$km sample, which I use for the results in figures 2 and table A.4, the final sample includes about one quarter of the municipalities that form my full sample.

Finally, I note that coverage areas of local newspapers mainly follow from the local economic geography, rather than from political or administrative units. Local newspapers are frequently headquartered in cities that act as regional centers. The coverage area then includes other towns and communities that have economic ties to the regional center, e.g. through commuting, commerce, or trade. Partially, this stems from the fact that local advertisers use news outlets to reach their target audience, which may extend beyond the county or even state where the newspaper is headquartered (Blotevogel 1984).

A.5.1 Covariate balance

Figure A.13: Standardized differences between municipalities with greater or smaller local media presence
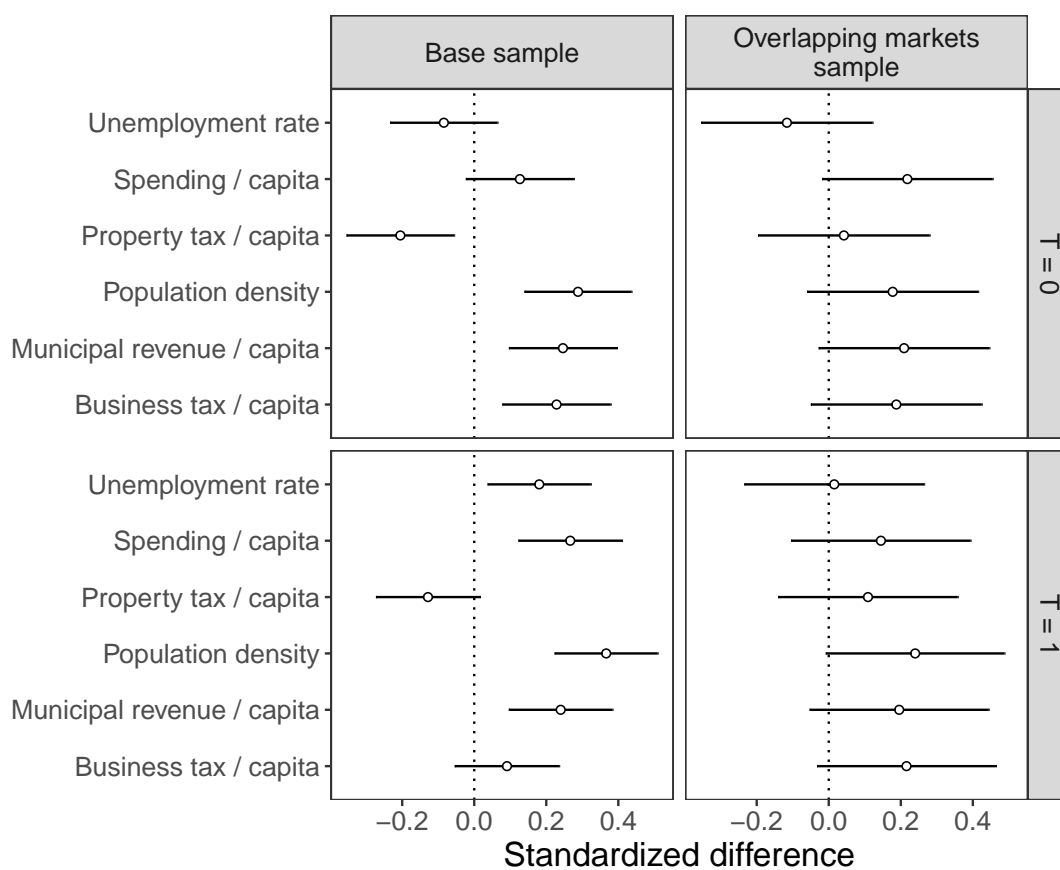
Note: The figure presents standardized differences between municipalities with greater or smaller local media presences. As implied by my empirical strategy, I only compare covariate balance within levels of the crisis-induced revenue decline variable. The left-hand side is the base sample, while the right-hand side is the sample used in the overlapping markets design.

A.6 Details on attitudinal outcomes (SOEP data)

As discussed in section 4.3, I probe the mechanism underlying my findings by drawing on data from the German Socio-Economic Panel Survey (SOEP, see Liebig et al. 2021). The data is constructed as follows: I first select all respondents who respond to the survey between 2006–2019 and live in one of the 2,193 municipalities in my sample. I then measure personal and general economic perceptions through the following two items, which are measured annually:

1. "How concerned are you about the following issues?: The economy in general."

2. "How concerned are you about the following issues?: Your own economic situation."

Respondents can then choose between three different responses, which are: not concerned at all, somewhat concerned, not concerned at all. I convert these responses to a scale that ranges from one to three, where higher values indicate greater concern. Before estimating the specification that forms the base for the results presented in figure 4, I standardize both outcomes.

A.7 Additional difference-in-differences results

Table A.1: Tax changes in response to the Great Recession

	Business tax multiplier				Property tax multiplier			
Crisis shock * post	-0.080^{***}	-0.075^{***}	-0.032^{***}	-0.029^{***}	-0.031	-0.024	-0.017	-0.011
	(0.023)	(0.023)	(0.011)	(0.010)	(0.023)	(0.022)	(0.011)	(0.010)
Variable definition	Binary	Binary	Cont.	Cont.	Binary	Binary	Cont.	Cont.
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State*year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Covariates	No	Yes	No	Yes	No	Yes	No	Yes
N	30,296	28,132	28,756	26,702	30,296	28,132	28,756	26,702
R^2	0.866	0.871	0.866	0.871	0.857	0.867	0.857	0.867

Notes: The table presents estimates from the base specification, for the business tax multiplier outcome (columns 1–4) and the property tax multiplier outcome (columns 5–8). I use two different definitions of the crisis shock variable, (i) a binary version that is equal to one if the percentage decline in government revenues between 2008 and 2009 is greater than the average decline in revenues across all municipalities and (ii) a standardized version of the continuous measure of percentage decline in revenue. For the continuous version, I drop the 5% most extreme values, which leads to a lower sample size. The outcome is standardized. The sample includes all years between 2006 and 2019. Standard errors clustered at the municipality level are given in parentheses. $^{***}p < .01$; $^{**}p < .05$; $^{*}p < .1$

Table A.2: Tax changes in response to the Great Recession – constant sample

	Business tax multiplier				Property tax multiplier			
Crisis shock * post	-0.084^{***}	-0.080^{***}	-0.032^{***}	-0.029^{***}	-0.033	-0.026	-0.016	-0.011
	(0.023)	(0.023)	(0.010)	(0.010)	(0.023)	(0.022)	(0.010)	(0.010)
Variable definition	Binary	Binary	Cont.	Cont.	Binary	Binary	Cont.	Cont.
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State*year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Covariates	No	Yes	No	Yes	No	Yes	No	Yes
N	26,702	26,702	26,702	26,702	26,702	26,702	26,702	26,702
R^2	0.870	0.871	0.870	0.871	0.863	0.867	0.863	0.867

Notes: The table presents estimates from the base specification, for the business tax multiplier outcome (columns 1–4) and the property tax multiplier outcome (columns 5–8). The main difference between this table and table A.1 is that the sample size is constant across all specifications. I use two different definitions of the crisis shock variable, (i) a binary version that is equal to one if the percentage decline in government revenues between 2008 and 2009 is greater than the average decline in revenues across all municipalities and (ii) a standardized version of the continuous measure of percentage decline in revenue. For the continuous version, I drop the 5% most extreme values, which leads to a lower sample size. The outcome is standardized. The sample includes all years between 2006 and 2019. Standard errors clustered at the municipality level are given in parentheses. $^{***}p < .01$; $^{**}p < .05$; $^{*}p < .1$
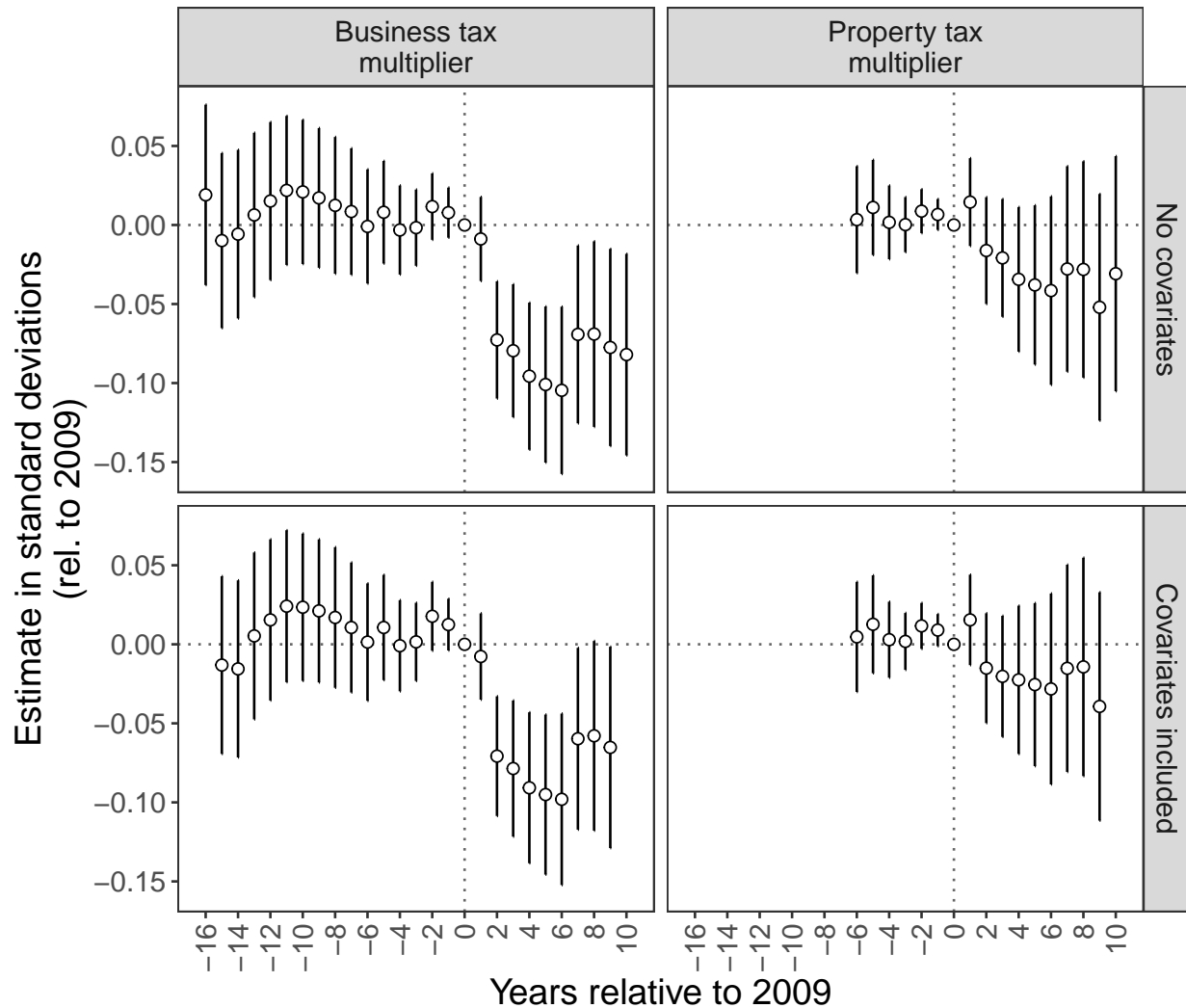
A.7.1 Lags and leads results

Figure A.14: Effect of revenue shock on tax rates over time
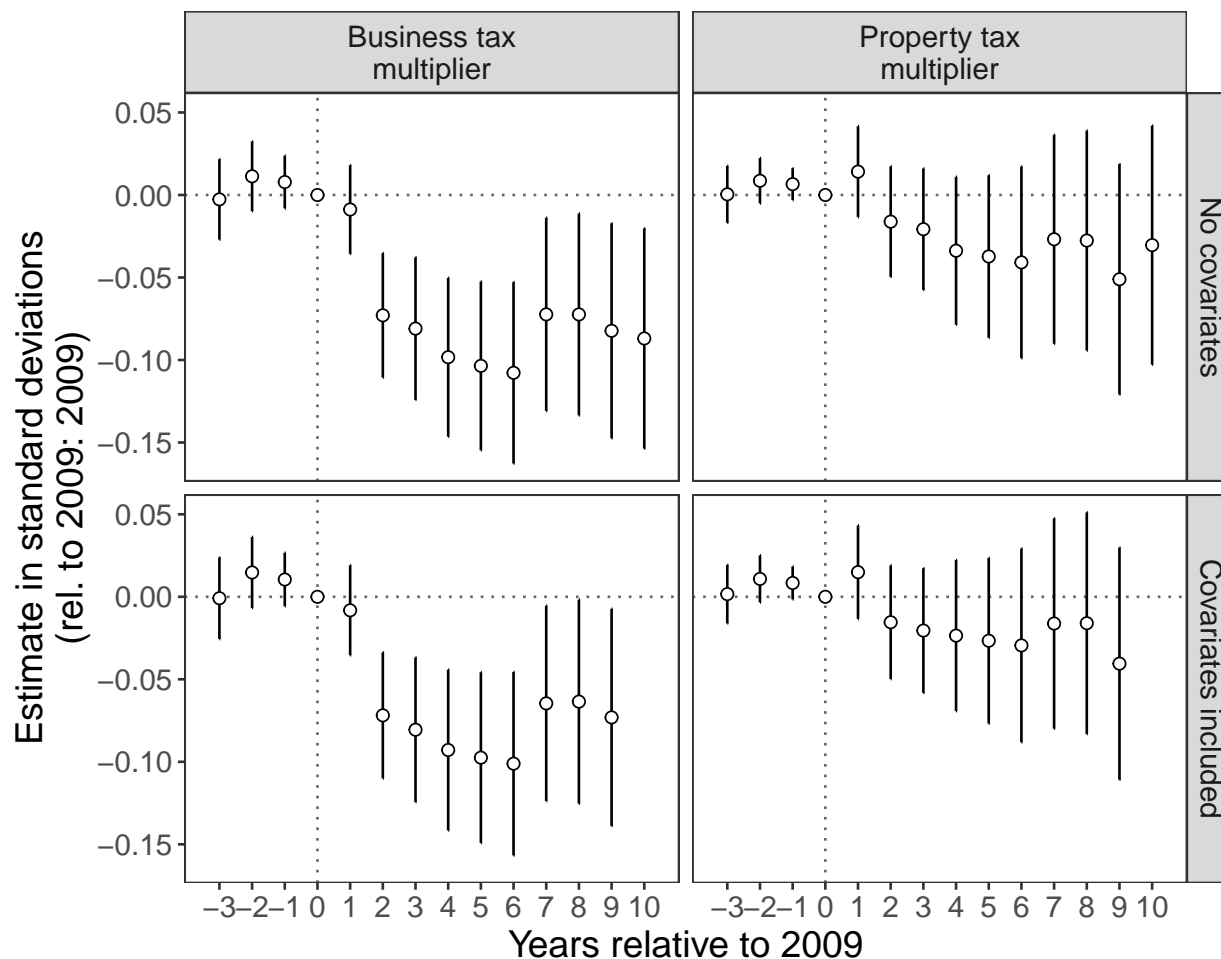
Notes: The figure contains lags and leads estimates of the effect of the revenue shock on business and property tax multipliers. The outcomes are standardized. The crisis shock indicator is equal to one if the percentage decline in government revenues between 2008 and 2009 is greater than the average decline in revenues across all municipalities. The sample includes all years between 2006 and 2019. Coefficients are differences relative to 2009. For raw trends, see figure A.7 in the appendix.

A.7.2 Additional pre-crisis periods

Figure A.15: Effect of revenue shock on tax multipliers over time, using more pre-crisis periods

Notes: The figure contains lags and leads estimates of the effect of the 2008 revenue shock on business and property tax multipliers. The outcome is standardized. The crisis shock indicator is equal to one if the percentage decline in government revenues between 2008 and 2009 is greater than the average decline in revenues across all municipalities. The sample includes all years between 1992 (business tax multipliers) or 2003 (property tax multipliers) and 2019. Coefficients are differences relative to 2009. The reason why there are estimates for some periods in the top but not bottom panels is missing covariates.

A.8 Additional interaction results

Table A.3: Effect of revenue shock on fiscal and tax responses to revenue declines, conditional on the local media presence

	Spending per capita	Liquidity loans per capita	Business tax multiplier	Property tax multiplier
Crisis shock * post	−0.020	0.066	−0.049**	−0.041*
	(0.015)	(0.042)	(0.025)	(0.024)
Crisis shock * post * media presence	−0.060	−0.072	−0.114**	0.044
	(0.050)	(0.057)	(0.056)	(0.052)
Municipality FE	Yes	Yes	Yes	Yes
State*year FE	Yes	Yes	Yes	Yes
Covariates	Yes	Yes	Yes	Yes
N	27,741	27,742	27,742	27,705
R^2	0.896	0.711	0.871	0.868

Notes: The table presents estimates from the interaction specification described in section 5, for four different outcomes. The crisis shock indicator is equal to one if the percentage decline in government revenues between 2008 and 2009 is greater than the average decline in revenues across all municipalities. I interact this variable with an indicator that is equal to one if a given municipality is covered by more newspapers than the average municipality. Standard errors clustered at the municipality level are given in parentheses. ***$p < .01$; **$p < .05$; *$p < .1$

Table A.4: Effect of revenue shock on business taxes conditional on the local media presence

	Business tax multiplier			
Crisis shock * post	−0.055**	−0.049**	0.047	0.053
	(0.025)	(0.025)	(0.068)	(0.068)
Crisis shock * post * media presence	−0.107*	−0.114**	−0.181**	−0.186**
	(0.056)	(0.056)	(0.084)	(0.084)
Municipality FE	Yes	Yes	Yes	Yes
State*year FE	Yes	Yes	Yes	Yes
Covariates	No	Yes	No	Yes
Overlapping markets	No	No	Yes	Yes
N	27,742	27,742	7,670	7,670
R^2	0.870	0.871	0.845	0.846

Notes: The table presents estimates from the interaction specification described in section 5. The crisis shock indicator is equal to one if the percentage decline in government revenues between 2008 and 2009 is greater than the average decline in revenues across all municipalities. I interact this variable with an indicator that is equal to one if a given municipality is covered by more newspapers than the average municipality. I present results from the base specification as well as from the overlapping market designs, where I exploit variation in the number of newspapers that stems from the intersection of overlapping newspaper coverage areas. The quantities shown in this table are the same as in figure 2. Standard errors clustered at the municipality level are given in parentheses. ***$p < .01$; **$p < .05$; *$p < .1$

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A.8.1 Continuous measure of media presence

Table A.5: Effect of revenue shock on business tax rate conditional on the local media presence – continuous measure

	Business tax multiplier			
Crisis shock * post	−0.066	−0.065	−0.066	−0.065
	(0.048)	(0.046)	(0.049)	(0.047)
Crisis shock * post * number of outlets	−0.084*	−0.082*		
	(0.050)	(0.048)		
Crisis shock * post * number of outlets (log)			−0.220**	−0.216**
			(0.110)	(0.107)
Municipality FE	Yes	Yes	Yes	Yes
State*year FE	Yes	Yes	Yes	Yes
Covariates	No	Yes	No	Yes
Overlapping markets	Yes	Yes	Yes	Yes
N	8,260	7,670	8,260	7,670
R^2	0.843	0.846	0.843	0.846

Notes: The table presents estimates from the interaction specification described in section 5. The crisis shock indicator is equal to one if the percentage decline in government revenues between 2008 and 2009 is greater than the average decline in revenues across all municipalities. I interact this variable with the number of newspaper covering a given municipality, as well as the logarithm of this number. I present results based on the overlapping market designs, where I exploit variation in the number of newspapers that stems from the intersection of overlapping newspaper coverage areas. Standard errors clustered at the municipality level are given in parentheses. ***$p < .01$; **$p < .05$; *$p < .1$

A.8.2   Varying distance calipers for the overlapping markets design

Figure A.16: Effect of revenue shock on business taxes conditional on the local media presence – sensitivity
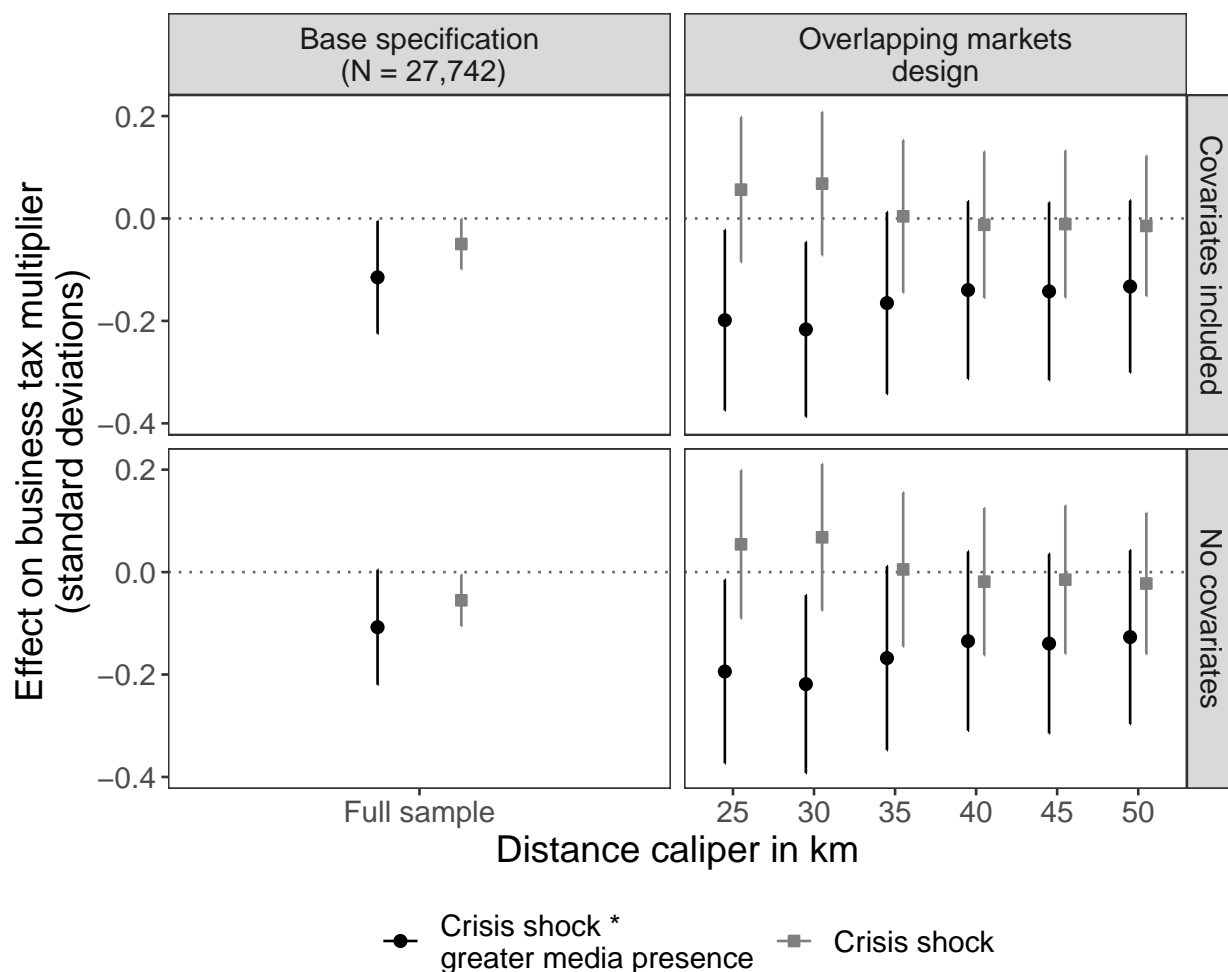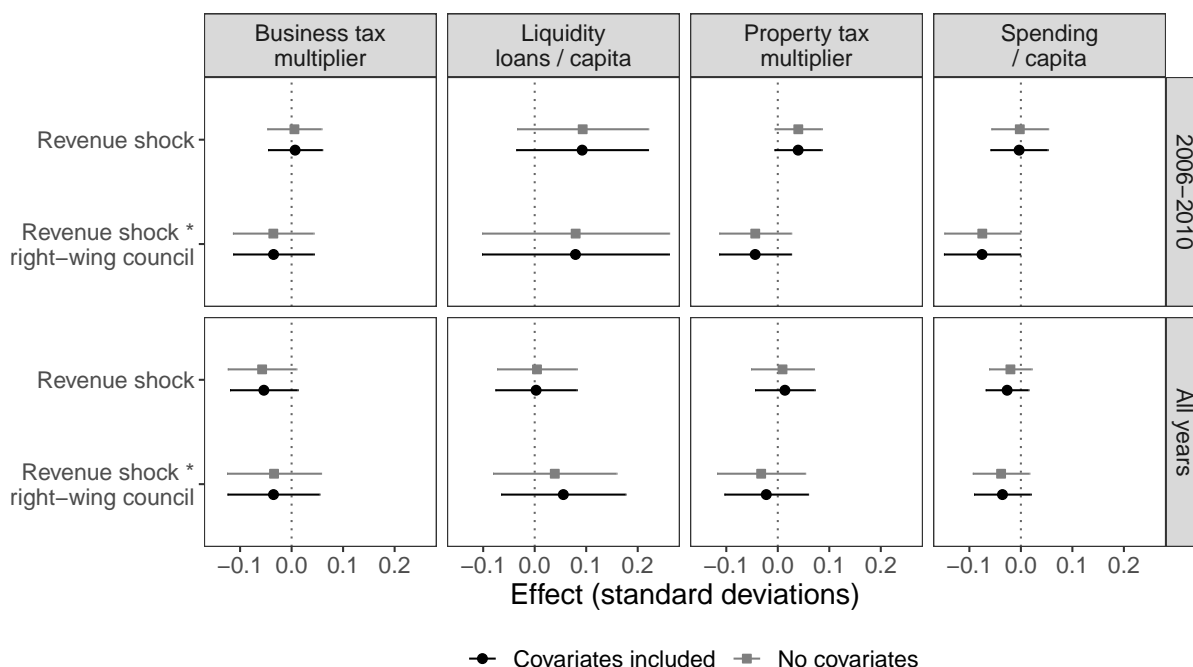

Notes: The figure presents estimates from the interaction specification described in section 5, for different distance calipers used in the overlapping markets design. The crisis shock indicator is equal to one if the percentage decline in government revenues between 2008 and 2009 is greater than the average decline in revenues across all municipalities. I interact this variable with an indicator that is equal to one if a given municipality is covered by more newspapers than the average municipality. The sample includes all years between 2006 and 2019. The left-hand side panel shows results from the base specification. The right-hand side panel is based on the overlapping market designs, where I vary the maximum permitted distance. Standard errors are clustered at the municipality level.

A.8.3 Partisan differences

I assess now whether the effect of the revenue shock varies with the partisan composition of the local council. To do so, I add an interaction term to the specification discussed in section 5, using a dummy variable that equals one if the right-wing CDU/CSU and FDP parties command a plurality of votes in the most recent municipal council election prior to 2009. I present the results of this analysis in figure A.17. I find no evidence that partisan differences matter strongly for how local governments respond. For business taxes, property taxes and spending, the differences between left- and right-wing councils is not significantly different from zero. The only outcome for which I observe differences is municipal borrowing. Here, I find that right-leaning councils tend to respond to the revenue shock with larger amounts of new debt than left-leaning councils, which somewhat contradicts the common observation that right-leaning parties are more fiscally conservative than left-leaning parties.

Figure A.17: Effect of revenue shock conditional on the local council partisan composition

Notes: The figure presents estimates from the interaction specification described in section 5. The crisis shock indicator is equal to one if the percentage decline in government revenues between 2008 and 2009 is greater than the average decline in revenues across all municipalities. I interact this variable with an indicator that is equal to one if the share of votes for the CDU/CSU and FDP parties is larger than the combined share of all other parties, based on the most recent municipal elections prior to 2009. I present results from two different samples, which are given in the panel labels. Standard errors are clustered at the municipality level.

A.8.4 Electoral incentives

In figure A.18, I explore whether electoral competitiveness effects fiscal responses to the crisis-induced revenue loss. The moderator is an indicator that is equal to one if municipal council elections are less competitive than the median municipal council elections. Competitiveness is defined as the difference in vote shares between the first- and second-ranked party in a given election. For years without elections, I use the most recent election to measure competitiveness. I find relatively pronounced moderation effects: in municipalities where council elections are not competitive, business tax cuts are larger, municipal governments borrow more. One possible explanation is that a secure electoral position allows municipal governments to enact a set of relatively more unpopular policies, such as taking on more debt while cutting taxes for businesses.

Figure A.18: Effect of revenue shock on business taxes conditional on electoral competitiveness
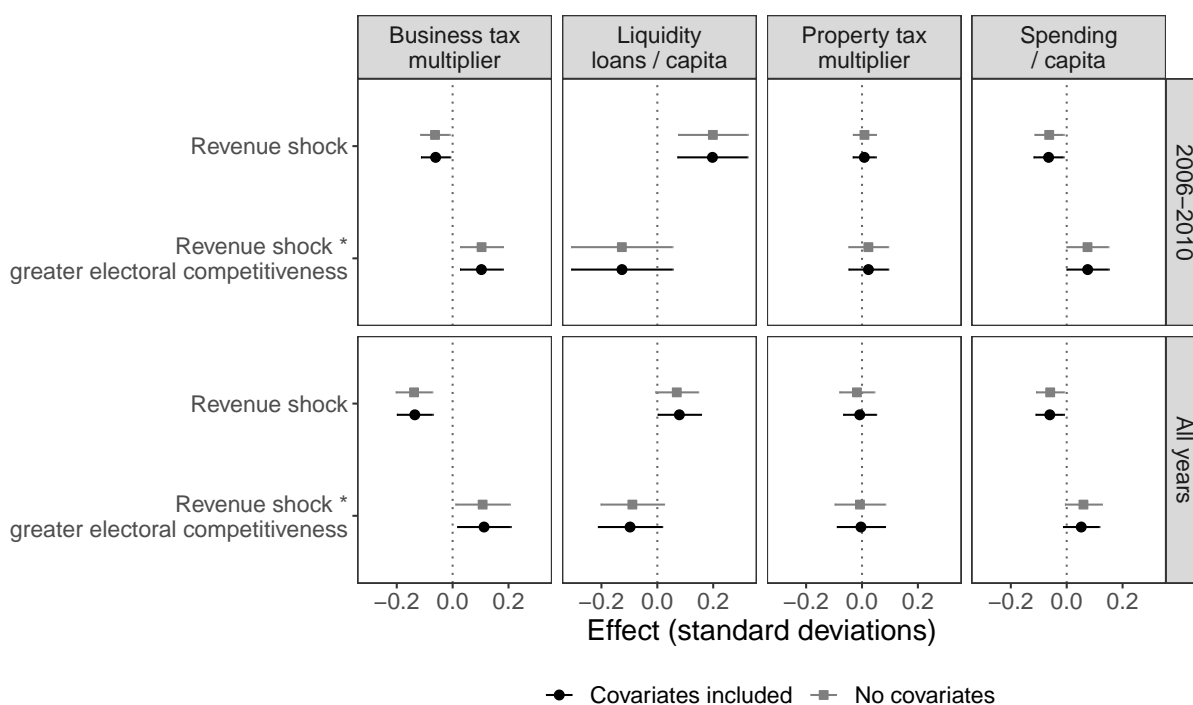
Notes: The figure presents estimates from an interaction specification. The crisis shock indicator is equal to one if the percentage decline in government revenues between 2008 and 2009 is greater than the average decline in revenues across all municipalities. I interact this variable with an indicator that is equal to one if municipal council elections are less competitive than the median municipal council elections. Competitiveness is defined as the difference in vote shares between the first- and second-ranked party in a given election. For years without elections, I use the most recent election to measure competitiveness. I present results from two different samples, which are given in the panel labels. Standard errors are clustered at the municipality level.

A.9 Cross-sectional evidence on debt preferences

In addition to the panel data on perceptions of economic risk, I employ cross-sectional survey data that was collected in 2019 and 2020. The data stems from the survey company *CIVEY*, and asks whether respondents support using government surpluses to reduce debts. I note that this survey question does not refer specifically to either local or national governments. Since the data is cross-sectional, I do not use the main difference-in-differences design outlined in section 5. Rather, I rely on a cross-sectional design, where I regress survey responses on the revenue decline variable, which is made possible by that fact that I know where respondents reside. In addition, I include state fixed effects and controls for GDP/capita and unemployment, as well as individual party identification. Aside from party identification, I do not observe any other background covariates. Finally, I interact my the municipal revenue decline variable with the number of local outlets in a municipality (see section 4.2).

A.10 Details on the individual-level results

Below, I show more detail on the individual-level panel results presented in figure 4.

Table A.6: Individual-level panel results

	DV: Worries about general economic situation		DV: Worries about own economic situation	
Crisis shock * post	−0.017	−0.039	−0.049	−0.061**
	(0.022)	(0.019)	(0.021)	(0.022)
Crisis shock * post * media presence	0.039	0.082**	0.061	0.089**
	(0.029)	(0.025)	(0.030)	(0.030)
Municipality FE	Yes	Yes	Yes	Yes
State*year FE	Yes	Yes	Yes	Yes
Covariates	No	Yes	No	Yes
N	153,583	153,583	161,379	161,379

Notes: The table presents estimates from the interaction specification described in section 5. The crisis shock indicator is equal to one if the percentage decline in government revenues between 2008 and 2009 is greater than the average decline in revenues across all municipalities. I interact this variable with an indicator that is equal to one if a given municipality is covered by more newspapers than the average municipality. The sample includes all years between 2006 and 2019. The outcomes are (i) whether individuals are more concerned about the general economic situation and (ii) whether they are more concerned about their own economic situation. For the survey items, see section A.6 in the SI. Standard errors are clustered at the municipality level.***p < .01; **p < .05; *p < .1

A.11 Evidence on elite position-taking

An alternative explanation for my results is that politicians use newspapers to influence public preferences by taking pro-tax cut positions. To test whether this is the case, I use newspaper content data from *Nexis Uni*. To my knowledge, this service constitutes the best source of data on newspaper coverage, as it allows users to search for keywords within all articles published by nine large German local newspapers.[16] To test the position-taking mechanism, I proceed as follows:

1. I download all articles published between 01/01/2007 and 12/31/2010 that mention the keyword "Gewerbesteuer" (business taxes). Given that that local business taxes are only referred to using this term, I obtain all articles that at least mention local business tax in some form. In addition to article metadata, I obtain the full text of the article.

2. I link these articles to municipalities based on whether the name of a municipality is mentioned in the article. I further define a set of municipalities that could potentially be covered by these newspapers - this set is based on information on newspaper coverage areas. In total, I obtain 423 municipalities that could feasibly be covered.

3. With the set of municipalities that could feasibly be covered, I can then create indicators whether the municipality was actually covered in a given time interval. This gives me a binary outcome variable Y_{it} for municipality i in year t, which is equal to one if the municipality is covered, and zero otherwise. I define two distinct outcome variables:

   (a) The first measures whether there are any articles in year t that cover municipality i and mention the word "Gewerbesteuer", or business taxes.

   (b) The second measures whether there are any articles in year t that cover municipality i and mention the word "Gewerbesteuer" as well as a number of terms that refer to local politicians, including "mayor" or "local council member", the two most relevant local offices.

Based on the two variables described above, I can estimate simple lags and leads specification of the following form:

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[16]The service has two main drawbacks – first, it only contains a relatively small number of local newspapers. Second, it does not allow users to simply download all articles that are published in a given time frame. Rather, it only allows users to download articles that are the result of a keyword search.

$$Y_{ijt} = \mu_i + \delta_{jt} + \sum_{k=2008}^{2010} \beta_k \big(T_j \times \mathbf{1}_{t=k} \big) + \varepsilon_{ijt}$$

As shown by the index j for states, this specification includes state-year fixed effects, as well as municipality fixed effects. Since my data includes all years from 2007 to 2010, the estimates β_k are difference-in-differences estimates relative to 2007, the last pre-crisis year. I present the results in figure A.19. I find that media coverage of business taxes becomes more likely in municipalities with greater revenue declines. This result is consistent with the fact that the revenue decline variable is strongly correlated with decreased business tax income – this should make it more likely that business taxes are covered by the local media. However, I do not find disproportionate growth in coverage that mentions both business taxes *and* local politicians. This result does not support a mechanism whereby politicians use newspapers to influence public preferences by taking pro-tax cut positions.

Figure A.19: Change in the likelihood of newspaper articles covering business taxes for 423 municipalities
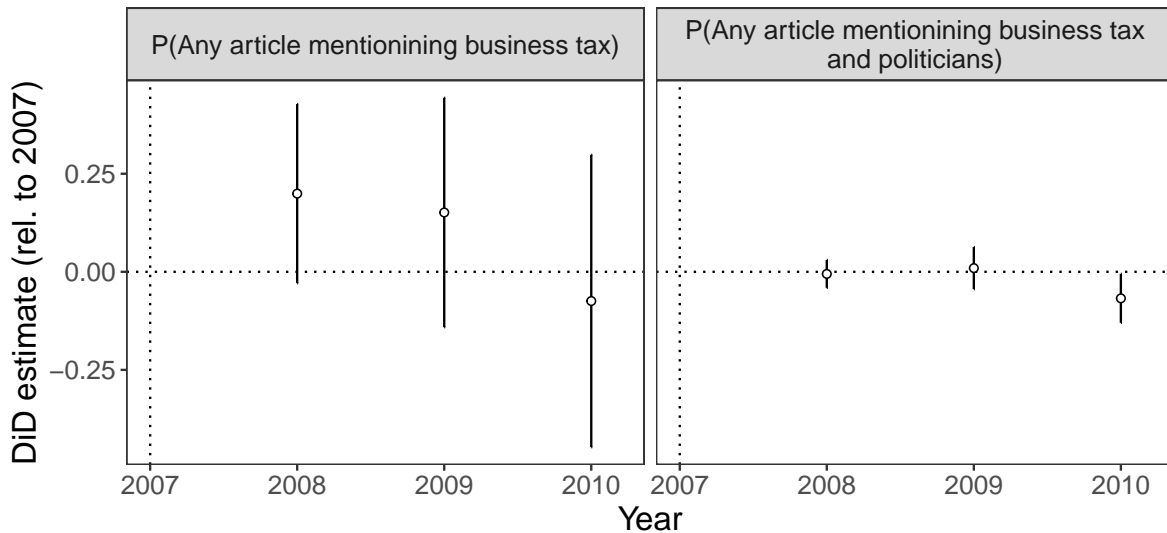
Notes: The figure contains results from the specification described above. See the previous discussion for the definitions of the outcome variables. The outcome variables are binary, so the estimates can be viewed as changes in probability.