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AUSTERITY AND THE RISE OF THE NAZI PARTY

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Austerity and the rise of the Nazi party

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ABSTRACT

The current historical consensus on the economic causes of the inexorable Nazi electoral success between 1930 and 1933 suggests this was largely related to the Treaty of Versailles and the Great Depression. Alternatively, it has been speculated that contractionary fiscal austerity measures contributed to votes for the Nazi party. Voting data from 1,024 districts and 98 cities shows that Chancellor Brüning's austerity measures (spending cuts and tax increases) were positively associated with increasing vote shares for the Nazi party. We also find that the suffering due to austerity (measured by mortality rates) radicalized the German electorate. Our findings are robust to a range of specifications including an instrumental variable strategy and a border-pair policy discontinuity design.

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1. Introduction

In 1928 the German Nazi party gained just over 2 percent of the votes in the general federal elections. By mid-1932 it received 38 percent of votes becoming the largest political party in the Reichstag. How did this shift to the extreme far-right happen so quickly? Economic factors like high unemployment associated with the Great Depression and socio-cultural issues associated with the Treaty of Versailles are well studied and played an indisputably important role in the rise of the Nazis. Still the rapid growth of support for the Nazi party well into the Great Depression and in a period when reparations payments were de facto frozen remains the subject of considerable economic and historical debate (Eichengreen 2018; Ferguson 1996; Hoffmann 1965; Manstein 1988; Stephan 1931; Temin 1990).

How much did the “austerity” measures implemented by the central German government compel voters to switch their allegiance to the Nazi party? Although highly relevant to the recent resurgence in populism and extremism in the wake of crisis driven austerity, this thesis has received scant empirical attention and which is at the intersection of economic, social and political forces. During this period, Heinrich Brüning of the Center Party and Germany’s chancellor between March 1930 and May 1932, implemented a set of measures via executive decree in order to balance the country’s finances. These austerity measures included real cuts in spending and transfers as well as higher tax rates. According to Brüning, the suffering they would cause would help elicit international sympathy for the Germans and help put an end to the unpopular reparations imposed at Versailles (Evans 2003).¹

To test the hypothesis that austerity can explain increased Nazi vote share in federal elections, we use city and district level election returns for the federal elections of 1930, 1932 (July and November) and 1933 originally collected by Falter and Gruner (1981). We then link them to different proxies for city, district and state-level fiscal policy changes along with other potential explanations for the rise of the Nazis, such as unemployment, changes in wages and economic output.

The observational data we use to study austerity and extremism have a number of features which enable us to overcome obvious issues of reverse causality and endogeneity. First, Brüning’s policies on spending and taxes were not expected, instead they became an outcome of the unexpectedly severe economic and financial crisis. They were decided at the Reich level by Brüning virtually alone making them largely exogenous to the preferences of specific cities and districts. As noted by Feldman (1993, 225) “the progressive ‘nationalization’ of taxing and spending decisions, justifies historians in the responsibility they place on the Brüning cabinet and on Brüning personally, for the fiscal balance during the slump.”

¹ For Ritschl (2016, 634), “Brüning deliberately deflated the German economy in order to be able to revise the reparations”.

Limits on spending and on changes to taxes, policy variables often formerly controlled by local authorities were also imposed. Many of the expenditure cuts were out of the hands of localities and mandated by the national government. Some budget categories were hit harder than others (James 1986). We use variation at the local level in the pre-austerity shares of spending in various categories combined with the nationally imposed spending cuts to identify the impact of spending declines. Since states and localities could not borrow to avoid the fiscal crunch, localities traversed the depression with highly disruptive fiscal shocks.

As for taxes, the Reich maintained control over a number of specific taxes determining the statutory marginal rates for income taxes and corporation turnover taxes. Changes to the statutory marginal rates applied equally to all states and localities, but the rises in the rates for different tax brackets were not equal (Newcomer 1936). We use variation at the local level in the distribution of income, which determined tax brackets, along with the nationally imposed hikes in the marginal tax rates to identify the impact of tax hikes. There is clearly a distributional component to these changes, the percentage rise in tax rates being much higher for the lower income brackets. Wueller (1933) also discusses that while tax revenue had traditionally been retained where collected, intra-state redistribution was increasingly becoming need based during the Depression. Hence, higher Nazi vote share could be because of resentment arising from distributional battles for slices of the fiscal pie in difficult times.

We also use a number of different econometric specifications to eliminate further concerns about endogeneity. We employ both long differences and city/district fixed effects models, along with an instrumental variable strategy. We are also able to circumscribe the control group by matching a district to neighboring districts just across state borders as in Dube *et al.* (2010). With the cross-border district pair matching strategy we are able to control for common economic shocks and unobserved fiscal preferences in the treatment group (i.e., socioeconomic factors that do not vary discontinuously at the border where economic shocks and trends are likely to be highly correlated). We use within district-pair variation in changes in fiscal outcomes (especially average tax rates) which are a function of the initial income distribution prior to the fiscal shock.

We also investigate polarization. Particular spending changes and vote shares had differential impacts on support for the parties of the left and the center showing that fiscal austerity is in line with theoretical political and economic predictions about its political impact. Additionally, we provide a plausible mechanism by studying mortality rates. Spending cuts limited health care spending driving up mortality. Austerity-driven mortality is likely to have been one transmission mechanism for the increase in Nazi support at the polls. Finally, looking at archival documents of Nazi propaganda, we document how Nazi leaders invoked austerity to attack Brüning and the Weimar Republic (Goebbels 1931; Hitler 1931) and how Brüning's tax

risers were seen as inefficient and unfair by the German masses (Eichengreen 2018; James 1986).

Even though there has been a German debate on whether there was an alternative to austerity (Borchardt 1979, 1980; Büttner 1989; Ritschl 1998; Voth 1993) and speculation that austerity played a role in the rise of the Nazi party (Eichengreen 2015, 2018), to our knowledge no previous research has tested empirically whether austerity measures can explain the rise of the Nazis in interwar Germany. One study evaluated the impact of the Great Depression and austerity on voting patterns on 171 elections in 28 countries (Bromhead *et al.* 2013) and another looked at the European level (Ponticelli and Voth 2011). Yet these have not considered the unique inter-war context in Germany. There have also been cross-sectional studies with aggregated data for Germany (Ritschl 2013a; Stögbauer and Komlos 2004). These studies do not use variation at the district or regional level, and the transmission mechanisms emphasized are different than ours.

Our results show a robust economically and statistically significant positive association between austerity and rising support for the Nazi party. It was not just the absence of a coherent response to social suffering from government, but also the austerity policies that worsened such suffering, leading the electorate to radicalize and polarize. Indeed, we find that the misery and suffering of the German people, as proxied by mortality, is a strong mechanism that translated German despair into votes for the Nazis.

The lowest status groups and the unemployed turned to the Communists, but those just above in the economic hierarchy, who had more to lose from the tax hikes and spending cuts, seem to have favored the Nazis. As Keynes cautioned after meeting with Brüning in 1932, “Germany today is in the grips of the most powerful deflation that any nation has experienced ... many people in Germany have nothing to look forward to—nothing except a ‘change’, something wholly vague and wholly undefined, but a *change*” (*italics* in original, Moggridge 1992, 540).

Indeed, our results show that Brüning’s austerity had a sizable effect. Each one standard deviation increase in austerity was associated with between a two and five percentage point increase in vote share for the Nazis or, equivalently, between one quarter to one half of one standard deviation of the dependent variable. Under reasonable assumptions, the Nazis would have faced significant difficulty in forming a coalition with the German National People’s Party (DNVP) in 1933 to form a majority, had austerity not been pursued so relentlessly.

In contrast to other explanations for the rise of the Nazis, austerity also played a very important role. Adena *et al.* (2015) find that exposure to the Nazis’ propaganda was associated with 1.8 percentage point rise in vote share for the Nazi party and Satyanath *et al.* (2017) find that club association density (a measure of social capital) was associated with 1.4 percentage points increase in the elections of September 1930 and March 1933. The Twin Banking crisis

of 1931 (as measured by exposure to Danatbank) was associated with 0.17 standard deviations in Nazi vote share (Doerr *et al.* 2018).

The rest of the paper is as follows. In the next section we provide a detailed account of the main existing explanations for the rise of the Nazis. Section 3 reviews how austerity was implemented and Section 4 presents the historical context of the different elections in Germany between 1930 and 1933. In Section 5 we explain the sources and methodology we use to calculate the impact of austerity on the rise of the Nazi party (Section 6). Finally, we discuss some of the parallels between what happened during the interwar period (Section 7).

2. Main explanations for the Rise of the Nazis

2.1. The Great Depression and Economic Collapse

There are many competing explanations for the stark rise of the Nazi party in Weimar Germany. The conventional explanation is the impact of the Great Depression. Those hit hardest by the economic downturn held the incumbent parties responsible for their situation, punishing them by voting for the Nazi party. The Great Depression began in 1928 in Germany with a sharp downturn in investment (Eichengreen 2018; Ritschl 2002; Temin 1971). Later, the cessation of capital inflows and the supply of loans to German banks culminated in a slowdown in the growth of credit, while other international shocks prolonged the downturn. The unwillingness of the Reichsbank to stop the deflation mattered but cannot explain regional variation in Nazi support.²

Fiscal austerity might simply have been a channel for greater economic collapse if multipliers were large enough, but Ritschl (2013a) reports that these were small. While economic hardship may seem to be an intuitive explanation, it is inadequate to account for the rise of the Nazi party (Ferguson 2001; Stephan 1931). As Table 1 shows, during the 1920s, the depth of the depression was greater outside Germany and there was no substantial difference in the economic performance of nations that, in the mid-1930s, were democratic regimes or dictatorships. If austerity and Depression mattered, it must have been something about the unique way Germany experienced it. Even if austerity did not have a standard contractionary effect, it still might have had distributional consequences.

[Table 1 about here]

² The collapse of the banking system might have affected regions differently depending on their financial development and dependence (Doerr *et al.*, 2018).

2.2. Unemployment

A related leading explanation points to the increasing numbers of unemployed workers, soaring from 1.4 million in 1928 to 5.6 million in 1932 (rising from 4.3% of the labor force to 17.4%). However, there are two important caveats. One is that, as Table 2 shows, although by 1932 industrial unemployment in Germany was higher than in any other western country, it also reached very high levels in other countries such as Norway and the USA around that time, without being accompanied by electoral radicalization. The other caveat is that those who were unemployed were actually more likely to vote for the Communist Party or the Social Democrats (in Protestant precincts) rather than the Nazi party (Evans 2003; King *et al.* 2008). It was not that Hitler did not try to appeal the unemployed masses, but rather that the Communist Party was perceived as the party that traditionally represented workers' interests. Ultimately, Hitler's attempts to attract the unemployed were ineffective. As noted by Ferguson (1997, 267) "it is a popular misconception that because high unemployment coincided with rising Nazi support, the unemployed must have voted for Hitler. Although some did, unemployed workers were more likely to turn to Communism than to Nazism."³ Again, the distributional tensions are highlighted here.

[Table 2 about here]

2.3. The Legacy of War Reparations

A third major explanation invokes resentment about high debt repayments imposed on Germany in the Treaty of Versailles. These debts initially totaled 132 billion gold marks or 260% of 1913 GDP (for details of the calculations see Ferguson 1997 or Ritschl 2013a, 113). Although France and Britain had post-war total debt burdens similar to Germany (Ferguson 1997; Heyde 1998), the Versailles agreements treated Germany as a conquered enemy, forcing it to pay the costs of the war. This placed financial demands on Germany that were very difficult to meet and which were dubbed as 'cruel' by some (Keynes 1920; Temin and Vines 2014). However, the amounts dictated at Versailles were never fulfilled completely and most German war debts were postponed in the Hoover moratorium issued on 20 June of 1931 or temporally suspended in the Lausanne Conference a year later. The burden of debt had ostensibly already been relieved by 1932.

³ Evans (2003, 237) also argues that "Communism was the party of the unemployed par excellence."

2.4. Other Competing Explanations

Other explanations invoke the Weimar Republic's electoral system, where each party was allotted a number of seats in the Reichstag proportional to the votes received in the election, which cleared the path for small parties to enter the Reichstag (Eschenburg 1984; Jepsen 1953). Relevant literature also stresses the animosity between the two major parties of the left and difficulties in building lasting coalitions. However, Evans (2003) argues that proportional representation did not, in fact, encourage the rise of the extreme right, and other electoral systems such as where the candidate who won the most votes in each constituency automatically won the seat in the Reichstag might have given the Nazi party even more seats.

2.5. Fiscal Austerity and the Nazis

Finally, there is the hypothesis that Brüning's domestic austerity measures led to a critical loss of faith in the government. As Figure 1 shows, state level real expenditure was cut by 8% (nominal total spending fell by about 25%) between 1930 and 1932 and Reich level real expenditure by 14% (30% nominal).⁴ In an attempt to balance the budget, Reich real total revenue declined by about 15%, and real GDP declined by about 15%. Clearly, this was a fiscal contraction after cyclical adjustment.

[Figure 1 about here]

Austerity not only hurt the lower middle classes and elites, by massively increasing tax rates on profits and income, but ostensibly also had a major impact on people's welfare by cutting key social spending lines after 1929.⁵ Brüning was commonly known as the 'Hunger Chancellor' stressing how these budget cuts threatened living conditions. There is in fact some qualitative-base consensus about these damaging economic effects. Eichengreen (2015, 139) comments that "radical cuts in public spending in a period when private spending was collapsing had the predictable effect of worsening the slump." Ferguson (1997, 273) also notes that "there is little doubt that fiscal and monetary policy made the slump worse between 1930 and 1932". Similarly, Feinstein *et al.* (2008, 90) also opine that "Brüning introduced a succession of austerity decrees... The descent was cumulative and catastrophic." Other historians have also commented on Brüning's devastating legacy. For Evans (2003, 253), "whatever Brüning's wider aims might have been, growing poverty made the economic situation worse" and for Ferguson and Temin (2001, 12) "Brüning tried a variety of ploys. They all failed." Several authors also opine that austerity could have contributed to the rise of the right-wing political

⁴ The spending data includes transfers to other public authorities.

⁵ The Nazis also received support from the elites, as during the 1920s top incomes lost income more quickly than the those at the bottom (Gómez-León and De Jong *forthcoming*)

extremism. For instance, Crafts and Fearon (2010) note that “German economic policy during and after the crisis of July 1931 apparently contributed to the rise of the NSDAP”. Similarly, for Feldman (2005, 494) “Brüning’s reliance on emergency decrees had paved the way for a right-wing rule” and for Eichengreen (2015, 139) “Brüning’s unrelenting austerity, by plunging the economy deeper into recession, increased political polarization”.

Historical records also point out that Hitler viewed austerity as a springboard to power. Twelve days after Brüning enacted his fourth and last emergency decree, Hitler issued a mass pamphlet titled *The Great Illusion of the Last Emergency Decree* as an attempt to channel mass frustration to reach the power. He concluded the letter saying that “Although that was not the intention, this emergency decree will help my party to victory, and therefore put an end to the illusions of the present System” (Hitler 1931). Despite the future of Nazi economic policy was a large question mark there is also evidence of an anti-austerity platform. For instance, on May 1932 (a month before the elections of July 1932) another pamphlet titled *Emergency Economic Program of the NSDAP* offered “fundamental improvements in agriculture in general, multiple years of taxation exemption for the settlers, cheap loans and the creation of markets by improving transportation routes, and making them less expensive.” On the welfare system, the “National Socialism will do all it can to maintain the social insurance system, which has been driven to collapse by the present System” and “we will make immediate preparations to carry out point 15 of the party platform: ‘We demand a generous expansion of support for the aged.’”

Austerity also formed part of the Nazi propaganda machine (Adena *et al.* 2015). In difficult days, “Goebbels ordered the Nazi *gauleiters* [a political official] to concentrate their scarce resources on the most promising sections of those who had not voted for them. Thus they must tell the bourgeois voters what to expect if Hindenburg was re-elected [in the presidential elections of 1930]: the stopping of pensions, huge tax burdens, and renewed inflation, as well as further territorial encroachments” (seen in Irving 1996, 261). In a speech in May 2 of 1931 at the Reichstag, Goebbels very prominently also alluded tax pressure on the middle-class (Goebbels 1931).⁶ Close to the elections of 1933, Voigtländer and Voth (2014, 1) also stress that promises for the construction of a highway system were effective in boosting popular support for the Nazis, stressing that “highway construction signalled economic “competence” and an end to austerity” (see also Ritschl 2013b).

⁶ We thank Hans-Joachim Voth for calling this speech to our attention.

3. Fiscal Federalism and Austerity by Executive Decree

Under Article 48 of the Weimar Constitution, Brüning, virtually alone, ruled the country by emergency decrees. Brüning's austerity measures began in spring 1930 with a policy of tight credit and a rollback of civil service salary increases, cuts in government expenditure and unemployment insurance benefits, and tax increases (Mommsen 1989; Schmidt and Ostheim 1949). This policy was highly unpopular among the majority of the Reichstag members, leading President Hindenburg to dissolve the Reichstag and call new elections. While austerity had seemingly been rejected by the electorate and other parties, many were willing to accept it due to fears of a worse extreme right-wing alternative. As Eichengreen (2018, 86) notes, "That the most dramatic cuts were imposed by decree, circumventing normal legislative deliberation, did not foster popular admiration of the politicians then in office or enhance the legitimacy of the constitutional system."

In the elections of September 1930, the SPD remained as the largest party in the Reichstag (with 8 million votes), however Nazi support surged to more than 6 million votes. The September 1930 election was a key turning point in German history, not only for the Nazis' successful results, but because it was seen as a withering verdict against austerity—a message that went unheeded. As discussed by Temin (1990, 82-83) "...it is clear that the vote of 1930 was a resounding rejection of Brüning's policies at an early stage."

Although a fiscally federal system the national government still mattered. By 1930 Reich spending accounted for half of all expenditure. During the Brüning years, the national government began to limit the ability of states to raise property tax rates. In 1932 it acted to limit local authority spending (Feldman 1993, 222-223).⁷ The key taxes in the Weimar revenue system were incomes taxes (20% of total revenue) and property and property equity taxes (20%), business, corporation, and transactions (14%), turnover (7%), and a host of excise duties as well as reparations levies.⁸ Feldman (1993, 221, 225) notes that, as of 1928, 56% of all tax revenue in Germany derived from classes of taxation on which the Reich directly controlled the statutory rates (e.g., income, corporation taxes, customs duties, tobacco and sugar). Meanwhile 54% of state revenue and 39% of local authority revenue was accounted for by taxes over which these units had no control over statutory rates (e.g., property and buildings taxes). In 1929 local authority revenues were about one-third of total revenues, state revenues 20% and the Reich accrued 48% of all revenue.

⁷ Unemployment insurance benefits and contributions were also determined at the national level. The Reich was responsible for deficits in these funds and for supplementing payouts with "relief" payments once insurance benefits had expired.

⁸ There were two main bases for collection and re-distributing revenue: origin and population. While the origin base (passing back of money to the locality where it was collected) failed to take into account of the local need factor, redistribution by the population principle could be effective in terms of 'need'. Yet, the extent of re-distribution depended on state political bargains and the tax in question and key taxes were distributed on origin (Wueller 1933, 38).

In 1928 the Reich directly received 25% of total income and corporate tax revenue, whereas 37% went to the states and 34% to local governments (the remainder, 4%, was due to the Hanseatic cities). By 1932 the Reich share of the income and corporate tax revenue had risen to 32%, but the states still accounted for a significant level with 36% and the local governments 29% of total revenue from these sources. On this shift, James (1986, 76) observes that “the Reich Government indeed deliberately pushed responsibility for unpopular measures onto Lander governments struggling to maintain parliamentary majorities” where regional governments were “left with odious taxes and falling revenues.” He also notes that “the Reich did nothing to lessen the discomfiture of the Lander in the depression” (James 1986, 76).

Although austerity was determined at the Reich level, the extent to which it mattered varied by state and locality. We believe that the source of this variation mainly depended on how reliant lower levels of government were on different types of expenditure and taxation. Around 40% of the spending cuts were implemented by local authorities, 22% by the different states and around one third by the Reich (Newcomer 1936).⁹ However, the extent to which they were applied and the sectors to which they were applied in each state and district varied according to a number of pre-determined fixed factors, including population and land area, number of schools, highway mileage, and the distribution of income (see Newcomer 1936, 205).¹⁰

Political affinity to Bruning’s policies might have mattered, but in essence, the room for maneuver in the states was highly constrained. States could no longer borrow on international capital markets after 1930 and only a small share of state spending was accounted by local tax revenue over which a state had control. While local politicians could potentially shift spending between categories the Reich increasingly dictated the way in which states should spend money and in many instances they relied heavily on Reich “subsidies” or transfers (e.g., policing, relief spending etc.). States were thus also constrained both by an inability to legislate tax rates, and by the traditional ways of re-distributing tax revenue. Newcomer (1936, 205) also comments that “it is unfortunate that the equalizing factors adopted have been vitiated in a number of instances by guarantees of pre-war income” (see also Wueller 1933, 36). Our bottom line is that when we look at income tax revenue and total expenditure these variables were largely out of the hands of state governments and local authorities.

⁹ For comparison, Feinstein (1964, 31-36, 86) calculated that in 1931 the British central government controlled 62% of the total expenditure.

¹⁰ It is possible that greater unemployment also generated greater transfers via the unemployment insurance scheme. Yet, by 1931, the period of eligibility for unemployment relief was drastically restricted and nearly all people under 21 years were excluded from welfare benefits.

4. Brüning's Fall and the Rise of Dictatorship

On 30 May 1932, Brüning was removed from the Chancellorship and Hindenburg appointed a minority cabinet headed by von Papen. von Papen began introducing some stimulus packages, involving employment programs, tax credits and subsidies for new employment, public works projects, and agricultural improvement (Evans 2003; Feinstein *et al.* 2008; Schneider 1986). Despite these were modest in magnitude, Germany's economic situation began to improve. Between 1932 and 1933 GDP grew by 6% (GDP fell by 8% between 1931 and 1932 and between 1930 and 1931) and the unemployment rate declined by 8% percentage points (it increased by 10% percentage points between 1931 and 1932 and, by 12% percentage points between 1930 and 1931).¹¹

These changes appeared to have temporarily delayed the Nazi's rise. Between the elections of July 1932 and November 1932 the Nazi party dropped from 608 seats in the Reichstag to 584. As O'Rourke (2010) comments, "by this stage Brüning was gone, his successor adopted some modestly stimulative policies, and there were signs of a partial recovery. Not coincidentally, in November 1932 the Nazi share dipped to 33.1%; but by then it was too late, and the Weimar Republic was doomed." However, von Papen had virtually no support in the Reichstag and in attempt to increase his support call for new elections in July and November of 1932. Yet, given the upswing by the Nazi party by December 1932, Hindenburg appointed Schleicher of the DNVP as Chancellor. He lasted for less than two months. Adolf Hitler was appointed chancellor on 30 January ahead of the decisive elections of March 1933 where the Nazi party became the largest party (44% of the votes) and built a bare working majority with the DNVP that offered 8% of the votes.

5. Data and Methodology

5.1. City level data

We collected data on the Nazi party vote share for the four federal elections between 1930 and 1933 for German cities above 50,000 inhabitants ($N=98$) using data from the official publication *Statistik des Deutschen Reiches* (ICPSR 1999). We then transcribed data from the *Statistisches Jahrbuch deutscher Städte* on key economic variables.¹² For each city, we collected city spending data which includes transfers from higher levels of government and spending by budget category, in 1,000 RM. We also collected data on city level unemployment. Unemployment is defined as people in the labor force not working and registered in the local offices as

¹¹ GDP data form the Maddison project and unemployment from Eichengreen and Hatton (1988, 6-7).

¹² For the German names, *Statistik des Deutschen Reiches* stands for Statistics of the German Reich and *Jahrbuch deutscher Städte* for Statistical Yearbooks of the German Municipalities. *Reichs-Gesundheitsblatt* stands for the Reich Health Bulletins.

an unemployed person. We proxy city economic output and prosperity by the construction of new apartments on residential buildings. Unfortunately, at the city level, income taxes were only available for 1929 and 1932 and we decided to not use them as we have more disaggregated data at the district level (Section 5.2). For cities above 100,000 inhabitants ($N=51$) we also transcribed cause adjusted mortality data using the *Reichs-Gesundheitsblatt*. We aggregate the weekly data from these health bulletins into yearly data and calculated crude death rates weighting the number of adult deaths by the mid-year population (x1,000). Notably, all the variables in the panel are at the same level of aggregation (city). For more details about the data see the Data Appendix.

5.2. District level data

Data for the 4 federal elections between 1930 and 1933 at the district level ($N=1,024$) are also from the official publication *Statistik des Deutschen Reiches* (ICPSR 1999) (see Figure A1 in the Appendix). As individual-level data are unavailable, we use aggregate data from small geographic units, recognizing the limitations of all ecological studies. From the *Statistik des Deutschen Reiches* we collected district/municipal and state level data on government spending (in 1,000 RM) and district level data on income and wage taxes. Data on taxes include the number of taxpayers, total taxable income, and total revenue for each state (in 1,000 RM). The wage tax (*lohnsteuer steuerabzug vom arbeitslohn*) is an ex-post declaration-based income tax and the income tax (*einkommensteuer*) is the sum of direct taxes on incomes and contributions to social security and unemployment insurance.¹³ For the wage tax, data were available in 1928, 1932, and 1933 and for the income tax for the years 1928, 1929, 1932, and 1933 (see Dell 2007, 384, Tab. 9A1)¹⁴. Despite data being unrecorded for some years, the available years allow us to capture the main changes in taxation in the period of interest (1930-1933).

From the *Statistik des Deutschen Reiches* we also collected the data on state-level unemployment (people in the labor force not working), a proxy for state-level economic output (generation of electricity, in 1,000 kWh), and city level hourly wages. We created a state-level index of nominal wages averaging the monthly data from the hourly wages paid in four occupations (construction, wood and skilled and unskilled workers in metallurgy) in 38 big cities which have been located within each of the states. To test competing explanations, we also operationalized changes in economic output. Here we use a proxy based on electricity generation, as these two correlate closely, since the vast majority of goods and services are produced using electricity. We further include a measure of unemployment and also wage deflation

¹³ We also digitalized data on corporate taxes (*Körperschaftsteuerveranlagung*), but not used them, as according to James (1986, 64), “The level of corporation tax was left unchanged (at 20 per cent of corporate net income).”

¹⁴ Fiscal years ran from 1 April to 31 March. When we say 1928 this is for the fiscal year 1928-29.

though an index of nominal wages. More details of the data are available in the Data Appendix and descriptive statistics on all variables are available in Table A1 of the Appendix.

5.3. Mechanism: Mortality and Spending Cuts

A popular proposal for a mechanism behind the rise of populist parties is that they gain the most votes where health fares worst. For example, Bor (2017) documents that in the recent US elections change in life expectancy was a causal factor in the shift in Republican vote share. Hence we hypothesize that middle- and upper-classes who suffered most from the grips of austerity were more likely to vote for the Nazis.

Suffering arose not just from economic insecurity and marginalization but also from persistent high mortality rates, due to the lack of a social response to hardship, with cuts on health insurance, basic social and relief programs and even very simple programs related to sanitation such as the cleaning of the streets and the removal of sewage. As noted by Eichengreen (2018, 73), “the failure of the political establishment to do more to help those feeling the most damaging effects and instead curtailing even those limited programs of social support of greatest value to the masses—the decision to opt for what today we would call austerity at the cost of the working class—bred support for political extremists.”¹⁵

6. Austerity and the rise of radical voters

Between September 1930 and July 1932 the number of votes for the Nazi party increased from 6 million to 14 million with overall spending in main cities being cut by 6 percent. The cut in expenditure was much higher in key social areas such as health and wellbeing (14 percent), education (33 percent) and housing (38 percent). Figure 2 shows a strong and positive correlation between Germany’s real government expenditure cuts (i.e., minus 1 times the percentage change in nominal spending) and Nazi electoral success between 1930 and July 1932.

[Figure 2 about here]

6.1. City level panel

Next we test the association between austerity and the rise of the Nazi party after conditioning on several variables. We report the results of statistical models where the dependent variable is either the level of the Nazi vote share (when using city fixed effects) across cities or the change in the share of votes for the Nazi party between elections. When we include city and

¹⁵ In Section 2.5 we also documented that when the Nazis exploited the German suffering, for parts of the German society became more acceptable to vote for Hitler in order to end pain.

time fixed effects, the model yields a difference-in-differences with an intensity of treatment interpretation based on:

$$\text{NAZI}_{ct} = \alpha + \beta_1 \ln(\text{Expenditures}_{ct}) + \beta_2 \ln(\text{Unemployment}_{ct}) + \beta_3 \ln(\text{Output}_{ct}) + \mu_c + \delta_t + \varepsilon_{ct} \quad (1)$$

Where c is a city, t is an election period and NAZI denotes the vote share of the Nazi party as measured by the ratio of the number of votes to the Nazi party over the total number of (valid) votes cast. Additionally, Unemployment_{ct} is the number of registered unemployed in a city, Output_{ct} is our proxy for economic output in a city and ε_{ct} is an error term. These control variables are expressed in natural logarithms. We standardize data to have a mean of zero and a standard deviation of one so coefficients across models are directly comparable. We also include city fixed effects (μ_c) and a fixed effect for the fiscal years 1931/32 and 1932/33 according to specification (δ_t). We report standard errors clustered at the district (*Regierungsbezirke*) level, although, similar to Satyanath *et al.* (2017), we observe that clustering at the state level makes only a very small difference (increasing somewhat standard errors) suggesting that spatial dependence (at least at the state level) is not a major concern in our data.

Since expenditures are for fiscal years, we use the controls of 1929 for the elections of September 1930, controls of 1931 for the elections of July and November 1932 and controls of 1932 for the election of 1933. In Table 3 we study three different samples: first, we use only Nazi vote shares in September 1930 and March 1933 (columns 1-2), the latter year witnessing a massive electoral bump for the Nazis even if 1933 could not be treated as totally free elections with the SA and the SS instigating terror against other political wills. Second, we include Nazi vote shares in September 1930 and the two elections of 1932 (columns 3-4) and third, pooling the data for the four elections (columns 5-6). From the three different models, our preferred specification is the change between 1930 and 1932. These specifications allow for the accumulated impact of austerity in cities that had larger spending cuts and tax rises relative to areas which had lower treatment intensities.

Our identifying assumption is that each city's spending cuts have a component or share determined at the national level and so exogenous to the circumstances of the cities. Of course the incidence of spending or tax changes could vary with the income distribution or the shares of spending categories. With a stable distribution of income, or assuming that shocks at different levels of the income distribution are conditionally uncorrelated to unobserved drivers of Nazi vote share, we are isolating the impact of exogenous policy changes. Since some expenditure categories were hit harder than others, we estimate unbiased parameters so long as the changes in spending were uncorrelated with the levels of the pre-determined variables driving dependence on various categories of expenditure.

Using specifications in levels (Table 3), we find strong evidence that spending is negatively and statistically significantly associated with vote share for the Nazi Party. Specifically, a one

standard deviation increase in the natural logarithm of spending decreases Nazi vote share (in standard deviation terms) by from -0.36 (95% CI: -0.66 to -0.06) in column 2 to -0.78 (95% CI: -1.21 to -0.35) in column 4. Unemployment is not statistically significant when including the elections of 1933 (1.02; 95% CI: -0.99 to 3.03). However, when we consider the change between 1930 and 1932 results for unemployment are statistically significant at 5%. It is likely that urban unemployment is reflecting mostly industrial unemployment, which was lower than unemployment in rural settings. As argued by Doerr *et al.* (2018), it might also be that as a consequence of the 1931 banking crisis, the unemployed favored the Nazis in the main German financial and industrial hubs. Finally, when controlling for austerity and unemployment, the economic output variable is not statistically significantly associated with the Nazi electoral success. Yet, the Nazi economic program in the different elections was less than precise but tended to be anti-austerity, and Brüning’s discourse until 1932 was highly efficient in ‘instrumentalizing’ the depression in order to pursue austerity.

In Table 4 we modified equation 1 and, instead of all city level expenditure, we study the impact of changes in different types of expenditure. Interestingly, most of the effect of austerity is driven by cuts in health and wellbeing (-1.03; 95% CI: -1.53 to -0.52) and housing (-0.21; 95% CI: -0.39 to -0.03) (column 4). Indeed, the size of the effect for cuts in health and wellbeing are 32% higher than the overall effects of the spending cuts presented on Table 3, showing that social cuts plausibly exacerbated the suffering of the German masses, influencing their decision to vote for the Nazi party.

[Tables 3 and 4 about here]

6.2. Cross-city models in differences for the different elections

Next, in Table 5 we model the impact of city level measures of austerity on the city level Nazi vote share in differences with the following equation:

$$\Delta\text{NAZI}_{ct} = \alpha + \beta_1 (\% \Delta \text{Austerity}_{ct}) + \beta_2 (\% \Delta \text{Unemployment}_{ct}) + \beta_3 (\% \Delta \text{Output}_{ct}) + \delta_t + \varepsilon_{ct} \quad (2)$$

Here austerity is measured city level *change* in expenditure expressed in percentage points. NAZI again denotes the percentage point vote share of the Nazi party. The dependent variable is thus the change between 1930 and later elections in the ratio of the number of votes to the Nazi party over the total number of (valid) votes cast (measured in percentage points). Unemployment and Economic output are also expressed in percentage points. We cluster the standard errors at the city and administrative district level (*Regierungsbezirke*). In the differenced model, the impact in terms of standard deviations in vote share for the Nazi party associated with a one standard deviation increase in the natural logarithm of the spending is -0.36 (95% CI: -0.23 to -0.49) (column 4).

Using differences allows us to instrument the spending changes with transfers from the Reich (*Überweisungen aus Reichsteuern*) to the cities in 1929 as a share of city level spending in 1929.¹⁶ This instrument is a measure of cities' reliance on the Reich prior to the austerity shock. While the percentage cuts in spending by budget category were likely to be administered evenly across the nation, localities had different shares of these categories and differential levels of reliance on the Reich for revenue. We assume these ratios and shares are for pre-determined reasons. The association between the spending change on the initial share (i.e., the first-stage) is positive and statistically significant. The second stage IV results (column 6) are just 14% above the OLS results in column 4, showing that OLS results may not be highly biased.

[Table 5 about here]

6.3. The Hunger of Austerity

Brüning's fiscal plans were part of a political strategy to elicit international sympathy for German suffering putting an end to WW1 reparations. This strategy, was never a clear political winner, and soon it lacked an economic rationale (Eichengreen 2015; Ferguson 1997). By June 1931, the Hoover Moratorium had suspended Germany's WW1 debts for one year. A year later, in July 1932, reparations were permanently postponed at the Lausanne Conference. As noted by Voth (1993), Brüning's memoirs, also tell us that in December 1931 he could also have negotiated a nearly complete end of the Young Plan payments. However, Brüning's response to the temporary suspension of debt reparations was more austerity, with new emergency decrees issued in June, October and December of 1931. Coinciding with the fiscal retrenchment, mortality rates, which had been declining, started to rise rapidly after 1932. This rise was, however, not shared by any other European nation, where mortality continued to decline (Baten and Wagner 2002).

To further explore the austerity-driven suffering of the German people as a mechanism, Figure A2 of the Appendix models the impact of city level measures of austerity on overall mortality and deaths from major causes with the following equation:

$$CDR_{cty} = \alpha + \beta_1 \ln(\text{Expenditures}_{cti}) + \beta_2 \ln(\text{Unemployment}_{ct}) + \beta_3 \ln(\text{Output}_{ct}) + \mu_c + \delta_t + \varepsilon_{ct} \quad (3)$$

Where c is a city, t is an election period (September 1930, July 1932, November 1932 and March 1933), y is a particular cause and CDR denotes the number of deaths for cause y divided by the mid-year city population (x1,000). The variable expenditure relates to the budget category, where i could be one of the following six categories: general administration, education,

¹⁶ Data from the *Überweisungen aus Reichsteuern* are also collected from the *Statistisches Jahrbuch Deutscher Städte*.

health and wellbeing, construction, public infrastructures and housing. The other controls are also unemployment and economic output as defined in equation 1.

Not surprisingly, only declines in spending in health and wellbeing categories were consistently statistically significantly connected with rises in overall and infant mortality. Most rises in mortality were driven by increases in death rates from infectious diseases such as pneumonia or influenza and from accidents and homicides, possibly due to increases in violence and robberies. Deaths among the elderly (e.g., senility) and suicides also rose as social spending fell. As a placebo test, Figure A2 of the Appendix also shows that some causes of death such as cancers and heart diseases that are less likely to be affected by short-term changes in economic changes or spending are not statistically significant. Moreover, mortality was not associated with levels of unemployment or economic output once expenditure was controlled for.

In Table 6 we further explore the link between austerity and Nazi vote share by using the model from equation (1) and controlling for mortality. After controlling for unemployment and economic output and other fixed effects, increases in spending are negatively and statistically related to Nazi party vote. However, once we add mortality as an explanatory variable, expenditure is no longer statistically significant (-0.51; 95% CI: -0.13 to 1.14). We achieve the same overall finding if we pool data from all elections (columns 4-6). This result further illustrates that the impact of austerity on the polls was in effect channeled through German suffering (as measured by changes in mortality). It is also interesting that the size and levels of significance for the variables unemployment and economic output are similar before and when we include the variable mortality. Results also show that these two variables are unrelated to the German suffering as a mechanism for voting the Nazi option.

[Table 6 about here]

6.4. District level panel

We next move to district level data. Since spending data at the district level are unavailable from national sources, we rely on district level taxes as our measure of austerity with the following equation:

$$\text{NAZI}_{dt} = \beta_1 \ln(\text{Avg. Tax Rate}(\lambda))_{dt} + \beta_2 \ln(\text{Wages}_{st}) + \beta_3 \ln(\text{Unemployment}_{st}) + \beta_4 \ln(\text{Output}_{st}) + \mu_d + \delta_t + \varepsilon_{dt} \quad (4)$$

Where d is a district, t is an election period (September 1930, July 1932, November 1932 and March 1933), s is a state and NAZI denotes the vote share of the Nazi party as measured by the ratio of the number of votes to the Nazi party over the total number of (valid) votes cast. The index λ denotes the way we measure austerity, simply as the natural logarithm of the district average tax rate of income or wage taxes. The average tax rate is calculated as tax

revenue divided by total declared taxable income. Additionally, $\ln \text{Wages}_{st}$ is the level of nominal wages in a state from the indexed basket of wages, $\ln \text{Unemployment}_{st}$ is the log of the level of the number of unemployed in a state, Output_{st} is our proxy for economic output in a state and ε_{dt} is an error term. For all elections in 1930, 1932 or 1933 we use values of controls besides taxes in 1930 and 1932. Wage taxes were only available for 1928, 1932, and 1933. So we use the values for 1928 and 1932. Income taxes are only available for 1928, 1929, 1932 and 1933. We use the values for 1929 and 1932. We also include district fixed effects (μ_d) and a fixed effect for the fiscal year 1932/1933 (δ_t) and report standard errors clustered at the district level or state level. The number of clusters is somewhat low (clusters are given by the total number of states and Prussian provinces), but state level correlations are less of a concern since district fixed effects pick up the state fixed effects.

At the district level we also find strong evidence that Brüning’s fiscal reforms, as measured by increases in district level taxes, are positively and statistically significantly associated with vote share for the Nazi Party (Table 7). For instance, for the sample that includes the elections of 1930 and 1933 (column 1), the impact measured by the number of standard deviations in vote share for the Nazi party associated with a one standard deviation change in the natural logarithm of the average tax rate is 0.16 using income taxes (95% CI: 0.08 to 0.25) and 0.19 using wage taxes (95% CI: 0.09 to 0.30).

[Table 7 about here]

6.5. Cross-district models in differences for the different elections

We next model the impact of austerity on Nazi vote share using long differences across election years with the following equation:

$$\Delta \text{NAZI}_{dt} = \alpha + \beta_1 (\% \Delta \text{ Avg. Tax Rate } (\lambda)_{s/dt}) + \beta_2 (\% \Delta \text{ Wages}_{st}) + \beta_3 (\% \Delta \text{ Unemployment}_{st}) + \beta_4 (\% \Delta \text{ Output}_{st}) + \varepsilon_{dt} \quad (5)$$

Where the average rate of *income* or *wage* taxes (denoted by λ) is calculated as the ratio of tax revenue divided by total declared taxable income. Tax rates are indexed by districts d , or states, s , t is an election period (September 1930, July 1932, November 1932 or March 1933) and Δ denotes the difference across election years; NAZI denotes the percentage point vote share of the Nazi party in the four different elections, the difference Δ is taken between the three later elections and the initial election of September 1930. The results in Table 8 show that the impact in terms of standard deviations in vote share for the Nazi party associated with a one standard deviation change in the natural logarithm of the average tax rate is 0.12 using income taxes (95% CI: 0.06 to 0.17) and 0.07 using wage taxes (95% CI: 0.01 to 0.12).

Additionally, when we add the lagged Nazi vote share to control for differential growth based on initial Nazi support, results are also very stable lowering the size of the standardized coefficient by 7%. Lagged values refer to the election immediately prior to the latest election in the differenced dependent variable. Finally, in columns 7-8 we also add state fixed effects which allows for differential state-level trends and potentially mops up some of the within state correlations in the error terms of the differenced model. Here too the results are very similar quantitatively and qualitatively to those in the previous columns. Finally, if instead of income taxes we use wage taxes, results are also very consistent across models.

To control for endogeneity, we also instrumented the percentage change in taxes with the level of the income tax rate in 1928 (Table 9). Using the district variation in initial average income tax rates we can also replicate the results using OLS showing a positive relationship between changes in tax rates and Nazi vote share. Results are not dependent on clustering at the district level or at the state level. Nevertheless, the size of the standardized coefficients using the IV are above those using OLS (3-4 times larger).

[Tables 8 and 9 about here]

6.6. Cross-district models in differences for the different elections

As a robustness test we also model the impact of state level measures of austerity on the district level Nazi vote share in differences with the following equation:

$$\Delta \text{NAZI}_{dt} = \alpha + \beta_1 (\text{Austerity}(\lambda)_{st}) + \beta_2 (\% \Delta \text{Wages}_{st}) + \beta_3 (\% \Delta \text{Unemployment}_{st}) + \beta_4 (\% \Delta \text{Output}_{st}) + \varepsilon_{dt} \quad (6)$$

Following the methodology of the IMF, we define austerity (λ) as the size of the fiscal consolidation: the combined percentage change in average tax rates (wages or income taxes) and spending cuts. In panel 1 we show the results using the sum of state and municipal spending cuts and percentage changes in the wage tax rate and in panel 2 with changes in the income tax rate.¹⁷ Average tax rates are calculated as the tax revenue divided by total taxable incomes of various sorts at the state level and all the measures are expressed in percentage changes (x100).¹⁸ NAZI again denotes the percentage point vote share of the Nazi party. The dependent variable is thus the change in the ratio of the number of votes to the Nazi party over the total number of (valid) votes cast between two elections (measured in percentage points).

In columns 7, 8 and 9 we also weight the regressions by the level of population to emphasize the data from the larger provinces and states and eliminate undue influence from smaller states

¹⁷ By tax rate we mean the average tax rate or total revenue divided by the total taxable income in each category.

¹⁸ The IMF defines fiscal consolidation as a policy result of increases in taxes and/or cutting expenditures to adjust the fiscal balance.

(Solon *et al.* 2013). We cluster robust standard errors at the state level and since we use differences of all variables, time-invariant unobservable heterogeneity explaining the level of Nazi vote share at the district level is eliminated as if we had included district fixed effects in a regression of levels of variables, differencing out any district-level differences in propensity to vote for certain parties and other cross-district economic and social level differences.

Results using cross-district differences and state level austerity are presented in Table A2 of the Appendix and are in line with the previous tables. We also test the robustness of the association pooling data for all four elections (Table A3 of the Appendix). This is a reduced sample, which conforms to the sample that has both district income and wage taxes available with standard errors clustered at the state level. Results are also robust when we weighted the regressions by the level of population and when we include the lagged values of Nazi vote share. In Table A4 of the Appendix we also calculate the taxes as the percentage point change instead of percentage change in income and wage taxes. The results are again very similar quantitatively and qualitatively.

6.7. Border-pair policy discontinuity models

We also use a policy discontinuity design at state borders following Dube *et al.* (2010) and Holmes (1998). By looking at district-pairs which lie along state borders, Dube *et al.* (2010) exploit variation in state or county-level policy (in their case, minimum wage laws in the United States) induced by differential legislation across borders. This approach, which considers only districts within states that share a border, helps provide suitable control groups given the extreme similarity of other local economic, social and political conditions besides austerity imposed by state level governments. This strategy limits biases imparted by unobserved or unmeasured confounders correlated with austerity and deals with endogeneity associated with unobservables.

Figure A3 of the Appendix shows a map of districts that share a border. For each election at date t (t defined by the elections of September 1930 and July 1932), our border district pairs data are organized to have at least two observations in each pair p (one for each state in the pair). A given district appears in the data k times (for each election t) if it borders k districts. The district-pair match on opposite sides of a state border is a good control group since while there are substantial differences in treatment intensity of austerity, due to differing state level policies, these pairs, as shown in Table A5 of the Appendix, are very similar culturally, socially and economically. Indeed, this border matching estimate is clearly not reflecting religious differences or industrial versus agricultural variations, as there are only very small differences in religion, economic activity and employment between near borders pair-districts.

Importantly, approaching the border most controls vary smoothly, but the treatment variable jumps. For instance, the change in the income tax ratio within each state for the elections of 1930 and 1932 is on average 10% in non-border districts and 19% in the border districts. Hence, variation in austerity across state borders would be due to differences in state level decisions on austerity. To the extent that austerity has a common, national component across states then we assume that variation is due to changes in the income distribution, the initial income distribution or differences in the sectoral spending patterns. Our assumption is that differences in these variables is much smaller than in the full sample.

We model the Nazi party vote share in district d in year t in levels in a difference-in-differences with intensity of treatment framework (Table 10). Austerity here is measured as the logarithm of the taxes paid minus the logarithm of expenditure within a state (i.e., the log of the fiscal surplus). We use income and wage taxes in alternative specifications indexed by λ . Since along with district (μ_d) and time fixed effects (δ_t) we also cluster the standard errors at the state level and for the district border segment, we account for potential mechanical correlation given the presence of districts in multiple pairs (Dube *et al.* 2010). In total there are 459 districts that lie along a state border and for each border-district we match all the neighboring districts that are located on opposite sides of the borders, yielding a total of 1,080 border-pairs. We provide four types of specifications (according to whether we use district-pair fixed effects (μ_p) and district-pair fixed effects by year interactions (μ_{pt})). Our specification is as follows:

$$\text{NAZI}_{dt} = \beta_1 \ln \text{Surplus}(\lambda)_{st} + \beta_2 \ln \text{Wages}_{st} + \beta_3 \ln \text{Unemployment}_{st} + \beta_4 \ln \text{Output}_{st} + \mu_{d/p/pt} + \delta_t + \varepsilon_{dt} \quad (7)$$

We find that the variable Surplus for the border pair sample is also positive and statistically significant using the two-way clustering or with very low p-values using Surplus 1 (that combines spending and wage taxes) or Surplus 2 (that combines spending and income taxes). For instance, a time-varying district-pair fixed effects model using Surplus 1 gives a standardized coefficient of 0.28 (95% CI: 0.15 to 0.42) and using Surplus 2 a coefficient of 0.23 (95% CI: 0.06 to 0.40). This border pair matching strategy for state level change in taxes and spending shows that a well-identified piece of variation, comparing neighboring districts that straddle state borders, produces consistent results with the full sample, with strong evidence of a positive and statistically significant relationship between austerity and the Nazi vote share.

[Table 10 about here]

In Table A6 of the Appendix we also instrumented the change in the level of taxes paid with the initial level of taxes paid in 1928 using district-pair and state level clustering along

with district pair fixed effects. Here too the results are very similar quantitatively and qualitatively to those in Table 10.

6.8. Nazi party membership

Finally, we also modified equation 6 where instead of using vote share for the Nazi party as the dependent variable, we use district level data on entry into Nazi party membership (Table 11). Data on party entry are originally from Brustein and Falter (1995), although we use the data organized by Adena *et al.* (2015), which computes spatially the number of people who joined the Nazi party in 1932 and between February and May 1933.¹⁹ Hence, we focus on the inflow of people into the party rather than on the stock of party members. Here too we find evidence that due to austerity people not only voted for the Nazis but also became Nazi party members. This result is important as it reveals strong preferences for the Nazi ideology due to austerity. Satyanath *et al.* (2017, 496) looking at the association between social networks and entry into the Nazi party, also observed that “measures of income and wealth (based on tax assessments) show positive correlations with Nazi Party entry.”

[Table 11 about here]

6.9. Impact of austerity on alternative platforms

As it could be that voters unsupportive of austerity simply migrated from supporting center parties at the polls to either end of the political spectrum, we explore whether austerity impacted the other main political parties. In Table A7 of the Appendix we show that while austerity is insignificantly associated with communist (KPD) vote share, unemployment is consistently positively and significantly associated with the KPD and that improvements in the economy also brought new votes to the KPD. For the Center Party (Brüning’s party) austerity clearly reduced support for the party between 1930 and 1932 but the results somewhat weaken when Brüning left and von Papen started to implement some expansionary policies (columns 3-6) (Table A8 of the Appendix). The positive and statistically significant association between unemployment and vote share to the Center party can be explained by Brüning’s premise to ‘instrumentalize’ the Great Depression to pursue austerity. Since the Social Democratic Party (SPD) formed a coalition with the Centre Party and two liberal parties appointing Brüning as chancellor, the German electorate also penalized the SPD for the contractive fiscal measure (Table A9 of the Appendix). Finally, results for the DNVP, a major conservative and nationalist party before the rise of the Nazi Party, show how efficient

¹⁹ It ends in May 1933 because, due to the massive increase in the number of applicants, the Nazis stopped accepting new members in that month (the ban was lifted in 1937).

was the Nazi party (and not just far-right parties) to channel the mass frustration of austerity, with a negative and statistically significant relationship with different measures of austerity. The DNVP was a party that supported Hitler's appointment as Chancellor in January 1933 and joined forces in the *Harzburg* Front of 1931 (a short-lived radical right-wing alliance) to promote the succession of Brüning and opposition against the authoritarian Article 48.

7. Discussion

This paper offers econometric support for the idea that austerity created polarization and radicalization of the German electorate. Each one standard deviation increase in austerity measured in several different ways was associated with between a two and five percentage point increase in votes to the Nazis or up to one quarter or one half of one standard deviation of the dependent variable. At the upper end of our point estimates, it is plausible to argue that the Nazis might never have achieved power in March 1933 since it would have required coalition partners to supply up to 11 percent of the votes. As it happened, the Nazis relied on the support of the DNVP in March 1933, a party which could only offer 8% of the votes in the Reichstag. Presumably the lost vote share would have gone nearer to the political center than the DNVP. Of course counterfactual history is always treacherous ground on which to tread and so we provide this particular result more by way of example than as categorical truth. Indeed, austerity is only one factor affecting the rise of the Nazi party and future work is needed to explore additional hypotheses.

Our analysis is also conservative in the sense that we are controlling for output and employment, two variables potentially related to and affected by fiscal policy if multipliers are strong. Even after controlling for these factors austerity matters. One possibility is that each of our variables is an imperfect signal of the strength of the shock of the downturn. The other possibility is that austerity proxies not only for the destructive contractionary effect on output and employment but also for distributional battles. In particular tax revenue began to be shifted from its origin to places in need, in defiance of long-standing tradition. Moreover, particular types of spending were hit harder. Places that relied on the national government for health and wellbeing spending were hit extremely hard. Our evidence on the mortality suggests that this one key transmission mechanism for austerity.

Weimar Germany was not primarily designed to be a fiscal system that shared risk via fiscal transfers, even if the unemployment insurance fund did act in this way to a degree. While extremely hard to document the rules and norms for such transfers because of the number of players in the system, it is an open question whether austerity had an impact because resources were increasingly re-distributed in an egregious and unacceptable fashion or whether budgetary cutbacks and higher taxes had a negative impact on pocket-book voters in localities ravaged by austerity. Undoubtedly, the relationships we have identified suggest an element of truth in both.

Our work also draws some parallels with new populism in Europe and North America. Austerity packages in recent years, have often correlated with rising vote shares of far-right and neo-Nazi parties. These include the Austrian Freedom Party, the National Front (France), Alternative for Germany, Golden Dawn (Greece), the Fidesz-KDNP and Jobbik parties (Hungary), Law and Justice (Poland), Northern League (Italy) and the People's Party Our Slovakia. Donald Trump in the US offers another example. Also relevant is the rise of the UK Independence party (UKIP) and the events that followed the EU referendum, with a backlash against immigration in Europe and elsewhere. Research by Fetzer (2018) indicates that austerity tipped the balance towards Leave.

Another parallel is between the Great Depression and the Great Recession, both associated with a run-up in credit and US financial markets which collapsed. A third is the lack of monetary policy to maneuver: in the 1930s with the gold standard and today with the euro, paired with very high unemployment rates. Both then and now economies collapsed, giving rise to problems of balancing budgets and austerity. Recently, southern European countries have been forced by, ironically, a strong Germany and the 'troika' (the tripartite committee led by the European Commission with the European Central Bank and the International Monetary Fund) to pursue fierce austerity policies in exchange for emergency loans. In both cases, the finances of the countries are also dictated by a group of technocrats, without political accountability.

The corollary seems clear: even when the particular history of a country precludes a populist extreme-right option, austerity policies are likely to produce an intense rejection of the established political parties, with the subsequent dramatic alteration of the political order. The case of Weimar Germany explored in this article provides a timely example that imposing too much austerity and too many punitive conditions can not only be self-defeating, but can also unleash a series of unintended political consequences, with truly unpredictable and potentially tragic results.

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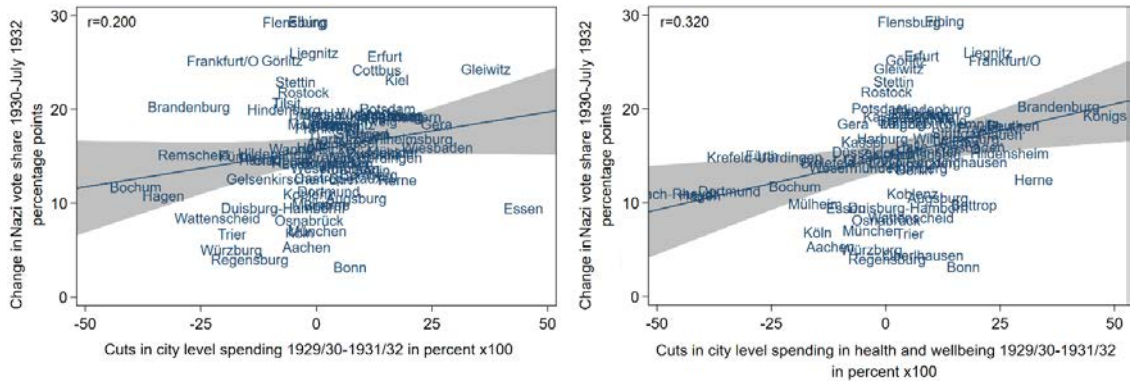
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Figure 1: Development of state spending 1926/27-1932/33



Nominal state level expenditure as reported in James (1987, 52) following fiscal years accounting for transfers to other public authorities. Data were originally collected from Official Statistics (*Statistisches Jahrbuch für das Deutsche Reich*). Nominal expenditure has been adjusted for inflation using the price index (1913/14=100) from Jürgen Sensch in HISTAT-Datenkompilation online (Preisindizes für die Lebenshaltung in Deutschland 1924 bis 2001) and for population using the data from Piketty and Zucman (2013, Table DE1, available at <http://piketty.pse.ens.fr/en/>).

Figure 2: City level change in vote for the Nazi party and spending cuts, 1930-1932



To calculate the spending cuts we multiply by minus 1 the percentage change in nominal spending.

Table 1: Economic growth in selected countries, 1926-1936

Year	Austria	France	Germany	Netherlands	UK	USA
1926	1.37	-0.62	-0.09	4.20	-3.59	5.09
1927	2.70	-3.57	6.98	0.46	8.18	-0.40
1928	4.35	5.21	1.50	1.57	1.26	-0.10
1929	1.11	4.79	-3.18	-2.83	3.22	5.01
1930	-2.42	-3.35	2.01	-0.50	-1.07	-9.99
1931	-7.73	-6.11	-4.56	-6.51	-5.49	-6.60
1932	-10.01	-6.10	-4.53	-1.92	0.26	-15.11
1933	-3.02	7.57	9.54	-0.57	2.59	-3.39
1934	1.30	-0.69	12.26	-2.11	6.33	8.34
1935	2.57	-2.08	10.33	3.61	3.49	12.37
1936	3.67	4.34	8.24	6.30	4.14	9.81

Real GDP per capita is in 2011US\$ with multiple benchmarks, so that account has been taken for cross-country income comparisons. Data are from Maddison Project Database, update 2018 (<http://www.ggd.net/maddison>).

Table 2: Industrial unemployment rates (in percentage points), 1926-1938

Year	France	Germany	Netherlands	Norway	UK	US
1926	3.0	18.0	7.3	24.3	12.5	2.9
1927	11.0	8.8	7.5	25.4	9.7	5.4
1928	4.0	8.6	5.6	19.2	10.8	6.9
1929	1.0	13.3	5.9	15.4	10.4	5.3
1930	2.0	22.7	7.8	16.6	16.1	14.2
1931	6.5	34.3	14.8	22.3	21.3	25.2
1932	15.4	43.8	25.3	30.8	22.1	36.3
1933	14.1	36.2	26.9	33.4	19.9	37.6
1934	13.8	20.5	28.0	30.7	16.7	32.6
1935	14.5	16.2	31.7	25.3	15.5	30.2
1936	10.4	12.0	32.7	18.8	13.1	25.4

Data are from Eichengreen and Hatton (1988) reflecting industrial workers.

Table 3: Panel data on the impact of city expenditures on the Nazi party vote share, elections 1930, 1932 and 1933

	Elections 9/1930 and 3/1933		Elections 9/1930, 7/1932 and 11/1932		Elections 9/1930, 7/1932, 11/1932 and 3/1933	
	(1)	(2)	(3)	(4)	(5)	(6)
	ln Expenditures	-0.354** (0.135)	-0.360** (0.146)	-0.771*** (0.215)	-0.778*** (0.213)	-0.480*** (0.106)
ln Unemployment		1.020 (0.996)		1.004** (0.409)		0.636** (0.292)
ln Economic output		0.032 (0.071)		-0.014 (0.117)		0.019 (0.044)
Number of observations	156	156	234	234	312	312
Number of cities	78	78	78	78	78	78
Number of clusters	44	44	44	44	44	44
R ²	0.939	0.941	0.796	0.802	0.861	0.865
City level fixed effect	✓	✓	✓	✓	✓	✓
Fixed effect 1931/1932			✓	✓	✓	✓
Fixed effect 1932/1933	✓	✓			✓	✓

Dependent variable is the percentage share (x100) of the valid votes cast going to the Nazi party in the different elections. We use the controls of 1929 for the elections of September 1930, 1931 for the elections of July and November 1932 and 1932 for the elections of March 1933. We use a balanced panel with robust standard errors (in parenthesis) clustered at the district level corresponding to 44 *Regierungsbezirke* (administrative districts). We standardized all variables with a mean of zero and a standard deviation of one, *** p<0.01, ** p<0.05, * p<0.1.

Table 4: Panel data on the impact of city expenditures by budget category on the Nazi party vote share, elections 1930, 1932 and 1933

	Elections 9/1930 and 3/1933		Elections 9/1930, 7/1932 and 11/1932		Elections 9/1930, 7/1932, 11/1932 and 3/1933	
	(1)	(2)	(3)	(4)	(5)	(6)
ln Expend. General Administration	-0.286 (0.372)	-0.108 (0.305)	-0.375 (0.342)	-0.348 (0.350)	-0.328 (0.287)	-0.308 (0.298)
ln Expend. Education	-0.015 (0.080)	-0.076 (0.107)	0.013 (0.123)	0.010 (0.141)	-0.060 (0.117)	-0.077 (0.126)
ln Expend. Health and Wellbeing	-0.451* (0.228)	-0.396* (0.119)	-0.940*** (0.238)	-1.028*** (0.251)	-0.340** (0.156)	-0.350** (0.146)
ln Expend. Construction	0.425** (0.173)	0.413** (0.167)	0.121 (0.257)	0.118 (0.244)	0.131 (0.141)	0.153 (0.141)
ln Expend. Public Infrastructures	-0.141 (0.227)	-0.144 (0.231)	-0.202 (0.433)	-0.201 (0.410)	-0.121 (0.281)	-0.159 (0.285)
ln Expend. Housing	-0.150** (0.071)	-0.155** (0.072)	-0.249*** (0.089)	-0.208** (0.090)	-0.183** (0.042)	-0.187*** (0.046)
Number of observations	132	132	198	198	264	264
Number of cities	66	66	66	66	66	66
Number of clusters	41	41	41	41	41	41
Baseline controls		✓		✓		✓
City level fixed effect	✓	✓	✓	✓	✓	✓
Fixed effect 1931/32			✓	✓	✓	✓
Fixed effect 1932/33	✓	✓			✓	✓

Dependent variable is the percentage share (x100) of the valid votes cast going to the Nazi party in the different elections. We use the controls of 1929 for the elections of September 1930, 1931 for the elections of July and November 1932 and 1932 for the elections of March 1933. We use a balanced panel with robust standard errors (in parenthesis) clustered at the district level corresponding to 41 *Regierungsbezirke* (administrative districts). Models are estimated independently and “baseline controls” in columns 1, 3 and 5 include unemployment and economic output (see text). We standardized all variables with a mean of zero and a standard deviation of one, *** p<0.01, ** p<0.05, * p<0.1.

Table 5: Cross-city models in differences for the impact of city spending on the Nazi party vote share. Using differences between (7/1932 and 9/1930), (11/1932 and 9/1930) and (11/1932 and 3/1933)

	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	First-stage	IV	OLS	First-stage	IV
% Δ Expenditures	-0.329*** (0.067)	0.334*** (0.041)	-0.387** (0.181)	-0.358*** (0.065)	0.333*** (0.041)	-0.407** (0.185)
% Δ Unemployment				0.349** (0.146)	0.239** (0.102)	0.362** (0.157)
% Δ Economic Output				-0.014 (0.062)	0.073* (0.040)	-0.011 (0.063)
Number of observations	234	234	234	234	234	234
Number of cities	78	78	78	78	78	78
Number of clusters	78	44	44	44	44	44
Number of differences	3	3	3	3	3	3
R ²	0.244		0.243	0.263		0.262
Kleibergen-Paap statistic			0.0002			0.0002
Anderson-Rubin Wald test			0.0940			0.0776
Hansen J statistic			0.0000			0.0000
Time election fixed effect	✓	✓	✓	✓	✓	✓
District level clustering	✓	✓	✓	✓	✓	✓

Dependent variable is the change in the percentage share (x100) of valid votes received by the Nazi party at the city level. We use the controls of 1929 for the elections of September 1930, 1931 for the elections of July and November 1932 and 1932 for the elections of March 1933. We use a balanced panel with robust standard errors (in parenthesis) clustered at the district level corresponding to 44 *Regierungsbezirke* (administrative districts). For the description of the instrument see text. The Kleibergen-Paap LM statistic is a post-estimation test for underidentification, the Anderson-Rubin Wald test is a weak-instrument-robust inference test and the Hansen J statistic is an overidentification test. We standardized all variables with a mean of zero and a standard deviation of one, *** p<0.01, ** p<0.05, * p<0.1.

Table 6: Panel data on the impact of city expenditures on the Nazi party vote share, elections 1930, 1932 and 1933

	Elections 1930 and 1932 (both)			Elections 1930 and 1932 (both) and 1933		
	(1)	(2)	(3)	(4)	(5)	(6)
ln Expenditures	-0.809** (0.318) [0.017]	-0.614* (0.304) [0.054]	-0.507 (0.310) [0.113]	-0.644* (0.332) [0.063]	-0.575* (0.310) [0.074]	-0.514 (0.317) [0.116]
ln Crude Death rate			0.178* (0.100) [0.085]			0.132* (0.065) [0.053]
ln Unemployment		1.299* (0.706) [0.077]	1.345* (0.674) [0.056]		0.704*** (0.251) [0.009]	0.698*** (0.242) [0.008]
ln Economic Output		-0.046 (0.174) [0.793]	-0.108 (0.176) [0.544]		0.022 (0.083) [0.790]	-0.010 (0.086) [0.908]
Number of observations	111	111	111	148	148	148
Number of cities	37	37	37	37	37	37
Number of clusters	28	28	28	28	28	28
Number of elections	3	3	3	4	4	4
City level Fixed effect	✓	✓	✓	✓	✓	✓
Fixed effect for 1931/1932	✓	✓	✓	✓	✓	✓

Dependent variable is the percentage share (x100) of the valid votes cast going to the Nazi party in the different elections. We use the controls of 1929 for the elections of September 1930, 1931 for the elections of July and November 1932 and 1932 for the elections of March 1933. The Crude Death Rate is the number of deaths within a city divided by the city level population (x1,000). We use a balanced panel with robust standard errors (in parenthesis) clustered at the district level corresponding to 28 *Regierungsbezirke* (administrative districts in Weimar Germany). P-values are immediately below the standard errors in brackets. We standardized all variables with a mean of zero and a standard deviation of one, *** p<0.01, ** p<0.05, * p<0.1.

Table 7: Panel data on the impact of district income and wage taxes on the Nazi party vote share, elections 1930, 1932 and 1933

	Elections 9/1930 and 3/1933		Elections 9/1930, 7/1932 and 11/1932		Elections 9/1930, 7/1932, 11/1932 and 3/1933	
	(1)	(2)	(3)	(4)	(5)	(6)
ln Income Tax	0.164*** (0.027)	0.164*** (0.042)	0.080*** (0.028)	0.080** (0.029)	0.105*** (0.024)	0.105*** (0.029)
ln Wages	0.021 (0.206)	0.021 (0.215)	0.088 (0.057)	0.088 (0.185)	0.059 (0.052)	0.059 (0.167)
ln Unemployment	-0.780*** (0.206)	-0.780 (0.615)	-0.452* (0.234)	-0.452 (0.814)	-0.567*** (0.214)	-0.567 (0.694)
ln Economic Output	-0.596 (0.554)	-0.596 (0.561)	-1.489** (0.643)	-1.489 (0.921)	-1.154* (0.599)	-1.154 (0.714)
Number of observations	1,724	1,724	2,586	2,586	3,448	3,448
Number of districts	862	862	862	862	862	862
Within R ²	0.916	0.916	0.775	0.775	0.692	0.692
District level clustering	✓		✓		✓	
State level clustering		✓		✓		✓
Fixed effect for 1932/1933	✓	✓	✓	✓	✓	✓
District fixed effects	✓	✓	✓	✓	✓	✓
ln Wage Tax	0.191*** (0.030)	0.191*** (0.051)	0.006 (0.035)	0.006 (0.007)	0.069** (0.030)	0.069 (0.062)
ln Wages	0.065 (0.061)	0.065 (0.210)	0.088 (0.058)	0.088 (0.185)	0.064 (0.051)	0.064 (0.164)
ln Unemployment	-0.692*** (0.211)	-0.692 (0.603)	-0.518** (0.235)	-0.518 (0.752)	-0.606*** (0.219)	-0.606 (0.659)
ln Economic Output	-0.421 (0.591)	-0.421 (0.542)	-1.569** (0.656)	1.569*** (0.413)	-0.993 (0.627)	-0.993 (0.803)
Number of observations	1,724	1,724	2,586	2,586	3,448	3,448
Number of districts	862	862	862	862	862	862
R ²	0.915	0.915	0.773	0.773	0.690	0.690
District level clustering	✓		✓		✓	
State level clustering		✓		✓		✓
Fixed effect for 1932/1933	✓	✓	✓	✓	✓	✓
District fixed effects	✓	✓	✓	✓	✓	✓

Dependent variable is the percentage share (x100) of the valid votes cast going to the Nazi party in the different elections. We use changes in district level income (panel 1) and wage taxes (panel 2) as a measure of austerity. The tax rate is calculated as the ratio between total revenue and total taxable income. We cluster standard errors (in parenthesis) at the district level in columns 1, 3 and 5 and at the state level in columns 2, 4 and 6. The method of estimation is least squares and we standardized all variables with a mean of zero and a standard deviation of one, *** p<0.01, ** p<0.05, * p<0.1.

Table 8: Cross-district models in differences for the impact of district income and wage taxes on the Nazi party vote share. Using differences between (7/1932 and 9/1930), (11/1932 and 9/1930), and (3/1933 and 9/1930)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
% Δ Avg. Inc. tax rate	0.124*** (0.030)	0.116*** (0.029)	0.124*** (0.026)	0.116*** (0.031)	0.108*** (0.027)	0.108*** (0.032)	0.135*** (0.030)	0.135*** (0.047)
% Δ Wages		0.039 (0.029)		0.039 (0.094)	0.062** (0.027)	0.062 (0.096)		0.060*** (0.015)
% Δ Unemployment		-0.086*** (0.030)		-0.086 (0.095)	-0.033 (0.024)	-0.033 (0.081)		-0.282*** (0.012)
% Δ Economic output		-0.067* (0.036)		-0.067 (0.049)	-0.044 (0.034)	-0.044 (0.033)		-0.225* (0.129)
Lagged Nazi vote share					0.368*** (0.019)	0.368*** (0.067)		
District level clustering	✓	✓			✓		✓	
State level clustering			✓	✓		✓		✓
State fixed effects							✓	✓
Number of districts	2,586	2,586	2,586	2,586	2,586	2,586	2,586	2,586
R ²	0.015	0.029	0.015	0.029	0.163	0.163	0.165	0.165
% Δ Avg. Wage tax rate	0.073*** (0.027)	0.065** (0.028)	0.073 (0.060)	0.065 (0.058)	0.072*** (0.022)	0.072* (0.040)	0.066** (0.027)	0.066** (0.027)
% Δ Wages		0.048* (0.029)		0.048 (0.092)	0.073*** (0.027)	0.073 (0.095)		0.085 (0.072)
% Δ Unemployment		-0.086*** (0.031)		-0.086 (0.090)	-0.030 (0.024)	-0.030 (0.080)		-0.288*** (0.066)
% Δ Economic output		-0.063* (0.037)		-0.063 (0.050)	-0.039 (0.035)	-0.039 (0.032)		-0.366 (0.729)
Lagged Nazi vote share					0.372*** (0.019)	0.372*** (0.069)		
Number of districts	2,586	2,586	2,586	2,586	2,586	2,586	2,586	2,586
R ²	0.005	0.020	0.005	0.020	0.156	0.156	0.152	0.152
District level clustering	✓	✓			✓		✓	
State level clustering			✓	✓		✓		✓
State fixed effects							✓	✓

Dependent variable is the percentage share (x100) of the valid votes cast going to the Nazi party in the different elections. We use district level income or wage taxes as a measure of austerity. Lagged values refer to the election immediately prior to the latest election in the differenced dependent variable. The income tax rate is calculated as the ratio between total revenue and total taxable income. We cluster standard errors (in parenthesis) at the district level in columns 1, 2, 5 and 7 and at the state level in the other cases. We standardized all variables with a mean of zero and a standard deviation of one, *** p<0.01, ** p<0.05, * p<0.1.

Table 9: Cross-district models in differences for the impact of district income and wage taxes on the Nazi party vote share. Changes in taxes instrumented by the value of the level of the income tax rate in 1928. Using differences between (7/1932 and 9/1930), (11/1932 and 9/1930), and (3/1933 and 9/1930)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
% Δ Avg. Inc. tax rate	0.124*** (0.030)	0.474*** (0.072)	0.116*** (0.029)	0.454*** (0.073)	0.124*** (0.026)	0.474*** (0.111)	0.116*** (0.031)	0.454*** (0.092)
% Δ Wages			0.039 (0.029)	0.043 (0.032)			0.039 (0.094)	0.043 (0.093)
% Δ Unemployment			-0.086*** (0.030)	-0.048 (0.034)			-0.086 (0.095)	-0.048 (0.101)
% Δ Economic output			-0.067* (0.036)	-0.072** (0.036)			-0.067 (0.049)	-0.072 (0.050)
Number of districts	2,586	2,568	2,586	2,586	2,586	2,586	2,586	2,568
Number of clusters	856	856	856	856	28	28	28	28
First stage p-value		0.000		0.000		0.000		0.000
Ander.-Rubin Wald test		0.000		0.000		0.000		0.000
Stock-Wright test		0.000		0.000		0.000		0.000
Kleibergen-Paap statist.		0.000		0.000		0.016		0.014
District level clustering	✓	✓	✓	✓				
State level clustering					✓	✓	✓	✓

Dependent variable is the percentage share (x100) of the valid votes cast going to the Nazi party in the different elections. We use district level income as a measure of austerity. The instrumental variable in columns 2, 4, 6 and 8 is the value of the average income tax rate in 1928 at the district level. The average income tax is calculated as the ratio between total revenue and total taxable income. We cluster standard errors at the district level in columns 1-4 and at the state level in columns 5-8. We standardized all variables with a mean of zero and a standard deviation of one. The Kleibergen-Paap LM statistic is a post-estimation test for underidentification, the Anderson-Rubin Wald test is a weak-instrument-robust inference test and the Hansen J statistic is an overidentification test, *** p<0.01, ** p<0.05, * p<0.1.

Table 10: The impact of state level austerity on the rise of the Nazi party in the restricted sample of cross district-pairs located on opposite sides of the borders

	District-pair fixed effects		Time-varying district-pair fixed effects		District-pair fixed effects and District fixed effects		Time varying district-pair fixed effects, district fixed effects	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ln Fiscal Surplus 1 (government spending and wage taxes)	0.248*** (0.064)	0.273*** (0.068)	0.253*** (0.067)	0.284*** (0.070)	0.769*** (0.097)	0.370* (0.196)	0.897*** (0.116)	0.252** (0.123)
ln Wages		-0.296*** (0.113)		-0.343*** (0.126)		-0.149 (0.236)		-0.520* (0.304)
ln Unemployment		0.154 (0.139)		0.143 (0.150)		0.330* (0.198)		0.300** (0.139)
ln Economic Output		-0.205 (0.128)		-0.200 (0.139)		-0.005 (0.023)		-0.018 (0.019)
Number of districts	3,156	3,156	3,156	3,156	3,156	3,156	3,156	3,156
Number of clusters (states)	27	27	27	27	27	27	27	27
Num. clusters (border segments)	401	401	401	401	401	401	401	401
Overall R ²	0.731	0.758	0.759	0.788	0.843	0.856	0.904	0.919
Two-way clustering	✓	✓	✓	✓	✓	✓	✓	✓
Year fixed effect	✓	✓	✓	✓	✓	✓	✓	✓
District fixed effects					✓	✓	✓	✓
District-pair fixed effects	✓	✓			✓	✓		
Distr.-pair fixed effect x year			✓	✓			✓	✓
ln Fiscal Surplus 2 (gov. spending and income taxes)	0.203*** (0.075)	0.222*** (0.084)	0.204** (0.080)	0.225*** (0.087)	0.763*** (0.095)	0.433** (0.190)	0.845*** (0.097)	0.184 (0.178)
ln Wages		-0.286** (0.113)		-0.335*** (0.125)		-0.061 (0.231)		-0.497 (0.317)
ln Unemployment		0.195 (0.136)		0.183 (0.147)		0.309 (0.193)		0.338** (0.156)
ln Economic Output		-0.222* (0.120)		-0.213 (0.134)		-0.007 (0.019)		-0.008 (0.016)
Number of districts	3,156	3,156	3,156	3,156	3,156	3,156	3,156	3,156
Number of clusters (states)	27	27	27	27	27	27	27	27
Num. clusters (border segments)	401	401	401	401	401	401	401	401
Overall R ²	0.728	0.755	0.754	0.785	0.850	0.858	0.907	0.918
Two-way clustering	✓	✓	✓	✓	✓	✓	✓	✓
Year fixed effect	✓	✓	✓	✓	✓	✓	✓	✓
District fixed effects					✓	✓	✓	✓
District-pair fixed effects	✓	✓			✓	✓		
Distr.-pair fixed effect x year			✓	✓			✓	✓

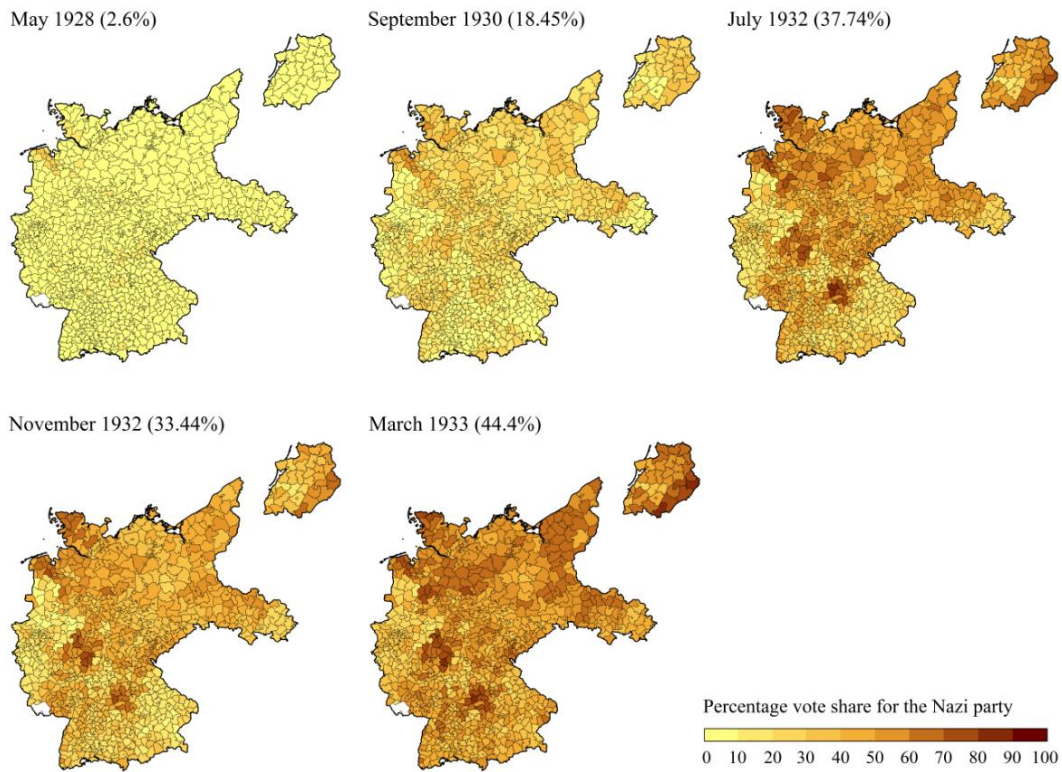
Dependent variable is the percentage share of the valid votes cast going to the Nazi party in the elections of September 1930, July 1932, November 1932 and March 1933. Fiscal surplus is defined as the log of the total state revenue in income or wage taxes minus the log of municipal plus state spending. For the years used in the controls see text. As illustrated in Figure A3 of the Appendix we have 459 districts that lie along a state border (the number of states is equal to 27 and the number of districts is reduced to 401 in the models after accounting for missing data) and for each border-district we match all the neighboring districts that are located on opposite sides of the borders, yielding a total of 1,080 “directed” border-pairs. Each district that lies along a state border, on average has 2.36 pair-districts across the border (with an associated standard deviation of 1.48). The minimum number of pairs for a district is 1 and the maximum is 10. We use a balanced panel and the methodology from Dube *et al.* (2010) for two-way clustering with standard errors (in parentheses) clustered at the state and district pair level. *** p<0.01, ** p<0.05, * p<0.1.

Table 11: Cross-district models in differences for the impact of austerity on Nazi party entry between January 1932 and May 1933

	(1)	(2)	(3)	(4)
ln Income taxes	0.106*** (0.036)	0.101*** (0.033)		
ln Wage taxes			0.332* (0.189)	0.360* (0.198)
ln Wages		0.163 (0.110)		0.183 (0.116)
ln Unemployment		0.221** (0.088)		0.261** (0.116)
ln Economic Output		-0.204** (0.091)		-0.207* (0.111)
Number of districts	830	830	830	830
Number of clusters	28	28	28	28
R ²	0.056	0.082	0.016	0.051

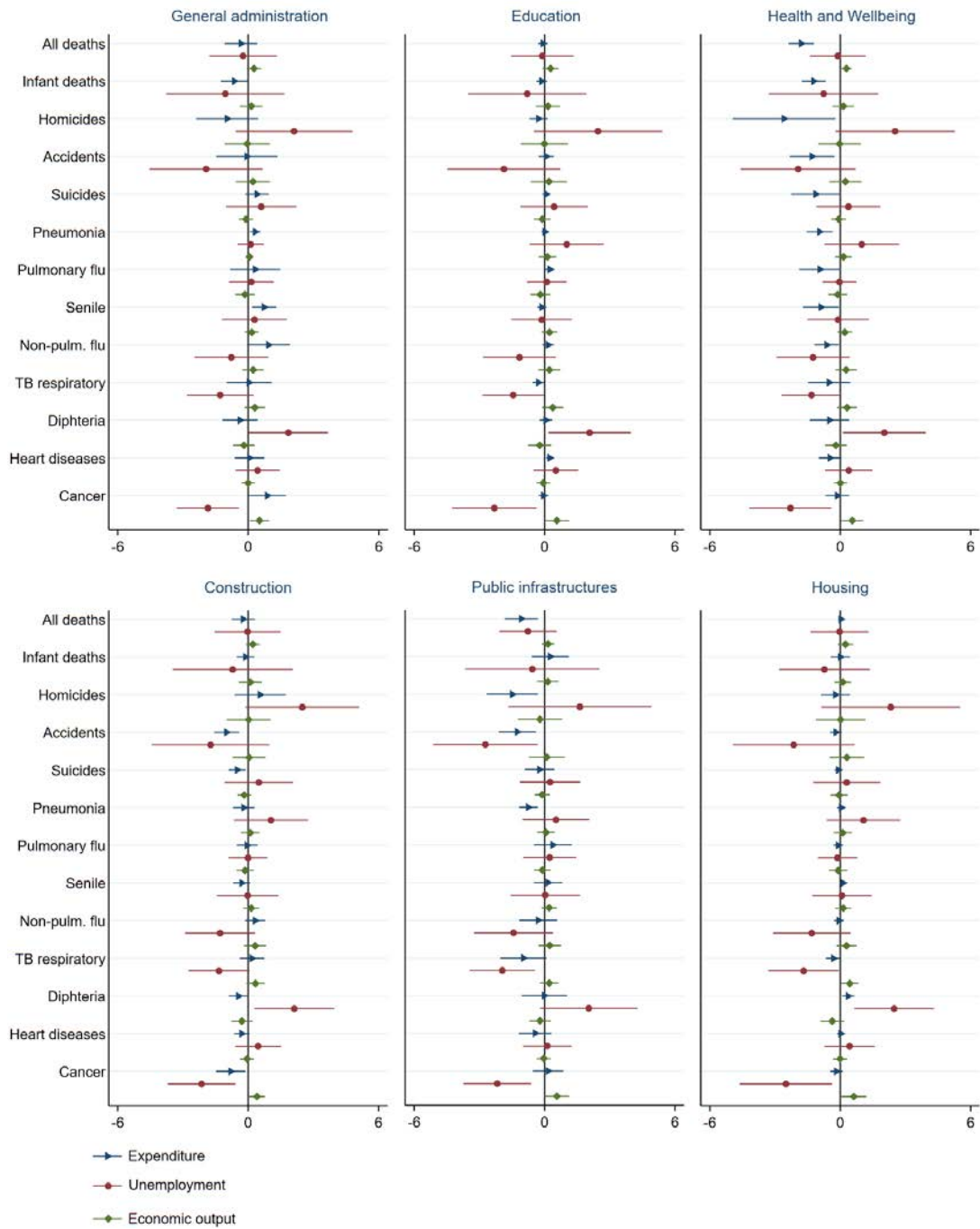
Dependent variable is the number of new party members in the Nazi party between January 1932 and May 1933. For the details of the calculations on Nazi party membership see text and Adena *et al.* (2015). Data were originally from Brustein and Falter (1995). We removed districts with zero new members. We use the controls for 1932. Standard errors in parentheses are clustered at the state level. The method of estimation is least squares and we standardized all variables with a mean of zero and a standard deviation of one, *** p<0.01, ** p<0.05, * p<0.1.

Figure A1: The rise of the Nazi party across Germany (in percentage points)



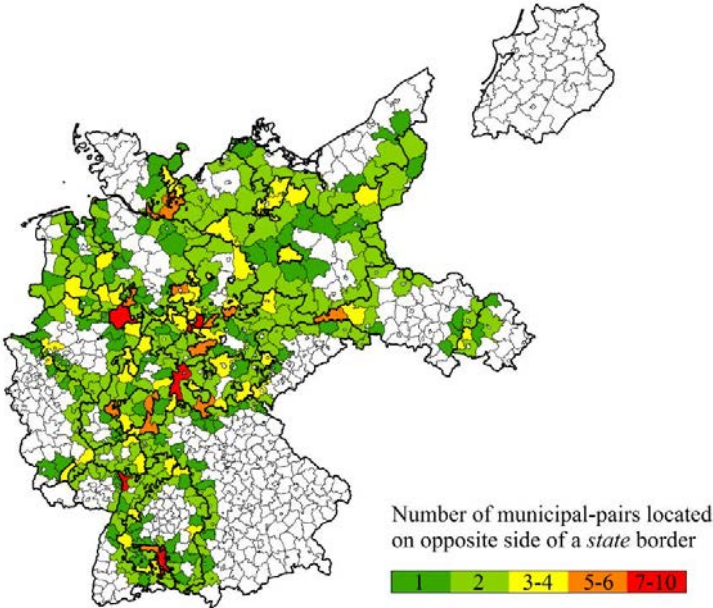
We report the percentage of vote share for the Nazi party in each district and election using the map of 1933. If a district lacks information from one election (because changes in political borders relative to the map of 1933) we use data from the previous or following election. In parenthesis we report the total vote share for each election. The Saarland region has been excluded from the analysis.

Figure A2: Panel data on the impact of city expenditures by budget category on mortality, elections 1930, July and November 1932



Dependent variable is the number of deaths of certain causes adjusted by the city population (x1,000). We use the controls of 1929 for the deaths in 1930 and the controls of 1931 for the deaths in 1932. Since unemployment data are only available after 1930 we link the level of unemployment of 1930 with the elections of 1930. The rest of the years are linked as stated above. All models have been estimated independently and use a city level fixed effect, a fixed effect for the year 1931/1932 and robust standard errors are clustered at the district level corresponding to 41 *Regierungsbezirke* (administrative districts).

Figure A3: District-pairs located on opposite sides of a state border



Each color represents the number of district-pairs located on opposite side of a state border. Non-district-pairs are colored in white. State borders are highlighted by a bold black line.

Table A1: Main descriptive statistics

	Mean	SD	Min.	Max	N
State and District Level Data					
Percentage vote cast for the Nazi party in the different federal elections					
May 1928	3.24	4.12	0.14	36.15	30
September 1930	18.84	8.96	2.20	58.80	30
July 1932	39.00	14.48	7.77	83.00	30
November 1932	34.93	13.38	5.33	76.42	30
March 1933	47.14	12.11	13.29	83.01	30
Control variables (percentage change between 1929/30 and 1932/33)					
Cuts in Municipal spending	11.68	4.40	-2.81	24.12	30
Cuts in State spending	15.84	4.44	-2.81	21.92	30
Cuts in Reich spending (municipal and state)	13.21	2.05	6.57	18.46	30
Δ Income tax rate (state level data)	10.23	5.74	-1.34	23.65	30
Δ Wage tax rate (state level data)	-21.79	2.67	-26.05	-15.14	30
Δ Income tax rate (district level data)	17.20	21.11	-58.28	96.67	583
Δ Wage tax rate (district level data)	-20.70	8.27	-63.33	19.83	558
Fiscal consolidation 1 (wage taxes state level)	8.58	3.47	-17.71	2.18	30
Fiscal consolidation 2 (income taxes, state level)	23.45	5.59	5.23	37.03	30
Δ Wages (% x100)	-20.50	3.26	-16.44	-30.41	30
Δ Unemployment (% x100)	28.17	8.41	15.67	39.70	30
Δ Electricity generation (% x100)	-1.37	6.30	-29.85	6.93	30
City Level Data					
Percentage vote cast for the Nazi party in the different federal elections					
May 1928	2.81	2.76	0.41	13.04	67
September 1930	18.04	5.86	6.75	33.39	67
July 1932	33.50	8.69	16.71	50.71	67
November 1932	29.31	8.06	12.96	49.77	67
March 1933	39.61	7.29	24.40	56.31	67
Control variables (percentage change between 1929/30 and 1932/33)					
Cuts in City total Spending	5.55	27.53	-45.00	143.57	67
Cuts in Administration	29.43	16.58	-60.38	52.42	67
Cuts in Education	32.56	68.85	-84.54	511.98	67
Cuts in Public infrastructure	-77.02	88.72	-16.69	568.79	67
Cuts in Construction	11.97	39.28	-55.40	170.35	67
Cuts in Health and Wellbeing	13.35	24.33	-68.35	107.76	67
Cuts in Housing	37.74	75.00	-89.34	325.43	67
Δ Unemployment (% x100)	8.91	9.54	-14.65	33.74	67
Δ Construction of New Buildings (% x100)	-64.81	22.92	-98.42	20.00	67

All variables in panels 1 and 2 have been adjusted for missing values. Control variables are calculated as percentage changes of nominal values. Tax rates are calculated as tax revenue divided by declared, taxable income. For the income taxes we use the percentage change between 1929 and 1932 and for wage taxes the percentage change between 1928 and 1932. For unemployment we report the change between 1930 and 1932 as city level data begin in 1930. The differences in the change in unemployment are due to how unemployment is being measured. In the state level panel unemployment is defined as a worker who is part of the labor force but not working and in the second panel using city level data it needs to be registered in the local offices. For reference the cumulative decline in the German CPI between 1928 and 1932 was 22.5% while the aggregate decline in German GDP between 1928 and 1932 was about 30%.

Table A2: Cross-district models in differences for the impact of austerity on the Nazi party vote share

	September 1930 and July 1932		September 1930 and November 1932		September 1930 and March 1933		Population weighted regressions		
							9/1930 - 7/1932	9/1930- 11/1932	9/1930- 3/1933
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Fiscal Consolidation 1 (cuts in spending and change in wage taxes)	0.253*** (0.091)	0.261** (0.100)	0.199** (0.088)	0.193* (0.101)	0.144** (0.062)	0.256*** (0.089)	0.263** (0.102)	0.197* (0.103)	0.259*** (0.091)
Δ Wages		0.114 (0.075)		0.090 (0.080)		0.211* (0.117)	0.114 (0.075)	0.090 (0.079)	0.208* (0.117)
Δ Unemployment		0.002 (0.116)		-0.036 (0.090)		-0.042 (0.101)	-0.004 (0.112)	-0.039 (0.088)	-0.045 (0.100)
Δ Economic output		-0.019 (0.074)		-0.043 (0.077)		0.068 (0.058)	-0.018 (0.075)	-0.044 (0.077)	0.067 (0.058)
Number of districts	933	933	933	933	933	933	933	933	933
R ²	0.065	0.077	0.039	0.052	0.020	0.069	0.081	0.055	0.072
Fiscal consolidation 2 (cuts in spending and change in inc. taxes)	0.017 (0.110)	0.005 (0.109)	-0.009 (0.198)	-0.028 (0.094)	0.019 (0.087)	0.073 (0.075)	0.010 (0.109)	-0.025 (0.093)	0.076 (0.075)
Δ Wages		0.043 (0.109)		0.027 (0.107)		0.085 (0.147)	0.038 (0.108)	0.024 (0.106)	0.079 (0.145)
Δ Unemployment		-0.099 (0.130)		-0.120 (0.094)		-0.111 (0.125)	-0.109 (0.124)	-0.126 (0.090)	-0.118 (0.123)
Δ Economic output		-0.076 (0.079)		-0.091 (0.077)		0.037 (0.060)	-0.075 (0.079)	-0.091 (0.077)	0.036 (0.060)
Number of districts	933	933	933	933	933	933	933	933	933
R ²	0.000	0.018	0.000	0.021	0.021	0.029	0.020	0.023	0.030

Dependent variable is the change in the percentage share (x100) of valid votes received by the Nazi party at the district level. We use the controls of 1930 for the elections of September 1930 and 1931 for the elections of July and November 1932 (columns 1-4). For columns 5 and 6 we use the controls of 1930 for the elections of September 1930 and 1932 for the elections of March 1933. Government spending is the sum of total within state municipal spending plus total state spending. We use the income taxes of 1928 and 1932 for columns 1-4 and 1929 and 1933 for columns 5-6 and wage taxes for 1928 1932 for all the columns adjusted to the nearest election. To account for sample selection bias due to redistricting between elections and missing data, models are adjusted for the same number of observations (933). If we do not account for these models, the total number of observations in the adjusted models are 989 (elections September 1930 and July 1932), 935 (elections September 1930 and July 1932), 935 (elections September 1930 and March 1933) and 993 (elections May 1928 and September 1930). Unadjusted samples for missing values report the same overall findings. Standard errors in parentheses are clustered at the state level. The method of estimation is least squares and we standardized all variables with a mean of zero and a standard deviation of one, *** p<0.01, ** p<0.05, * p<0.1.

Table A3: Cross-district models in differences for the impact of state level austerity on the Nazi party vote share. Using difference between (7/1932 and 9/1930), (11/1932 and 9/1930), and (3/1933 and 9/1930)

	Fiscal consolidation 1 (cuts in spending and changes in wage taxes)		Fiscal consolidation 2 (cuts in spending and change in income taxes)	
	(1)	(2)	(3)	(4)
Panel 1: Baseline specification				
Fiscal Consolidation	0.209*** (0.072)	0.220** (0.080)	0.023 (0.079)	0.014 (0.075)
% Δ Wages		0.108* (0.057)		0.042 (0.096)
% Δ Unemployment		-0.004 (0.073)		-0.095 (0.088)
% Δ Economic output		-0.004 (0.056)		-0.062 (0.055)
Number of observations	2,586	2,586	2,586	2,586
Number of states	28	28	28	28
R ²	0.044	0.056	0.001	0.016
Panel 2: Population weighted				
Fiscal Consolidation	0.211*** (0.073)	0.220** (0.082)	0.028 (0.079)	0.018 (0.075)
% Δ Wages		0.102* (0.057)		0.036 (0.093)
% Δ Unemployment		-0.011 (0.071)		-0.103 (0.084)
% Δ Economic output		-0.005 (0.057)		-0.062 (0.055)
Number of observations	2,586	2,586	2,586	2,586
Number of states	28	28	28	28
R ²	0.046	0.058	0.001	0.018
Panel 3: Lagged values of Nazi vote share				
Fiscal Consolidation	0.159*** (0.053)	0.181*** (0.059)	-0.001 (0.054)	0.001 (0.053)
% Δ Wages		0.117* (0.068)		0.062 (0.100)
% Δ Unemployment		0.031 (0.063)		-0.044 (0.077)
% Δ Economic output		0.008 (0.037)		-0.041 (0.038)
Lagged Nazi vote share	0.355*** (0.060)	0.354*** (0.060)	0.377*** (0.065)	0.024*** (0.004)
Number of observations	2,586	2,586	2,586	2,586
Number of states	28	28	28	28
R ²	0.167	0.178	0.142	0.151

Dependent variable is the percentage share (x100) of the valid votes cast going to the Nazi party in the different elections. We use income level wage taxes as a measure of austerity. This is a reduced sample which conforms to the sample that has both district income and wage taxes available. Results in the full sample are available upon request but qualitatively similar. The income tax is calculated as the ratio between total revenue and total taxable income. We cluster standard errors (in parenthesis) at the state level. The method of estimation is least squares and we standardized all variables with a mean of zero and a standard deviation of one, *** p<0.01, ** p<0.05, * p<0.1.

Table A4: Cross-district models in differences for the impact of district income and wage taxes on the Nazi party vote share using percentage point change instead of percentage change in income and wage taxes. Using difference between (7/1932 and 9/1930), (11/1932 and 9/1930), and (3/1933 and 9/1930)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Income taxes	0.093*** (0.033)	0.087*** (0.033)	0.093*** (0.025)	0.087*** (0.028)				
Wage taxes					0.118*** (0.026)	0.115*** (0.027)	0.018** (0.057)	0.115* (0.057)
% Δ Wages		0.039 (0.029)		0.039 (0.093)		0.055* (0.029)		0.055 (0.088)
% Δ Unemploymen		-0.092*** (0.030)		-0.092 (0.093)		-0.079*** (0.031)		-0.079 (0.092)
% Δ Economic outp		-0.067* (0.036)		-0.067 (0.048)		-0.063* (0.038)		-0.063 (0.050)
Number of districts	2,586	2,586	2,586	2,586	2,586	2,586	2,586	2,586
Number of clusters	862	862	28	28	862	862	28	28
R ²	0.009	0.024	0.009	0.024	0.014	0.029	0.014	0.029
District level cluster	✓	✓			✓	✓		
State level clusterin			✓	✓			✓	✓

Dependent variable is the percentage share (x100) of the valid votes cast going to the Nazi party in the different elections. We use income level wage taxes as a measure of austerity. Taxes are calculated as the percentage point change instead as percentage change. We cluster standard errors (in parenthesis) at the district level in columns 1, 2, 5 and 6 and at the state level in columns 3, 4, 7 and 8. The method of estimation is least squares and we standardized all variables with a mean of zero and a standard deviation of one, *** p<0.01, ** p<0.05, * p<0.1.

Table A5: Social, economic and religious structure between border districts located on opposite sides of the border, percentages of total population

	Number districts	Mean		Standard Deviation		Minimum value		Maximum value		t-test	
		District 1	District 2	District 1	District 2	District 1	District 2	District 1	District 2	t-stat.	p-value
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Social, cultural and economic controls											
Agriculture, Forestry and Fishery, 1925	232	36.034	36.025	18.488	17.960	0.685	0.255	83.649	78.536	0.008	0.994
Industry and Manufacturing, 1925	232	35.253	35.803	13.328	14.739	4.170	8.825	68.056	75.209	-0.674	0.501
Civil service, army and clergy, 1925	232	3.669	3.633	1.318	1.592	0.574	0.855	9.094	10.935	0.317	0.752
Self-employed workers, 1925	232	23.854	23.868	7.868	7.817	8.576	9.912	43.130	48.313	-0.033	0.974
White-collar workers, 1925	232	11.358	10.779	5.207	5.184	2.406	2.534	28.850	29.446	1.505	0.134
Blue-collar workers, 1925	232	39.971	40.379	11.457	12.057	13.213	11.346	69.042	72.287	-0.664	0.507
Employed in all occupations, 1925	232	91.295	91.033	4.869	8.347	37.118	39.062	97.945	130.388	0.443	0.658
Unemployed or with no occupation, 1925	232	8.175	8.144	2.861	2.960	2.055	2.971	20.517	20.517	0.161	0.872
Catholic population, 1925	232	25.544	26.168	31.996	30.613	0.404	0.650	98.380	98.425	-0.324	0.746
Jew population, 1925	232	0.451	0.458	0.575	0.841	0.000	0.000	2.283	10.471	-0.119	0.905
Unemployed, 1933	192	0.643	6.544	3.346	3.019	1.554	1.202	16.142	21.750	-0.562	0.575
Full-time occupation, 1933	192	7.994	7.922	2.219	2.288	3.575	3.457	15.312	18.600	0.494	0.622
Fiscal controls											
Avg. Wage tax rate, 1928	186	4.165	4.102	0.405	0.410	3.139	3.009	5.849	5.302	2.022	0.045
Avg. Wage tax rate, 1932	186	3.274	3.221	0.394	0.393	2.206	2.241	4.302	4.120	1.642	0.098
Avg. Income tax rate, 1928	186	7.392	6.888	2.452	2.261	2.554	2.665	16.136	14.382	2.606	0.009
Avg. Income tax rate, 1932	186	8.943	8.502	2.443	2.082	5.022	5.358	21.518	15.090	2.009	0.046
Avg. Income tax rate, 1933	186	8.912	8.544	2.293	1.886	4.807	5.563	18.311	15.814	1.824	0.069

We are using a balanced sample adjusting for missing data between variables in districts and pair districts. We report the t-statistic (column 10) and the corresponding two-tailed p-value (column 11). When p-values are above 0.1 (10% level of confidence) we conclude that the mean difference between border districts are not different from 0. In the ‘Social, cultural and economic controls’, data from the census of 1925 refer to the number of male wage earners employed in the different occupations. Data are originally from the census of 1925 and 1933 collected by Falter and Gruner (1981). For the ‘Fiscal controls’, for definitions of the fiscal variables see Table 10.

Table A6: Restricted sample of cross district-pairs located on opposite sides of the borders using the initial level of taxes as an instrument

	(1)	(2)	(3)	(4)	(5)	(6)
Income taxes	0.345*** (0.079)	0.345*** (0.115)	0.350*** (0.081)	0.350*** (0.124)	0.194** (0.079)	0.210*** (0.079)
Wages			-0.450* (0.246)	-0.450 (0.480)		-0.966*** (0.212)
Unemployment			0.015** (0.007)	0.015 (0.019)		-0.008 (0.009)
Economic output			0.676*** (0.119)	0.676*** (0.226)		0.809*** (0.108)
Number of districts	1,989	1,989	1,989	1,989	1,989	1,989
Number of clusters	395	24	395	24	395	395
First-stage p-value	0.000	0.000	0.000	0.000	0.000	0.000
Kleibergen-Paap p-value	0.000	0.001	0.000	0.001	0.000	0.000
Ander. Rubin Wald p-value	0.000	0.000	0.000	0.001	0.008	0.004
Pair district clustering	✓		✓		✓	✓
State level clustering		✓		✓		
Pair fixed effects					✓	✓

Dependent variable is the percentage share of the valid votes cast going to the Nazi party in the elections of July 1932, November 1932 and March 1933. For the years used in the controls see Table 4. We cluster standard errors (in parentheses) at the district or state levels noted. We instrumented the change in the level of taxes paid with the taxes paid in 1928. *** p<0.01, ** p<0.05, * p<0.1.

Table A7: Cross-district models in differences for the impact of austerity on the Communist party vote share

	September 1930 and July 1932		September 1930 and November 1932		September 1930 and March 1933		Population weighted regressions		
							9/1930 - 7/1932	9/1930- 11/1932	9/1930- 3/1933
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Fiscal consolidation 1 (cuts in spending and change in wage taxes)	-0.071 (0.068)	-0.057 (0.077)	-0.111 (0.084)	-0.031 (0.078)	-0.138 (0.115)	-0.106 (0.109)	-0.046 (0.071)	-0.019 (0.070)	-0.094 (0.108)
Δ Wages		-0.011 (0.071)		0.168* (0.089)		0.083 (0.136)	-0.002 (0.066)	0.182** (0.083)	0.104 (0.135)
Δ Unemployment		0.029 (0.082)		0.223*** (0.076)		0.128 (0.107)	0.041 (0.077)	0.235*** (0.068)	0.145 (0.107)
Δ Economic output		0.054 (0.060)		0.109* (0.057)		-0.012 (0.033)	0.057 (0.060)	0.112* (0.055)	-0.010 (0.031)
Number of districts	933	933	933	933	933	933	933	933	933
R ²	0.005	0.008	0.012	0.049	0.019	0.029	0.008	0.053	0.030
Fiscal consolidation 2 (cuts in spending and change in in- come taxes)	0.040 (0.079)	0.062 (0.082)	-0.052 (0.076)	0.017 (0.087)	-0.106 (0.076)	-0.069 (0.098)	0.058 (0.080)	0.012 (0.083)	-0.071 (0.097)
Δ Wages		0.024 (0.059)		0.183** (0.075)		0.111 (0.175)	0.030 (0.056)	0.191** (0.073)	0.125 (0.176)
Δ Unemployment		0.068 (0.073)		0.240*** (0.063)		0.148 (0.124)	0.076 (0.069)	0.246*** (0.059)	0.162 (0.124)
Δ Economic output		0.078 (0.070)		0.119* (0.059)		0.001 (0.028)	0.077 (0.071)	0.118* (0.058)	0.002 (0.027)
Number of districts	933	933	933	933	933	933	933	933	933
R ²	0.002	0.009	0.003	0.048	0.011	0.025	0.009	0.052	0.028

Dependent variable is the change in the percentage share (x100) of valid votes received by the Communist party at the district level. We use the controls of 1930 for the elections of September 1930 and 1931 for the elections of July and November 1932 (columns 1-4). For columns 5 and 6 we use the controls of 1930 for the elections of September 1930 and 1932 for the elections of March 1933. Government spending is the sum of total within state municipal spending plus total state spending. We use the income taxes of 1928 and 1932 for columns 1-4 and 1929 and 1933 for columns 5-6 and wage taxes for 1928 1932 for all the columns adjusted to the nearest election. To account for sample selection bias due to redistricting between elections and missing data, models are adjusted for the same number of observations (933). Unadjusted samples for missing values report the same overall findings. Standard errors in parentheses are clustered at the state level. The method of estimation is least squares and we standardized all variables with a mean of zero and a standard deviation of one, *** p<0.01, ** p<0.05, * p<0.1.

Table A8: Cross-district models in differences for the impact of austerity on the Centre party vote share

	September 1930 and July 1932		September 1930 and November 1932		September 1930 and March 1933		Population weighted regressions		
							9/1930 - 7/1932	9/1930- 11/1932	9/1930- 3/1933
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Fiscal consolidation 1 (cuts in spending and change in wage taxes)	-0.223*** (0.060)	-0.240*** (0.066)	-0.168** (0.065)	-0.217*** (0.069)	0.013 (0.075)	0.142 (0.117)	-0.244*** (0.066)	-0.220*** (0.069)	0.138 (0.117)
Δ Wages		-0.003 (0.064)		-1.116 (0.072)		0.292** (0.125)	0.002 (0.062)	-0.113 (0.071)	0.289** (0.126)
Δ Unemployment		-0.043 (0.081)		-0.125** (0.054)		0.290** (0.141)	-0.040 (0.077)	-0.122** (0.052)	0.281* (0.143)
Δ Economic output		-0.048 (0.050)		-0.071* (0.040)		0.024 (0.040)	-0.051 (0.049)	-0.073* (0.040)	0.023 (0.039)
Number of districts	933	933	933	933	933	933	933	933	933
R ²	0.047	0.050	0.028	0.042	0.000	0.056	0.053	0.044	0.054
Fiscal consolidation 2 (cuts in spending and changes in in- come taxes)	-0.064 (0.063)	-0.053 (0.068)	-0.071 (0.054)	-0.098 (0.061)	-0.025 (0.100)	0.059 (0.091)	-0.058 (0.068)	-0.101 (0.061)	0.050 (0.089)
Δ Wages		0.048 (0.110)		-0.086 (0.108)		0.233*** (0.099)	0.057 (0.107)	-0.079 (0.107)	0.226** (0.096)
Δ Unemployment		0.036 (0.102)		-0.067 (0.072)		0.256* (0.146)	0.044 (0.097)	-0.059 (0.069)	0.244 (0.146)
Δ Economic output		-0.005 (0.050)		-0.041 (0.041)		0.007 (0.044)	-0.007 (0.049)	-0.043 (0.041)	0.006 (0.043)
Number of districts	933	933	933	933	933	933	933	933	933
R ²	0.004	0.006	0.005	0.011	0.001	0.045	0.007	0.012	0.043

Dependent variable is the change in the percentage share (x100) of valid votes received by the Centre party at the district level. We use the controls of 1930 for the elections of September 1930 and 1931 for the elections of July and November 1932 (columns 1-4). For columns 5 and 6 we use the controls of 1930 for the elections of September 1930 and 1932 for the elections of March 1933. Government spending is the sum of total within state municipal spending plus total state spending. We use the income taxes of 1928 and 1932 for columns 1-4 and 1929 and 1933 for columns 5-6 and wage taxes for 1928 1932 for all the columns adjusted to the nearest election. To account for sample selection bias due to redistricting between elections and missing data, models are adjusted for the same number of observations (933). Unadjusted samples for missing values report the same overall findings. Standard errors in parentheses are clustered at the state level. The method of estimation is least squares and we standardized all variables with a mean of zero and a standard deviation of one, *** p<0.01, ** p<0.05, * p<0.1.

Table A9: Cross-district models in differences for the impact of austerity on the Social Democratic party vote share

	September 1930 and July 1932		September 1930 and November 1932		September 1930 and March 1933		Population weighted regressions		
							9/1930 - 7/1932	9/1930- 11/1932	9/1930- 3/1933
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Fiscal consolidation 1 (cuts in spending and change in wage taxes)	-0.103 (0.089)	-0.115 (0.104)	-0.070 (0.112)	-0.116 (0.118)	-0.047 (0.111)	-0.196 (0.118)	-0.127 (0.103)	-0.130 (0.117)	-0.205* (0.118)
Δ Wages		-0.061 (0.107)		-0.169 (0.109)		-0.308** (0.149)	-0.071 (0.108)	-0.181 (0.109)	-0.318** (0.149)
Δ Unemployment		-0.031 (0.093)		-0.119 (0.099)		-0.240 (0.148)	-0.038 (0.092)	-0.128 (0.098)	-0.243 (0.149)
Δ Economic output		0.003 (0.070)		-0.034 (0.080)		-0.087 (0.058)	-0.000 (0.069)	-0.037 (0.080)	-0.088 (0.058)
Number of districts	933	933	933	933	933	933	933	933	933
R ²	0.010	0.013	0.005	0.024	0.002	0.055	0.016	0.028	0.057
Fiscal consolidation 2 (cuts in spending and changes in in- come taxes)	0.017 (0.080)	0.019 (0.086)	0.088 (0.087)	0.064 (0.095)	0.068 (0.086)	-0.001 (0.076)	0.019 (0.085)	0.064 (0.940)	0.001 (0.0754)
Δ Wages		-0.023 (0.108)		-0.116 (0.118)		-0.176 (0.181)	-0.027 (0.109)	-0.122 (0.120)	-0.178 (0.182)
Δ Unemployment		0.020 (0.086)		-0.005 (0.092)		-0.174 (0.163)	0.019 (0.086)	-0.058 (0.093)	-0.172 (0.164)
Δ Economic output		0.032 (0.061)		0.003 (0.069)		-0.063 (0.053)	0.031 (0.060)	0.003 (0.069)	-0.063 (0.054)
Number of districts	933	933	933	933	933	933	933	933	933
R ²	0.000	0.002	0.008	0.016	0.004	0.030	0.002	0.018	0.030

Dependent variable is the change in the percentage share (x100) of valid votes received by the Social Democratic party at the district level. We use the controls of 1930 for the elections of September 1930 and 1931 for the elections of July and November 1932 (columns 1-4). For columns 5 and 6 we use the controls of 1930 for the elections of September 1930 and 1932 for the elections of March 1933. Government spending is the sum of total within state municipal spending plus total state spending. We use the income taxes of 1928 and 1932 for columns 1-4 and 1929 and 1933 for columns 5-6 and wage taxes for 1928 1932 for all the columns adjusted to the nearest election. To account for sample selection bias due to redistricting between elections and missing data, models are adjusted for the same number of observations (933). Unadjusted samples for missing values report the same overall findings. Standard errors in parentheses are clustered at the state level. The method of estimation is least squares and we standardized all variables with a mean of zero and a standard deviation of one, *** p<0.01, ** p<0.05, * p<0.1.

Table A10: Cross-district models in differences for the impact of austerity on the German National People's party vote share

	September 1930 and July 1932		September 1930 and November 1932		September 1930 and March 1933		Population weighted regressions		
							9/1930 - 7/1932	9/1930- 11/1932	9/1930- 3/1933
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Fiscal consolidation 1 (cuts in spending and change in wage taxes)	-0.415** (0.161)	-0.355** (0.151)	-0.316** (0.143)	-0.243* (0.132)	-0.299** (0.117)	-0.280 (0.166)	-0.349** (0.151)	-0.241* (0.131)	-0.277 (0.167)
Δ Wages		0.221* (0.112)		0.250* (0.128)		0.059 (0.169)	0.221* (0.112)	0.250* (0.129)	0.064 (0.170)
Δ Unemployment		0.190 (0.182)		0.211 (0.166)		0.202 (0.145)	0.192 (0.179)	0.208 (0.163)	0.206 (0.145)
Δ Economic output		0.009 (0.061)		0.039 (0.069)		-0.006 (0.043)	0.010 (0.064)	0.041 (0.072)	-0.006 (0.043)
Number of districts	933	933	933	933	933	933	933	933	933
R ²	0.166	0.201	0.097	0.142	0.087	0.116	0.201	0.144	0.117
Fiscal consolidation 2 (cuts in spending and changes in in- come taxes)	-0.201 (0.173)	-0.118 (0.164)	-0.155 (0.142)	-0.067 (0.138)	-0.260 (0.155)	-0.237 (0.206)	-0.125 (0.162)	-0.069 (0.138)	-0.238 (0.205)
Δ Wages		0.283** (0.115)		0.297* (0.152)		0.099 (0.222)	0.287** (0.114)	0.301* (0.152)	0.106 (0.218)
Δ Unemployment		0.296 (0.176)		0.287* (0.167)		0.241 (0.166)	0.301* (0.175)	0.288* (0.165)	0.250 (0.165)
Δ Economic output		0.066 (0.085)		0.081 (0.085)		0.028 (0.051)	0.065 (0.086)	0.082 (0.087)	0.029 (0.051)
Number of districts	933	933	933	933	933	933	933	933	933
R ²	0.040	0.109	0.024	0.097	0.065	0.104	0.115	0.100	0.106

Dependent variable is the change in the percentage share (x100) of valid votes received by the German National people's party at the district level. We use the controls of 1930 for the elections of September 1930 and 1931 for the elections of July and November 1932 (columns 1-4). For columns 5 and 6 we use the controls of 1930 for the elections of September 1930 and 1932 for the elections of March 1933. Government spending is the sum of total within state municipal spending plus total state spending. We use the income taxes of 1928 and 1932 for columns 1-4 and 1929 and 1933 for columns 5-6 and wage taxes for 1928 1932 for all the columns adjusted to the nearest election. To account for sample selection bias due to redistricting between elections and missing data, models are adjusted for the same number of observations (933). Unadjusted samples for missing values report the same overall findings. Standard errors in parentheses are clustered at the state level. The method of estimation is least squares and we standardized all variables with a mean of zero and a standard deviation of one, *** p<0.01, ** p<0.05, * p<0.1.

Data Appendix

City level data

Electoral results

Data on electoral returns for the Reichstag elections of September 1930, 1932 (July and November) and March 1933 at the city level are from the official publication *Statistik des Deutschen Reiches*. These data have been previously used by other authors (Adena *et al.* 2015; Satyanath *et al.* 2017) and were initially collected and used by Falter and his collaborators (Falter *et al.* 1986; ICPSR 1999). We used the updates made by Satyanath *et al.* (2017) to Falter's data which accounts for, amongst other things, changes in the names of cities across time.

Control variables

Population, unemployment, number of new apartments, expenditure and taxes are newly collected from the Statistical Yearbooks of the German Municipalities. Until 1934 these statistical yearbooks were published as *Statistisches Jahrbuch deutscher Städte* and after 1934 under the name of *Statistisches Jahrbuch deutscher Gemeinden*. Data for all these variables were available for cities above 50,000 inhabitants reporting a panel of 98 cities. Although unemployment data were available for 248 cities we adjust the panel to cities above 50,000 inhabitants (when spending data and other controls are all available). For some 6 cities data were not reported for all the years (1928-1932) since they were close to the threshold of 50,000 inhabitants and until they no exceed this threshold they do not appear in the books. For instance, data for the city of Neuß are only reported for 1931, 1932 and 1933 when the population was above 50 thousand individuals: 54.8 in 1931, 55.5 in 1923 and 55.8 in 1933. The same appears in the city of Ratibor with a population (in thousands) in 1931 of 50.5, 50.7 in 1932 and 51.8 in 1933.

Expenditures

Spending data (*Ausgaben Insges. Einschl. Umlagen in 1,000 RM*) are reported by fiscal years, which runs from the first day of April in a year to the last day of March in the following year. Data adds the ordinary and extraordinary budget and all level of expenditure. In the statistical analysis we removed the city of Solingen (an independent city—*Stadtkreise*—in the state of North Rhine-Westphalia) as a potential outlier. Regarding spending data by budget category, General Administration includes expenditures on general administration, police and security. Education combines spending on elementary school, secondary schools, middle schools, higher schools and other school systems including spending on science and art and church. Health and wellbeing adds data on healthcare and healthcare facilities, welfare and

relief. Construction adds construction management and civil entering, spending on transport and general economic development. Spending on public infrastructures adds data on street cleaning and lighting, parks, cemeteries, cleaning of canals, sewage and drainage and finally, Housing combines data on housing and settlement. For the later years instead of the totals for these five categories data were reported in more disaggregated categories. However, to have a consistent panel we just add the more disaggregated categories into these 5 meaningful categories reported in 1929.

Population

Population data refers to the level of population (nationals and non-nationals) at the beginning of the year (1 of January), with the exception of 1933 that was reported at 16 June 1933.

Unemployment

Unemployment data are given at the end of the year (31 December) with the exception of 1933 that was reported at 28 February of 1934. A worker is defined as unemployed if the worker is part of the labor force but not working and it is registered in the local offices as an unemployed person.

New Residential Apartments

To proxy economic output we use the yearly construction of new apartments on residential buildings (*Neuerstellte Wohnungen in Wohngebäuden*). We note that the construction of new residential apartments moved closely with the development GDP (Ritschl 2013a, Tab. 4.4).

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Mortality rates

We use the weekly bulletins of the *Reichs-Gesundheitsblatt* (the Health Bulletins/Journals of the Empire) to collect a new city level panel of weekly high-resolution mortality data for over 23 causes of death. Weekly data have been aggregated into yearly data and are available for cities with a population larger than 100,000 inhabitants. In total the panel is based on 51 cities. As an example, the picture below shows the structure of the *Reichs-Gesundheitsblatt* for week 19 of 1930 (with the number of deaths occurred between 4/5/1930 and 10/5/1930). Column 1 reports the name of the city, column 2 the level of population, column 3 the number of marriages, columns 4-9 are relative to births, columns 10-20 deaths by age groups and columns 24-57 reports on different causes of death. Since the *Reichs-Gesundheitsblatts* also provide population figures (instead of weekly reported population figures change every two-three months) we calculate crude death rates with the mid-year population weighting the number of deaths of a certain cause by the city-population (in thousands). We also use the data on infant deaths (deaths below the age of 1 not including stillbirths) to calculate the city level infant mortality rates weighting the infant deaths by the number of city births which are also reported in the health bulletins.

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District level data

Electoral Results

Data on electoral returns for the Reichstag elections of September 1930, 1932 (July and November) and March 1933 at the district (*kreis*) level are from the official publication *Statistik des Deutschen Reiches (Wahlen zum Reichstag's* volumes). These data have been previously used by other authors (Adena *et al.* 2015; Satyanath *et al.* 2017) and were initially collected and used by Falter and his collaborators (Falter *et al.* 1986; ICPSR 1999). We used the updates made by Adena *et al.* (2015) to Falter's data which accounts for, amongst other things, changes in district borders.

Nazi Party Membership

Data are from Nazi party membership cards originally collected by Brustein and Falter (1995) for the project "NSDAP-members in Germany who joined the party in the years before 1933-1934." The cards are random samples of all members' cards. Data were also used by Adena *et al.* (2015) and Satyanath *et al.* (2017) and for a description of the data collection see Brustein and Falter (1995).

Income and Wage taxes

Income taxes are newly collected from *Die Einkommen- und Körperschaftsteuerveranlagungen* and wage taxes are newly collected from *Der Steuerabzug vom Arbeitslohn* (which both are reported under the official *Statistik des Deutschen Reichs*). The Reich statistical books provide state and district (*kreis*) level data on the number of taxpayers, total taxable income, and total revenue (in 1,000 RM) on income and wage taxes. For income taxes at the district level we use the data from *Teil I Abschnitt A, Einkommensteuerveranlagung, Steuerpflichtige, Einkünfte und festgesetzte Steuer* and for wage taxes at the district level the data from *Teil I Abschnitt A, Lohnsteuerpflichtige (soweit nicht veranlagt): Steuerbelastete, Steuerbefreite, Unbesteuerte*. Below we provide an example of how the data are provided from the income taxes in *Die Einkommen- und Körperschaftsteuerveranlagungen*. We took the data from the last three columns (columns 16-18). Column 16 reports the number of taxpayers for each district, column 17 the total taxable income (in 1,000 RM), and column 18 the total revenue (also in 1,000 RM).

Gebiet	Einkünfte aus den einzelnen Quellen																Einkommen		Fest- ge- setzte Steuer
	Land- und Forst- wirtschaft		Gewerbebetrieb		Sonstige selbständige Berufstätigkeit		Nicht- selbständige Arbeit (soweit veranlagt)		Kapital- vermögen (soweit veranlagt)		Vermietung und Verpachtung		Andere wiederkehrende Bezüge und sonstige Leistungs- gewinne		Steuer- pflichtige	Betrag in 1 000 RM	Steuer- pflichtige	Betrag in 1 000 RM	
	Steuer- pflichtige	Betrag in 1 000 RM	Steuer- pflichtige	Betrag in 1 000 RM	Steuer- pflichtige	Betrag in 1 000 RM	Steuer- pflichtige	Betrag in 1 000 RM	Steuer- pflichtige	Betrag in 1 000 RM	Steuer- pflichtige	Betrag in 1 000 RM	Steuer- pflichtige	Betrag in 1 000 RM					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
Noch: Preußen																			
Reg.-Bez. Aachen																			
a	—	—	811	2 302	79	395	43	441	372	329	472	367	39	58	1 072	3 513	307		
a	—	—	492	1 437	76	410	71	723	272	290	211	269	61	60	816	2 525	244		
a	—	1)	549	1 244	55	323	23	199	275	247	431	309	41	65	802	2 120	175		
b	12	33	1 626	3 516	126	527	58	291	750	656	1 251	891	131	173	2 338	5 433	365		
b	—	—	914	1 955	69	312	23	116	496	444	807	842	70	89	1 386	3 279	238		
b	2	20	562	1 069	40	223	8	45	295	248	668	527	13	10	843	1 880	144		
b	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Reg.-Bez. Münster																			
a	—	—	587	2 199	38	309	34	497	194	415	281	186	26	56	719	3 273	412		
a	—	—	578	1 528	66	365	61	656	180	172	260	233	239	363	853	2 976	228		
a	—	1	3 206	7 964	337	1 815	363	4 356	1 049	1 571	1 434	1 458	915	1 449	4 359	16 358	1 571		
a	3	—	2 423	7 929	568	2 470	479	5 483	1 695	2 595	1 703	1 736	263	499	4 332	18 827	1 919		
a	—	2)	959	2 386	135	674	110	1 575	380	537	459	354	375	548	1 642	5 359	529		
a	—	—	219	540	38	141	24	276	87	125	91	109	31	27	326	1 048	83		
b	3	23	1 104	2 806	124	539	36	484	260	769	833	359	61	76	1 358	4 440	426		
b	—	—	69	2 329	117	344	78	687	357	650	570	326	96	96	1 340	4 008	347		
b	—	—	219	540	38	141	24	276	87	125	91	109	31	27	326	1 048	83		
b	—	—	7	804	2 065	66	218	40	245	191	176	574	581	52	118	983	2 700		
b	—	—	8	685	1 871	75	374	39	286	191	534	489	158	40	94	852	2 970		
b	—	—	146	685	1 871	75	374	39	286	191	534	489	158	40	94	852	2 970		
b	—	—	7	770	1 796	106	351	43	330	261	333	536	308	120	187	1 076	2 809		
b	—	—	10	856	2 080	63	233	27	246	266	394	699	445	68	98	1 133	2 975		
b	—	—	6	856	2 080	63	233	27	246	266	394	699	445	68	98	1 133	2 975		
b	—	—	7	223	476	25	97	27	347	62	56	73	52	154	219	421	1 062		
b	—	—	10	1 506	3 458	150	527	121	1 387	446	433	743	439	595	806	2 401	6 255		
b	—	—	7	223	476	25	97	27	347	62	56	73	52	154	219	421	1 062		
b	—	—	1)	276	594	26	87	21	285	51	33	128	75	116	128	453	1 063		
b	—	—	1)	1 819	6 154	143	797	69	551	505	729	998	489	100	218	2 209	7 962		
b	—	—	2	574	2 593	37	306	37	307	159	223	151	18	63	678	3 398	544		
b	—	—	1)	785	1 856	95	307	52	365	279	523	451	237	51	67	994	2 938		
b	—	—	5	785	1 856	95	307	52	365	279	523	451	237	51	67	994	2 938		
b	—	—	8	632	2 211	57	280	15	147	181	191	514	264	41	85	802	2 958		

References for income taxes:

- Statistik des Deutschen Reichs, 1933. *Einkommen- und Körperschaftsteuerveranlagung für 1929*. Bearbeitet im Statistischen Reichsamt, Vol. 430. Berlin. Verlag für Sozialpolitik, Wirtschaft und Statistik.
- , 1936. *Die Einkommen- und Körperschaftsteuerveranlagungen für 1932 und 1933*, Vol. 482. Berlin. Verlag für Sozialpolitik, Wirtschaft und Statistik.

References for wage taxes:

- Statistik des Deutschen Reichs, 1931. *Der Steuerabzug vom Arbeitslohn im Jahre 1928*, Vol. 378. Berlin. Verlag für Sozialpolitik, Wirtschaft und Statistik.
- , 1937. *Der Steuerabzug vom Arbeitslohn in den Jahren 1932 und 1934*, Vol. 492. Berlin. Verlag für Sozialpolitik, Wirtschaft und Statistik.

Expenditures

Government spending data are newly collected from *Die Ausgaben und Einnahmen der öffentlichen Verwaltung im Deutschen Reich* (which are reported under the official *Statistik des Deutschen Reichs*). These books provide state level data on central, state and municipal spending (in 1,000 RM). References:

- Statistik des Deutschen Reichs, 1933. *Die Ausgaben und Einnahmen der öffentlichen Verwaltung im Deutschen Reich für die Rechnungsjahre 1929/30 und 1930/31*, Vol. 437. Berlin. Verlag für Sozialpolitik, Wirtschaft und Statistik.

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- , 1936. *Die Finanzwirtschaft der öffentlichen Verwaltung im Deutschen Reich (Ausgaben, Einnahmen, Personalstand und Schulden) für das Rechnungsjahr 1932/33 mit Hauptergebnissen für das Rechnungsjahr 1933/34*, Vol. 475. Berlin. Verlag für Sozialpolitik, Wirtschaft und Statistik.

Unemployment

Data for unemployment are the number of unemployed workers in a state as given in the official *Statistisches Jahrbuch für das Deutsche Reich* (Statistical Yearbooks for the German Reich). A worker is defined as unemployed if the worker is part of the labour force but not working. Data on the unemployment rate at the district level are not available before December 1931. Frey and Weck (1981) used unemployment rates for 13 major regions. Stögbauer (2001) used unemployment at the district level but extrapolated backwards for the years prior to 1931.

Wages

For each year we created a state-level index of nominal wages arithmetically averaging the monthly data from the hourly wages paid in four occupations: construction (*Bauarbeiter*), wood (*Holzarbeiter*) and skilled and unskilled workers in metallurgy (*Metallarbeiter*). This index is based on 38 big cities that consistently reported data between 1929 and 1933 and each city has been located within each of the states. Data are in Rentenpfennig (Rf) (1 Rentenmark = 100 Rentenpfennig) and were newly collected from the official *Statistisches Jahrbuch für das Deutsche Reich* (Statistical Yearbooks for the German Reich). Throughout we use the natural logarithm of this index in a state or the percentage change. The 38 cities that create the index are: Aachen, Altona, Augsburg, Barmen, Berlin, Bochum, Brandenburg, Braunschweig, Bremen, Breslau, Chemnitz, Dortmund, Dresden, Duisburg, Düsseldorf, Erfurt, Essen, Frankfurt a. M., Gelsenkirchen, Hagen, Halle a. S., Hamburg, Hannover, Karlsruhe, Kassel, Kiel, Köln, Königsberg, Leipzig, Magdeburg, Mannheim, München, Nürnberg, Remscheid, Solingen, Stettin, Stuttgart, and Wuppertal.

Economic Output

Economic output is proxied by the generation of electricity under the assumption that the vast majority of manufactured goods and services are produced using electricity. Data are at the state level, measured in 1,000 kWh and were newly collected from the official *Statistisches Jahrbuch für das Deutsche Reich* (Statistical Yearbooks for the German Reich). Throughout we use the natural logarithm of this variable or percentage changes.