The Costs of Hyperinflation: Germany 1923

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Abstract

I study the link between monetary policy and populism by looking at the hyperinflation in Germany in 1923, one of the worst spells of inflation in history, and the Nazi electoral boost in 1933. Contrary to received wisdom, inflation data for over 500 cities show that areas more affected by inflation did not see a higher vote share for the Nazi party in each and every German federal election between 1924 and 1933. Yet, the inflation does predict the vote share of the *Volksrechtspartei*, an association-turned-party of inflation victims, and the vote share of the Social Democrats. In places where hyperinflation was higher, mortality and anti-Semitism also increased. Unobservables are unlikely to account for these results.

1 Introduction

In recent years, Germany has been leading the European Union and its institutions in a tight and conservative monetary policy. A focal point has been the European Central Bank's purchases of government debt, and Draghi's famous commitment in July 2012 to do "whatever it takes" to save the euro. Now, in response to the Covid-19 crisis, the debate is moving toward the creation of Eurobonds to resume the path of growth (Bordignon and Tabellini 2020, Giavazzi and Tabellini 2020, Landais, Saez and Zucman 2020). For nearly a century, Germans have been scarred by the traumatic experience of inflation in the 1920s, placing price stability at the top of its list of economic priorities due to fears of economic collapse and political extremism. As Figure 1 shows, in a few months, prices increased by up to nearly one trillionfold. In January 1923, a U.S. dollar was worth 17,000 Marks, 24,000 Marks in April, and 353,000 Marks in July. By November, a dollar was worth 2,193,600,000,000 Marks, and 4,200,000,000,000 Marks in December.

[Figure 1 about here]

Despite the fact that the origins and the economic consequences of hyperinflation are well studied,[1] there is little clarity about its political legacy; indeed, its contribution to the rise to political power of the Nazis is still, nearly a century later, a topic of considerable debate. For instance, historians like Ferguson (1995: 463) wrote that "the fear of inflation ... did not prevent voters from turning to Hitler" and Ferguson and Granville (2000: 1,084) that "the Weimar inflation proved the perfect seedbed for national(ist) socialism." Contemporary observations also argued that "Hitler [was] the foster-child of the inflation" (Robbins 1931: 5) and that "nothing else has made the German people as embittered, as hateful, as ripe for Hitler as the inflation" (Zweig 1944: 361).

Nowadays, economists like Acemoglu et al. (2019: 656) also argue that hyperinflation "set the stage for the ascent of the Nazi party" and Sala-i-Martín (2015: 163) that "in the midst of hyperinflation, political parties were filled with demagogues, populists and xenophobes who promised easy salvation. The Nazi party wins the election in Germany and Hitler becomes its chancellor."[2] Satyanath et al. (2017: 479) also commented that hyperinflation has been one of the conventional answers in the literature for the Nazi electoral boost[3] and in a recent interview in the *Neue Zürcher Zeitung* (a Swiss German-language newspaper), Sinn outlined that hyperinflation "prepared the breeding ground for the Nazis."[4]

This association has repeatedly appeared in editorial pieces of important media outlets including the *BBC*, *Der Spiegel*, *Die Zeit* and *The Economist*.[5] The latter, for instance, argued in 2010 that "Germany's interwar experience with hyperinflation famously created a political climate amenable to rise of Adolph Hitler" and in 2013 further warned of "a linkage between hyperinflation and the rise to power of the Nazis." Against these views, Krugman (2013) wrote that "No, the 1923 hyperinflation didn't bring Hitler to power; it was the Brüning deflation and depression" and Feldman (1997: 4) that, at most, "its connection to the events surrounding the Republic's demise and Nazism's triumph are complicated and indirect." Despite this controversy, I am not aware of any direct quantitative assessment of this issue.

In this paper, I explore the political and social consequences of hyperinflation in over 500 cities using prices and election returns for the seven federal elections held between 1924 and 1933.[6] Specifically, I link the Nazi local vote shares to the monthly city prices while controlling for other local features of the cities (such as location, religion, employment and other fixed effects). In none of the equations using models in levels or differ-

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[1]Particularly, see Feldman's *opus magnum* (1997) and Holtfrerich's masterly study (1986). See also Balderston (1993), Bresciani-Turroni (1931), Childers (1983), Evans (2004), Ferguson (1995), Graham (1930), James (1986), Laursen and Pedersen (1964) and Sargent (1977).

[2]For authors linking the hyperinflation and the rise of the Nazis see also Hill et al. (1977) and Taylor (2013).

[3]"Answers currently range from a history of deep-rooted anti-Semitism ... to the social changes engendered by German industrialization, hyperinflation, and the structural flaws of the Weimar constitution interacting with weak political leadership before 1933."

[4]*Neue Zürcher Zeitung*, 2 December 2020.

[5]*The Economist*, 4 March 2010; *The Economist*, 15 November 2013; *Die Zeit* 26 December 2018.

[6]As Figure A1 shows, there was a good degree of heterogeneity across German cities.

ences, I could find evidence that the hyperinflation boosted the Nazis' political fortunes. Contrary to what some have argued and to received wisdom, I find no connection between the traumatic experience of hyperinflation and the electoral success of the Nazis nearly a decade later.

Although, as I argue here, the hyperinflation was unconnected to the electoral fate of the Nazi party, since the votes for each party can be identified in the data, I found that hyperinflation strongly predicts the vote share of the *Volksrechtspartei*, an association-turned-party of inflation victims in 1928 (Doerr et al. 2021, Fritsch 2007, James 1986). Using archival documentation from newspapers and mass pamphlets, I also developed a historical narrative to show that, despite the Nazis had an anti-inflation rhetoric, after the fall of 1931, the Social Democratic Party (SPD) and the Communists forcefully used the fear of new inflation if the Nazis were elected as part of their political speech. The models presented here also predict that hyperinflation was an important factor in voting for the Social Democrats in the 1933 election, the natural political home of the workers' movement.

Finally, although hyperinflation did not have a positive impact on the right-wing vote, I show that it exacerbated the German suffering (using cause-specific mortality rates as a proxy). To my knowledge, this is the first time that an empirical link between hyperinflation and suffering is shown, and I do this by exploiting city-level variation with monthly data for over 300 cities. Finally, I show that the hyperinflation was strongly connected to the number of anti-Semitic letters sent to *Der Stürmer* (a virulently anti-Semitic newspaper) and with deportations of Jews under the Nazi regime, but was not correlated with the bloody and murderous attacks against the Jews in the 1930s, including the "Night of Broken Glass" (*Reichskristallnacht*) in 1938. After a brief review of the origins and developments of the German hyperinflation (Sections 2 and 3), I present the data (Section 4), empirical results (Sections 5, 6 and 7) and discussion (Section 8).

2   The German inflation

From the beginning of World War 1 (WW1) to the end of hyperinflation in 1924, German inflation rose exponentially. Germany, like other countries, had financed the war by increasing domestic debt and printing money, so when the war was over, inflation was more or less familiar in all western countries (Dornbusch 1985, Hubbard 1990, Evans 2004, Ritschl 2013, Lopez and Mitchener 2021). For instance, the annual inflation rate before and after WW1 had grown by 84.6% in Austria, 71.1% in Hungary, 42.2% in Italy, 35.9% in France, 23.1% in Britain and 21.2% in Germany.[7] However, the Versailles Conference (which ended in the summer of 1919) greatly compromised Germany's future. The Allied Commission forced Germany to pay the bill for the war, treating Germany as a conquered enemy and surpassing its capacity to pay.[8] This placed financial demands on Germany that were very

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[7] Data are from Lopez and Mitchener (2020), Table 1.
[8] Reparations initially totaled up to 260% of 1913 GDP (Ferguson 1997, Ritschl 2013).

difficult to meet and that were dubbed as "cruel" by some (Keynes 1920).[9]

The following months were overshadowed by more inflation, the threat of depression, political turmoil, and a tax boycott that worsened uncertainties over payments (Dornbusch 1985, Eichengreen 1996, Evans 2004, James 1986, Straumann 2019).[10] These concerns were temporarily halted with a new constitution and Erzberger's fiscal reforms, which tried to strengthen the budget position by centralizing taxation and attempting to increase tax revenue by instituting a hefty income tax and a one-time capital levy (Hubbard 1990, Newcomer 1936). However, under the punitive reparations of Versailles, relying on tax hikes was not an option as, for the German taxpayers, money would have been used to repay Germany's debts.

Because of uncertainties over payments, in May 1921, the London Ultimatum demanded a front-end payment of a thousand million Gold Marks by August in foreign exchange, and an additional 500 million Gold Marks by November (Dornbusch 1985, Eichengreen 1996). These demands amounted to about half of the total German tax revenue. If the conditions of the Ultimatum were not met, the Allies threatened Germany with the occupation of the Ruhr (Germany's western mining district). The immediate consequence of this thread was the fall of Chancellor Fehrenbach. Subsequently, since the Reichstag refused to hike taxes, by October 1921, the Allies annexed Upper Silesia to Poland. As a protest against these stiff terms, Germany suspended all payments in June 1922 and, by early 1923, it failed to make deliveries of coal, as payments in kind, to France, with France and Belgium occupying the Ruhr. Occupation was met by the Germans with passive resistance and inflation turned into hyperinflation.[11]

Monetary policy was out of control, and from September to November, prices changed more than once every day. This was the time when Germans carted worthless Marks in suitcases and wheelbarrows, and millions of Germans lost their jobs, savings and hopes. Unable to afford the most basic necessities, crowds soon began to riot. At that time, commentators noted that "plundering and riots were a daily occurrence" (Schacht 1927). These events included the *Beer Hall Putsch*, a failed *coup d'état* led by the Nazis in November 1923, in which Hitler was arrested and charged with treason.

Overall, along with problems in the balance of payments (i.e., disturbances in the foreign exchange market, rising import prices and money creation), hyperinflation also occurred because of budget deficits financed by printing money (Bresciani-Turroni 1931; Cagan 1956, Eichengreen 1996, Helfferich 1927, Hubbard 1990, Graham 1930). In both cases, these problems are rooted in the agreements dictated at Versailles, and, as Keynes (1920) famously argued, removing reparations would have just eased the need for monetization and inflation would not have moved beyond anecdotal. Expectations over the Mark also

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[9]Feldman (1997: 150) also opined that the Allied Powers peace terms "made impossible demands and promoted intolerable choices."

[10]On the tax boycott, taxpayers deferred the submission of their returns until the very last moment, so authorities delayed demands for arrears, obstructing the transfer of reparations (Straumann 2019). This created new inflation, as the difference between tax receipts and government expenditures was covered by banknotes printed by the Reichsbank.

[11]In an ill attempt to support the workers, the Reichsbank paid the workers' wages by printing money (Straumann 2019).

mattered, and the events that took place after the middle of 1922, including Germany's unilateral end to payments, the occupation of the Ruhr, and the assassinations of Matthias Erzberger and Walther Rathenau (the minister of finance and the minister of foreign affairs, respectively), further undermined confidence in the stability of the German Mark (Holtfrerich 1986, Lopez and Mitchener 2021, Webb 1986). The four unelected chancellors who led Germany between June 1920 and November 1923 also underlined the political chaos and the difficulties of building alliances to govern.[12]

Stabilization started by the end of November 1923. Measures to stop hyperinflation had already begun in the summer of 1923 with the new government under Stresemann. These included a 500 million Gold Mark loan, with bonds widely accepted as hard currency. In November, a new temporary currency appeared, the Rentenmark, and, in August of the next year, the Reichsmark replaced both the Mark and the Rentenmark. Its exchange rate was at 10,000,000,000,000 Marks and, since the Reichsmark was tied to the price of gold, it achieved general acceptance. Beyond monetary efforts, it was not until Stresemann's government agreed to call off the passive resistance in October 1923, and France signaled some willingness to reconsider the reparations bill, that prices began to stabilize (Ferguson 1996, Ferguson and Granville 2000, Eichengreen 1996, 2015). As Eichengreen (1996: 127) explained, "until the dispute over reparations subsided ... none of the prerequisites for monetary stability was present until 1924, and inflationary chaos was the result."

A critical element for stabilization arrived with the Dawes Plan in August 1924, which rescheduled Germany's obligations (although they were not significantly reduced), with the immediate debt service payments being scaled back to a fraction of what they had been in 1921/22, since payments were limited to some 1% of the GNP. Central to the success of the Dawes Plan, was a foreign loan amounting to 800 million Gold Marks of foreign currency (with the U.S. floating half of the loan). What followed in the mid-1920s was an economic boost, frequently referred to as the 'Golden Twenties', with a compound annual growth rate of 5.1% between 1924 and 1928.[13]

3   Distributional and political battles

Financial chaos disrupted productive activity in all sectors, shrinking the size of the pie to be distributed.[14] Arguably, the biggest economic losers from the inflation were people from outside Germany who held obligations payable in Marks (Hubbard 1990). Then, German pensioners and wealthy Germans, such as bondholders and rentiers, also became largely impoverished; as Voth (1994) commented "the inflation had virtually wiped out the entire German 'rentier' class; a whole group of citizens had to work for a living rather

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[12]Laws to nominate Chancellors were passed by emergency decrees avoiding parliamentary control. The fact that the directors of the Reichsbank were appointed directly by the Chancellor underlined the lack of independence of the Central Bank (Hubbard 1990, Eichengreen 1996).

[13]For the compound annual growth rate, I used the data from the 2020 Maddison Project.

[14]As Keynes (1923: 1-2) wrote, "a change in prices and rewards, as measured in money, generally affects different classes unequally, transfers wealth from one to another, bestows affluence here and embarrassment there, and redistributes fortune's favors so as to frustrate design and disappoint expectation."

than leading a pleasant life on the basis of income from capital."

Despite it being repeatedly stated that the middle class was severely hit by the hyperinflation, the effects on this group were very heterogeneous and, as Hubbard (1990: 562) maintained, "the persistent notion that the inflation 'destroyed the middle classes' must be substantially revised, if not completely discarded."[15] For those on a fixed income, the results were ruinous, but wages were generally protected by the unions and tended to preserve their value once nominal wages reflected the pace at which prices rose (Evans 2004, Holtfrerich 1986, Hetzel 2002, Webb 1989).[16] Unemployment remained very low until the fall of 1923, and then, it quickly fell to the pre-hyperinflation levels (Balderston 1993, Evans and Geary 1987, Pierenkemper 1987). For most farmers, hyperinflation also meant that they could liquidate their indebtedness and redeem their mortgage debts at a fraction of their pre-war real value (Hubbard 1990, Moeller 1982, Mommsen 1989, Osmond 1982). Overall, as Gómez León and de Jong (2019) have recently contended, throughout the period of hyperinflation all Germans lost and became impoverished, but those at the top of the wealth distribution lost more, making the income distribution more egalitarian. Bartels (2019: 13) has also argued that the "hyperinflation likely contributed to reducing inequality."

Politically, the hyperinflation did much to destroy what Robert Putnam calls social capital—the extent to which people implicitly trust each other—with the emergence of political disorder and the existence of very short-lived governments. After months of hyperinflation, the SPD, a working-class left-wing party, took the majority of votes at the Reichstag in the May and December 1924 elections, increasing their votes from 20.5% to 26.0%.[17] The German National People's Party (DNVP), a bourgeois and xenophobic party, maintained its quota (from 19.5% to 20%), and so did the Centre Party, a conservative Catholic party (moving just from 13.4% to 13.6%), and the German People's Party (DVP), a center-right party, with 9.2% and 10.1%. The Communist Party, the main party of protest for those workers disenchanted by the Weimar regime, declined from 12.6% to 9%.[18]

Since the Nazis were officially banned after the *Beer Hall Putsch* in 1923, the impact of months of inflation on their popularity cannot be directly studied in relation to the 1924 elections. However, two parties, the German *Völkisch* Freedom Party (DVFP) and the National Socialist Freedom Movement (NSFP), shared many of the Nazis' ideas and even had overlapping candidates; therefore, their votes could potentially be used as a proxy for the size of the Nazi support (Levy 2005, Striesow 1981, Voigtländer and Voth 2012). Nevertheless, despite their strong anti-inflation campaigns, the combined efforts of these

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[15]Furthermore, Evans (2004) posited that "it used to be thought that it destroyed the economic prosperity of the middle class. But the middle class was a very diverse group in economic and financial terms." See also Feldman (1978). For civil servants, Kunz (1986) argued that their real wages were "remarkably stable" and for the working-class, Abelshauser (1981: 447) that "the dominant dismal picture of working-class living standards is not supported by empirical evidence."

[16]Wages were set by the *Zentralarbeitsgemeinschaft* and both trade unions and employers were represented. On the role of unions, Gómez León and de Jong (2019: 23) commented that "labour unions, frequently supported by government arbitration, increased their bargaining power during the hyperinflation years."

[17]The latter took place because Chancellor Marx wanted to secure a bare working majority.

[18]For details on these parties, see Childers (1982), Feldman (1997), James (1986) and Jones (1972, 1979).

two parties could only bring together 6% of the votes in May, and 3% in December.[19] An important feature of the 1924 elections was also the surge of small and new protest parties including the Reich Party of the German Middle Class (1.7% and 2.3%), the Agricultural League (2% and 1.6%) and the German Social Party (1.1% and 0.5%).[20]

After four years of economic and political calm, only the parties on the left gained support in the 1928 elections, with the SPD increasing its vote share to 29.8% and the Communists to 10.6%. All the other main parties (who were at the right or far-right) suffered a bitter defeat: the DNVP only collected 14.2% of the votes, 12.1% the Centre's party and 8.7% the DVP. The Nazis did not fare much better, and in the first federal election in which they could participate, only 2.6% of the electorate voted for them. Yet, in just 27 months, and as a response to the Great Depression and the austerity policies implemented by Chancellor Brüning (Doerr et al. 2021, Galofré-Vilà et al. 2021a,b, Voth 2020), the Nazis surged from almost no support to taking more than 18.3% of the votes in 1930, 37.3% in July 1932, 33.1% in November 1932 and 43.9% in March 1933, dwarfing other political options. They gained votes from all walks of life, yet they were somewhat 'underrepresented' among the working classes, in industrial cities, and in the Catholic regions (Falter et al. 1986, King et al. 2008, Voigtländer and Voth 2012).

4   Data

This paper combines several data sources for interwar Germany at the city level, some of them hand-collected and digitized for the first time. Local prices at the monthly level are from the official bi-monthly statistical periodical of the *Reichsamt Wirtschaft und Statistik*. I hand-collected the official inflation rates based on a cost-of-living index (the so-called *Teuerungsraten*) for over 70 cities from August 1921 (when the periodical was first published) to December 1924. This cost-of-living index was created by the German Department of Labor (*Reichsarbeitsministerium*), and it was based on the prices of a basket of goods representative for a family of five members. Importantly, these periodicals provide inflation rates relative to the baseline year (1913=100), so I can compute prices for these cities back in 1913 (when inflation was not an issue). Additionally, starting in December 1919, the Statistics of the Reich Office published the Inflation Statistics of the Reich (*Vierteljahrshefte zur Statistik des Deutschen Reichs*), with the details of this cost-of-living index (*Teuerungsraten*) on a monthly basis for over 500 cities (those with at least 10,000 inhabitants).[21]

Voting data for the above cities were obtained for the seven federal elections between 1924 and 1933 (May and December 1924, May 1928, September 1930, July and November

[19]As noted by Feldman (1977: 855), "their campaign deliberately targeted pensioners, small investors, and other inflation victims by characterizing the inflation as 'finance Bolshevism' and history's 'most shamelessly and ruthlessly executed expropriation.'

[20]As Eichengreen (2018: 73) argued, "inflation in the 1920s … undermined confidence in the ability of mainstream politicians and governments to manage the economy."

[21]Unfortunately, they did not provide the details of the pre-WW1 (i.e., 1913) cost-of-living index for the +500 cities. After June 1923, the number of cities is also substantially reduced to around 280 cities.

1932 and March 1933). In the German federal elections, under to the principle of proportional representation, people voted for nationwide party lists to decide who would be Chancellor. Details have been described elsewhere, and I use the voting data as organized by Voigtländer and Voth (2012) and are drawn from Official German Statistics (*Statistik des Deutschen Reichs*). To measure support for the Nazi party, I compute vote shares as a proportion of the total valid vote. I also measured Nazi's support from the flow of new members to the Nazi party. On membership, data were originally collected by Falter and Brustein (2015) and I use the data as in Adena et al. (2015).

As a proxy for the impact of the hyperinflation on German society in the early 1920s, I matched the local data on prices for over 300 cities with cause-specific monthly mortality data using the demographic statistics from the German Health Bulletins (*Reichs-Gesundheitsblatt*). From the health reports, I extracted new data on the main vital statistics (population, births and cause-specific deaths) covering the months between June 1921 and September 1924. Crude death rates were calculated per thousand population, or per thousand births in the case of infant mortality rates. Finally, I also explored the impact of hyperinflation on anti-Semitism using the data from Voigtländer and Voth (2012). To control for additional local characteristics of the cities, I controlled for city population, the share of blue-collar workers, of Protestants, and of Jews. Data are from the census of 1925 as in Voigtländer and Voth (2012). The remaining data (i.e., radio signal, WW1 participants, etc.) are from Adena et al. (2015). Table A1 shows descriptive statistics for the main variables.

5 Results

5.1 Hyperinflation and Political Outcomes

Multivariate regression models in differences were used to quantify the association between hyperinflation and Nazi vote share using city-specific slopes:

$$\triangle \text{NS}_{c,t} = \alpha + \beta_1 \triangle \text{Hyperinflation}_{c,m} + \gamma'_{c,t} + \varepsilon_{c,t} \quad (1)$$

where c denotes cities, t indexes elections and $\text{NS}_{c,t}$ is the vote share of the Nazi party in percentages of the total vote between two different pairs of elections. In the preferred specification, I use differences from the 1928 election (i.e., the change in the Nazi support between May 1928 and September 1930, between May 1928 and one of the elections in 1932, and between May 1928 and March 1933). Throughout, I provide results for alternative differences (i.e., taking changes from the elections of 1930 and the next elections). The main explanatory variable is the highest level of hyperinflation experienced by taking the average prices between November 1923 and January 1924, relative to a pre-hyperinflation year with the baseline of prices in 1913. Thus, I use deviations from undisturbed levels of prices, taking differences from some reasonable pre-WW1 benchmark year (before prices started to rise).

I also add a city-level vector of controls as of 1925 ($\gamma'_{c,t}$), including population size, as well as share of Protestants, Jews, and blue-collar workers out of its total population. I also include the latitude and longitude of each city's location to control for spatial autocorrelation (Voth 2021).[22] Additionally, I cluster robust standard errors at the state-level. By clustering at the state-level (above the city-level), I allow for arbitrary spatial correlations of the error term within the cluster. Finally, since I am using first differences, this is equivalent of using city-level fixed effects, absorbing much of the unobservable characteristics at the city-level.

As Figure 2 suggests, there is a negative association between hyperinflation and the Nazi electoral boost (see also Figure A1). To limit biases due to endogeneity and omitted variables, Figure 3 presents the baseline results of equation 1. Results show that despite having a negative slope, the hyperinflation was highly unconnected to the Nazis votes in each and every German federal election between 1928 and 1933. As Table A2 shows, the inclusion of other controls like provincial or state fixed effects, weighting the regressions by the level of population in 1919 to emphasize the data from the larger cities and eliminate undue influence from smaller towns and clustering at the city level, leads to no material change in the baseline findings. If instead of using differences as in equation 1, I use models in levels for the different elections (Table A3), the same general picture emerges: in localities where prices were higher, this was not translated into a higher vote share for the Nazi party. The same results hold when looking at different pairs of elections and, for instance, looking at the Nazi electoral boost between 1930 and one of the elections of 1932, or 1930 and 1933 (Table A4). In Table A5, I also show very consistent results without taking logarithms in prices (or instead of logarithms the inverse hyperbolic sine transformation) and reporting results using standardized variables to have a mean of zero and a standard deviation of one, so the size of coefficients across models are directly comparable.

[Figure 2 about here]

Despite the Nazis not having a well-defined economic program and the uncertainty over the Nazi's future economic policy (Brustein 1996, Evans 2004, James 1986), they were often attacked by the Social Democrats and the Communists on the grounds that their programs would fuel new inflation into the economy (Figure A2). As I show in Figure A3, the mentions of "hyperinflation" and "inflation" in the corpus of German-language texts (i.e., books, magazines, etc.) spiked in 1933, meaning that hyperinflation was an important issue for the German society and politics of the early 1930s. Here James (1986: 351) explained that "the Accusation frequently made against the Nazis in 1932 that their programme would mean a new inflation was particularly damaging and dangerous." Voth (1993: 284) also argued that "inflation had become bitterly unpopular and was denounced in propaganda as right-wing exploitation of the workers." Similarly, Brustein and Falter

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[22]On spatial autocorrelation, I also calculated the Moran's Index. For the change in prices between 1913 and December 1923, I obtain a Moran's Index of 0.163 (p-value = 0.160). For the change in the Nazi vote share between 1928 and 1933 the Moran's Index was 0.048 (p-value = 0.618). Similar values were obtained for different pairs of elections and in all cases the data fits under the reasonable assumptions of randomness.

(1994: 380) wrote that "the NSDAP's suggestions to stimulate economic activity ... was generally viewed as irresponsible and inflationary by the major political parties" and Ferguson (1995: 463) that "on numerous occasions in 1931 and 1932, [Hitler] was accused of advocating inflationary policies."[23]

By looking at mass pamphlets and speeches from Nazi leaders, I also observe how inflation was a major issue after the 1932 elections, but not before, and how the Nazis tried to refute the accusations that their economic policy would lead to inflation. For instance, in a pamphlet issued in July 1932 called *Stürzt Das System!* (Bring Down the System!), the Nazis stated that "the gutter press today accuses the National Socialists of wanting inflation. With this miserable lie that lacks any kind of proof, the Black-Red parties are attempting to divert the masses from the fact that they are the real culprits behind the inflation of 1923."[24] In another pamphlet issued in the spring of 1932, called the *Die Journaille Lügt!* (The Sensationalist Newspapers Lie!), they wrote that "the Red bigwig society found a new lie in fall 1931, the lie that the Nazis wanted inflation ... The only thing to say about this miserable lie is that the NSDAP has always said that it wants to create a stable currency." In a speech that Hitler delivered in Dresden on 6 April 1932, he said very prominently that "some say today that we would produce an inflation. We cannot do this, even if we wanted to, for the specialists in inflation are sitting in the parties which today rule the state."

Beyond the lack of association between the hyperinflation and the Nazi electoral gains, in Figure 3 I show that hyperinflation is positively connected to the votes for the Social Democrats, but only in the 1933 election. As already seen, in the fall of 1931 the SPD started a campaign to attack the Nazis on the grounds of inflationary consequences of the economic policy. On their impact, Harsch (1993) contended that "the SPD press and Reichstag speakers took up Hilferding's crusade against the 'inflation plans' of the Right, a campaign motivated in part by a desire to frighten the middle class away from the NSDAP."[25] This explains why, in the pre-1933 campaigns, the results are not statistically significant. Adena et al. (2015) also show that the Nazis did not have access to radio airtime before they were in power in 1933 (and thus only in February and March of 1933), making it difficult to defend against the SPD allegations that they were intending to foster renewed inflation.[26]

The negative association between hyperinflation and the vote share of the Center party in the 1928-1930 elections, reflects how hyperinflation originated under the short-lived governments of Fehrenbach (from June 1920 to May 1921), Wirth (May 1921 and November 1922) and Marx (November 1923 and January 1925). All from the Center party. The cabined from Cuno (an independent in office from November 1922 to July 1923) also added

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[23]On this issue, see also Barkai (1988), Borchardt (1985), Childers (1983) and Holtfrerich (1990).

[24]The *red* stood for the left-parties, such as the Social Democrats and the Communists, and the *black* referred to the Center Party.

[25]Rudolf Hilferding was an influential SPD politician. Labor unions in the 1920s also had strong affiliations with the SPD (particularly in Protestant areas). See Brustein and Falter (1994) and Ferguson (1996).

[26]In Table A6, I also interacted the SPD vote share with the radio signal strength to show that the SPD increased its popularity with radio airtime.

members from the Center party. I next pursue a number of additional robustness checks to the baseline findings.

[Figure 3 about here]

5.2 Robustness checks

One may worry about how well the Reich officers measured prices at that time. Hachtmann (1988) examined very thoroughly the consistency of this index of prices, and only questioned its values for the years that followed 1933. The index, among other issues, already takes into account black-market prices and changes in the families' consumption patterns due to the crisis. The same conclusion was reached by Holtfrerich (1986) and van Riel and Schram (1993). Ultimately, the prices used here were those used by workers' negotiation of the collective wage agreements.

Another concern is about what drives the variation in the local prices. In Table A7, I try to predict the local inflation with the local population in 1919, distance to the Ruhr, the share of participants in WW1, the share of Protestants, Catholics and Jews, and the number of workers in different industries.[27] Overall, I find that these variables have the expected sign, but they have a low predictive value and, if anything, throughout, I control for population size and the location of the cities. Since there was a great deal of heterogeneity in the size of hyperinflation experienced by the different cities (Figure A4), in Table A8, I show the impact of hyperinflation on the Nazi vote share by percentiles. Neither the bottom nor top of the distribution (those exposed to less or more inflation) could be linked to the Nazi electoral boost of the 1930s.

In Table A9, I explore potential heterogeneity in the impact of hyperinflation on the Nazi vote share. I split the sample for values above and below the median value of Protestants, Catholics and Jews and people working in agriculture, industry, trade and transport, self-employed, and blue-collar occupations as a share of population in 1925.[28] When I stratify the sample, I find that the impact of hyperinflation on the Nazi vote share was rather weak in agricultural and industrial cities. It was also low in cities with a higher share of Jews and self-employed workers. Arguably, the latter group could have lost their small business, shops and groceries during the hyperinflation months and worried about the Nazis' "new inflation" if elected. In cities with below the median share of blue-collar workers, they tended to vote less for the Nazi option on the grounds of hyperinflation.[29]

A good identification of these prices can be provided by looking at the impact of hyperinflation with the vote share of the *Volksrechtspartei*, a party that called for a better deal for those expropriated during the German inflation and sought a revaluation of (old) Marks

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[27]See the end of this section for more details on sources. About the importance of the number of workers in the paper industry, they were necessary to accommodate new supplies of money. For instance, the Reichsbank (1924: 14) outlined "efforts never experienced before", with the involvement of 132 printing houses for the official money production.

[28]Occupatinal data are from the census of 1925.

[29]I also divide the sample by Prussian and non-Prussian cities (unreported here). While none display statistically significant p-values, the Prussian cities hold a consistent negative sign, while the non-Prussian cities a positive one. The sizes of coefficients are roughly similar.

(Bauser 1927, Doerr et al. 2021, Fritsch 2007, James 1986, Jones 1979). Effectively, in Table A10, I show that, in localities where hyperinflation was more severe, voters were also more likely to vote for the *Volksrechtspartei*. On this issue, Doerr et al. (2021) also show that cities that voted more for the *Volksrechtspartei* did not support the Nazis more.

Another concern might be that the post-1928 elections are too distant from the events in 1923 and 1924. While the literature places most importance on the cumulative effects of hyperinflation and its deep memories, I do not think that hyperinflation was strongly connected to the Nazi sentiment or ideology back in 1924. Even when looking at the effects of the hyperinflation on the DVFP and NSFP votes in the May and December 1924 elections, the so-called 'inflation' elections, the effects are not statistically significant, displaying a consistent negative sign (Table A11). I also compute differences from the vote share of the DVFP and the NSFP in 1924 and the Nazi vote share in the latter elections (i.e., taking changes from the elections of 5/1924 and 1928, 5/1924 and 1930, etc.), to show that hyperinflation was unrelated to the Nazi success (Table A12).

I also offer an alternative way of measuring political radicalization, namely by looking at the yearly flow of new Nazi party members instead of the share of the vote in the different elections (Table A13). In none of the models did hyperinflation predict Nazi membership in 1932 and the early 1933.[30] I pursued additional robustness tests in the analysis. Since the inflation data are available at the monthly level, I can control for the issue of how I define hyperinflation (the change between two points) and, in Figure A5, I explore this with different deltas (i.e., the change between 1913 and June 1922, 1913 and July 1922, 1913 and August 1922, etc.) and show very consistent results using the difference between the 1913 figures and the maximum point for hyperinflation. In Figure A6, I also control for potential outliers and remove one city at a time, showing that the results are very stable across the samples. In Figure A7, I use the disaggregated price levels for 11 commodities (data are also from the *Wirtschaft und Statistik*). Despite the spatial coverage being limited because of data availability (covering fewer than 20 cities), none of the items under scrutiny boosted the Nazi vote and some of them (i.e., fish, bacon, and cereals) display a strong negative sign with low p-values.

As a final robustness check, I directly control for the cost of living with real wages rather than just prices (Table A14). Here I collected data on different industrial occupations from the Wage and Salary Survey (*Lohn- und Gehaltserhebung*) conducted by the German Department of Labor in 1920/21.[31] Specifically, for each city, I collected the number of employees, the average hourly wages (in Pfennigs) and the average earnings over 4 weeks (in Marks) in the following industries and occupations: construction (workers and bricklayers), metallurgy (lathe and foundry), and chemical (workers). These are nominal tariff-based wages, and I divide them by the cost-of-living index (the *Teuerungsraten*) at the time when the survey was conducted. As when using just prices, evidence based on real wages in different occupations, is also highly unconnected to the Nazi electoral boost in

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[30]Due to a massive surge in the number of applicants, the Nazis stopped accepting new members in May 1933 (this ban was lifted in 1937).

[31]*Statistik des Deutschen Reichs*, Volume 293.

the five elections between 1928 and 1933.[32]

6 Scaring through the inflation experience

A mechanism by which to capture the social effects of hyperinflation is through looking at its effects on health. In the fall of 1923, the Reich Health Office wrote a memorandum noting that "in 1920 and 1921 the standard of nutrition improved, and this led to an improvement in the health of the population," but coinciding with the hyperinflation months, "a renewed and progressive deterioration took place in the standards of nutrition and clothing" with "horrifying and universally evident undernourishment."[33] Ferguson (2010) also wrote that "1923 brought catastrophe to the German … bourgeoisie, as well as hunger, disease, destitution and sometimes death to an even wider public."

Next, I test for scarring through the hyperinflation experience and excess mortality due to the rise in prices. Here I exploit a novel dataset for over 300 cities using hand-collected data on monthly mortality by cause of death from the *Reichs-Gesundheitsblatt*. Specifically, I have linked monthly cause-specific mortality data from June 1921 to September 1924 to increases in the monthly price's data using panel data with fixed effects in the following way:

$$\log \text{CDR}_{c,t,m} = \alpha + \beta_1 \log \text{Hyperinflation}_{c,t,m} + \gamma_c + \theta_t + \varepsilon_{c,t,m} \quad (2)$$

where c denotes cities, t years, m months and $\text{CDR}_{c,t,m}$ are crude death rates (in logarithms). In column 1, crude rates are simply the number of all deaths per thousand population and, in the case of infant mortality, in column 2, is the number of infant deaths (below age 1) per thousand live births. In columns 3 and 4, I also compute infant mortality rates separately for national Germans and those born within the German territory but from foreign parents.[34] Finally, in column 5, I collected cause-specific mortality data for deaths plausibly linked to deteriorating social conditions over the short-term and combined them into a single category called *amenable mortality*. It includes deaths from influenza, meningitis, scarlet fever, tuberculosis and whooping cough, all endemic at the time.[35] Table A15 reports disaggregated models for each of the 5 causes of death.

Hyperinflation here is simply the monthly level of the cost-of-living index, γ_c are city-level fixed effects, absorbing much of the time-invariant characteristics of the cities and θ_t are year-month fixed effects, controlling for the overall time trend, and factors such as national inflation and economic conditions. Robust standard errors are clustered at the state level,[36] though clustering at lower levels (i.e., city), display the same levels of

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[32]Nominal wages display the same overall findings (unreported here).

[33]*Uber den Gesundheitszustand des Deutschen Volkes nach dem Stande von Anfang Januar bis Ende September* 1923. For mortality in inter-war Berlin see Winter and Cole (1993).

[34]The German statistics reported the number of live births and infant deaths for national and non-national parents. They also recorded total deaths from national and non-national, but I do not have the population figures for "foreigners."

[35]Roughly, these causes accounted for 20 percent of all deaths. This new variable, *amenable mortality*, is also expressed per thousand population.

[36]For simplicity, when I say states, I also mean Prussian provinces.

statistical significance. I also weight the regressions by the level of population. Since I use time and local fixed effects, results can be interpreted as excess mortality or deviations of mortality from its within sample mean.[37]

In Table 1, I show that the effects of the hyperinflation on mortality are stronger for very vulnerable groups such as infants, where localities with relatively high hyperinflation experienced relatively high suffering as measured by infant mortality rates, mostly affecting babies from "German nationals." Yet, the latter result might just reflect that despite the infant mortality of babies from foreign-born parents nearly doubles the rate for "German babies", births from the former only accounted for 6 percent of all births. There is also a lot more heterogeneity around the mean in the infant mortality for "foreign babies" and, as Dehejia and Lleras-Muney (2004) outlined, it is also possible that births to the poorest families fall disproportionately during difficult times.

The results accounting for all deaths are somewhat weaker, but still highly statistically significant and positive. However, there is a differential strong gradient for *amenable deaths*, coming from communicable and infectious diseases, being highly responsive to short-term social stress. Medical Official of the Reich reported that "the decline in mortality is, however, initially interrupted in 1922 and 1923 mainly by a repeated strong occurrence of flu as a result of the deterioration in the living conditions of the broadest sections of the population caused by inflation."[38] Furthermore, Evans (2004: 106) argued that "the threat of starvation, particularly in the area occupied by the French ... was very real ... [where] malnutrition caused an immediate rise in deaths from tuberculosis." On tuberculosis, Medical Official of the Reich reported that "a continuous increase in admissions to tuberculosis clinics has been detected throughout the Reich since 1922 and is still in progress."[39] On this trend, Holtfrerich (1986: 264) explained that although a "long winter bore some responsibility... this must reflect the general worsening of health conditions associated with deteriorating nutrition and falling real incomes."[40]

Since I show how people suffered from hyperinflation, a final check of the data consists in examining whether the worsening mortality in 1921 and 1923 was correlated with the Nazi electoral boost after 1928. Using a similar model as in equation 1, but adding the mortality data as the explanatory variable instead of prices, I find no relationship between excess mortality and the rise of the Nazis in the post-1928 elections (Table A16). The mortality mechanism shows that neither the hyperinflation nor its scars helped the Nazis in the early 1930s. This is a very important finding, since Galofré-Vilà et al. (2021b) find a positive and strong association between worsening health in the early 1930s and the Nazis'

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[37]A potential caveat is that age adjusted mortality data were unavailable in the historical records. Generally, city fixed effects would have adjusted for any time-invariant characteristics of the age distribution, except in the case that a general increase in prices or decline in public health interacted with the age structure of each city. Nonetheless, when, in equation 2, I interact the death rates with time dummies, they continue to display the same signs and levels of statistical significance.

[38]*Beiträge zum deutschen Bevölkerungsproblem. Der Geburtenrückgang im Deutschen Reich Die allgemeine deutsche Sterbetafel für die Jahre* 1924-1926, page 38.

[39]*Ober den Gesundbeitszusrand des Deutschen Volkes nach dem Stande von Anfang Januar bis Ende September* 1923. On the capacity of the social security during the hyperinflation see Eghigian (1993).

[40]Although the local deaths from suicides were unrecorded in the data, Hubbard (1990) reported an increase of what recently has been called *deaths of despair*.

electoral success, meaning that those who suffered most in the grip of hyperinflation did not turned to the Nazis. By contrast, those who suffered from the Great Depression and Brüning's deep deflation were lured by the siren calls of the Nazis.

[Table 1 about here]

7 Anti-Semitism

Alongside the galloping rise in prices after the late-1910s, a number of events took place that fostered anti-Semitism. During the Great War, there was the belief that Jews were underrepresented at the front and, consequently, they were blamed after the war for Germany's defeat (Evans 2004, Voigtländer and Voth 2012). Many saw the large tax hike instigated by Matthias Erzberger (a Jewish citizen) as a general acceptance of the Versailles reparations, and many believed that Jews manipulated local prices to get rich quickly in the throes of the hyperinflation (Evans 2004, Feldman 1997, Ferguson 2010, Voigtländer and Voth 2012). As argued by Hetzel (2002: 11), "On 5 November 1923, the government raised the price of bread to 140 billion Marks and, in response, crowds plundered stores and attacked Jews." Similarly, Evans (2004) noted that "at the height of the hyperinflation, on 6 November 1923, a newspaper reporter observed serious disturbances in a district of Berlin with a high proportion of Jewish immigrants from the East."

Next, I test the extent to which Germans blamed the Jews on the grounds of hyperinflation. Using data from Voigtländer and Voth (2012), I use the number of deportations of German Jews from 1933 to 1945 and the number of anti-Semitic letters to the Nazi newspaper *Der Stürmer* between 1935 and 1938 (both in logs). I try to predict these two anti-Semitic outcomes based on the log of prices in December 1923 and with the rest of controls as in equation 1. Since the variable measuring the number of letters to *Der Stürmer* is right skewed, as in Adena et al. (2015), instead of OLS, I use a negative binomial distribution maximum likelihood estimation.[41] As Table 2 shows, I find that places more affected by hyperinflation (higher prices at its height) had relatively more anti-Semitic attitudes like higher post-1933 deportation of Jews and more anti-Semitic letters to *Der Stürmer*. However, I also tried to predict more violent events such as attacks on synagogues during the *Reichskristallnacht* in 1938 and results were not statistically significant (unreported here).[42] The bottom line here is that, while many blamed and denounced the Jews for the hyperinflation, writing ostensibly open letters against them and pressing them to leave their communities, they were less likely to instigate terror and commit violent crimes because of any connection to hyperinflation, beyond riots and disturbances in the fall of 1923.[43]

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[41] Results just using OLS report similar p-values, but the sizes of the coefficients are somewhat lower (around 10% lower).

[42] Using data from Voigtländer and Voth (2012), I also regress the number of pogroms during the Black Death in the 14th century and the size of hyperinflation. While unconditional correlations show very low p-values, results were not statistically significant when adjusting for the city's location plus other city controls as in equation 1.

[43] The Nazi campaigns after 1928 also became less virulently anti-Semitic, as they tried to approach the a more mainstream voter (Bracher 1978).

8 Discussion

This paper shows that, although the hyperinflation had a strong financial and scarring effect on German society, its role in the Nazi electoral boost was rather weak in each and every election between 1924 and 1933. I have tested the link between hyperinflation and Nazification in a number of ways, but contrary to some inter-war historical literature and widespread established opinion, none of these supported the prediction of the Nazi vote share from the size of the hyperinflation. Instead, the political turmoil of 1922 and 1923 was followed by a rise of the left-wing parties and economic growth that lasted until the arrival of the Great Depression.

There are a number of paradoxical situations that stem from this historical episode. One has to do with the collective fear of inflation, rather than the political choices to avoid it. It seems an irony that Chancellor Brüning, who was adamant that any inflationary move had to be avoided because of the memories of hyperinflation, drove Germany towards deflation and austerity, and ultimately to the Third Reich (Galofré-Vilà et al. 2021a). A parallel can be established with the European economic situation in 2007/2008, when Angela Merkel and the Troika[44] were reluctant to purchase public debt because of fears of inflation and instead used deflation and austerity, with the well-known disastrous impact on the southern European economies, which would last for over a decade, and would, in turn, open the door to new waves of populism.

Those in the grip of the fear of inflation seem to misremember Weimar. Using modern survey data, Haffert et al. (2021) found that many Germans could not distinguish clearly between hyperinflation and the Great Depression, and apparently thought about the two events as the same thing. About half of all Germans think of the Great Depression as a period of high inflation, whereas fewer than 5% know that it was, in fact, a period of deflation. Haffert et al. (2021) further showed that better educated Germans are more likely to hold this fallacy, and that this confusion is unique to Germany, as the Dutch do not commit the same mistake. In other words, the fears we see today of inflation are, in fact, historically attributed to a period of deflation.[45]

Although this is sometimes forgotten, hyperinflation also wiped out all debt denominated in the German currency, including all domestic public debt, providing Germany with a fresh start in 1924.[46] By contrast, Britain and France were sitting on huge domestic debt piles stemming from WW1. It is therefore striking that, once Germany got rid of its debt by means of inflation, it refused to buy public debt to countenance any rise in prices. Meanwhile, other countries like Britain, which had a more flexible attitude towards buying

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[44]The European Commission, the European Central Bank and the International Monetary Fund.

[45]As commented by Eichengreen (2015: 36), "the hyperinflation that reached its chaotic climax in Germany in 1923 came to be seared, seemingly forever, in the country's collective consciousness." Similarly, Brunnermeier, James and Landau (2016: 6) wrote that "Germans were so seared by the experience of catastrophic hyperinflation ... that ninety years later they repeat a meaningless mantra."

[46]On the development of the German debt see Galofré-Vilà et al. (2017) and Piketty (2014).

public debt even if it led to more inflation, always had paid their debts.

The noise generated by the German hyperinflation is also striking. By the end of WW1, all the western economies had high inflation rates and, until the end of 1921, the German inflation was, in fact, below that of other countries, such as the U.S. or France. As Eichengreen (2015: 36) commented, "in France, inflation never quite reached hyperinflationary levels but nonetheless had the same socially corrosive effects." Surprisingly, no one talks today about the French inflation of the 1920s. Indeed, other countries suffered hyperinflation in the 1920s and these are today largely forgotten events. At their heights, prices stood at 14,000 times their prewar level in Austria, 23,000 times in Hungary, 2,500,000 times in Poland and 4,000 million times in Russia.[47]

Furthermore, it is not clear whether Germany did "whatever it took" to stabilize the Mark in 1923, or whether, by contrast, for political, social or other reasons, it prioritized economic reconstruction and full employment. While this is a very difficult assumption to test, many German historians and academics seem to take the German efforts to stabilize its currency with a grain of salt (Borchardt 1972, Schroeder 1982, Feldman 1982, Hirsch and Goldthorpe 1978, Eichengreen and Temin 1997, Witt 1974, 1982).

It is a fascinating and a difficult empirical question to ascertain the extent to which the memory of a historical episode informs the decision-making of political leaders and the perceptions of an electorate at a particular historical juncture. It is a challenging theoretical question to elucidate in which cases and to what extent historical parallels are meaningful or relevant. Nonetheless, there is a *prima facie* case to argue that few episodes of the European historical past hold so much sway on our recent time (the 2007-08 crisis and the policies designed to overcome it), and our short-term future (due to the Covid-19 pandemic crisis), as the hyperinflation of 1923. This article has endeavored to correct our understanding of this episode. So, if a meaningful parallel is established with the present situation, and insofar as it might help to guide our current efforts, very different lessons from those taken for granted in the past should be paid heed: neither the political impact of the 1923 German hyperinflation was nearly as perverse as previously thought on the political side, nor its economic and social impact was as dire and uniform.

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[47] As argued by Bernanke and James (1991: 55), in Europe "all suffered hyperinflation and economic dislocation in the 1930s, and all suffered severe banking panics in 1931."

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Figure 1. Hyperinflation
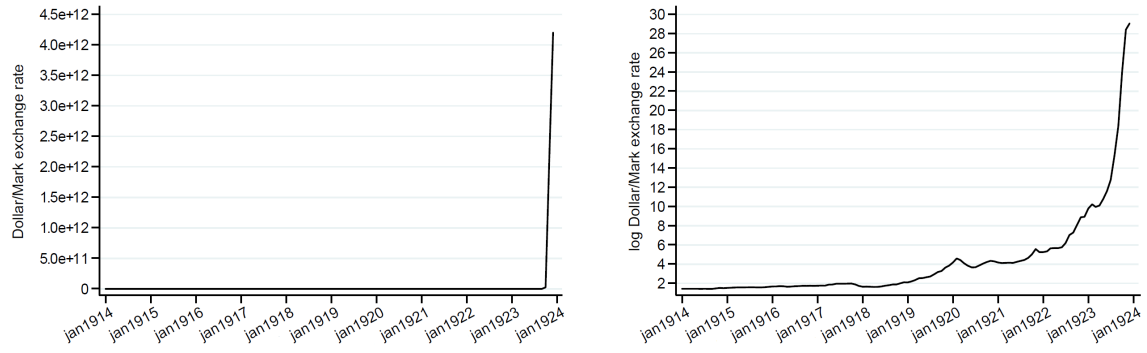
Data are from the statistical report *Zahlen zur Geldentwertung in Deutschland* 1914 *bis* 1923. Edited by the *Statistischen Reichsamt* in 1925. I use the data from Table 2 (page 6). Data report monthly averages.

Figure 2. Hyperinflation and Nazi voting
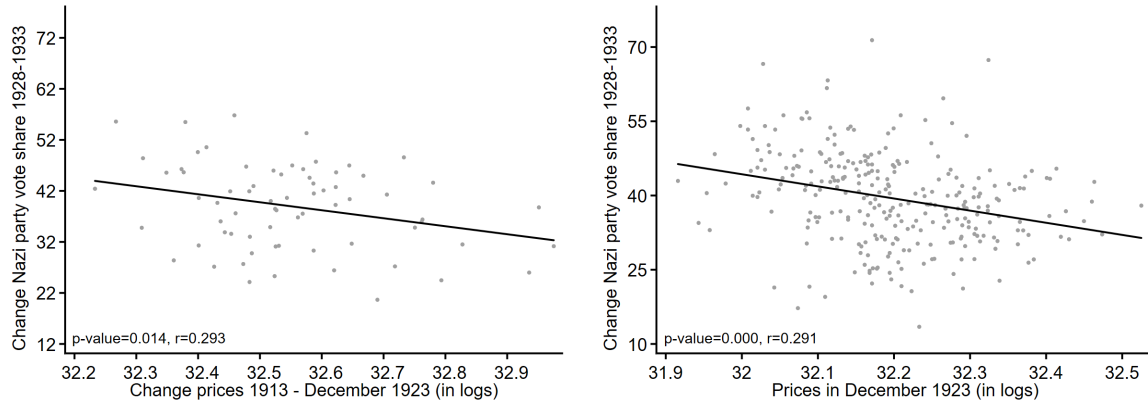
Data on the vertical axis are the difference in the vote share going to the Nazi Party between the elections of 1928 and 1933. The horizontal axis shows the change in the cost-of-living index (*Teuerungsraten*) between 1913 and December 1923 in logarithms (left figure) and the cost-of-living index in December 1923 (right figure). December 1923 was the time when generally hyperinflation reached its maximum point.

Figure 3. Hyperinflation and Nazi voting (differences from 1928)
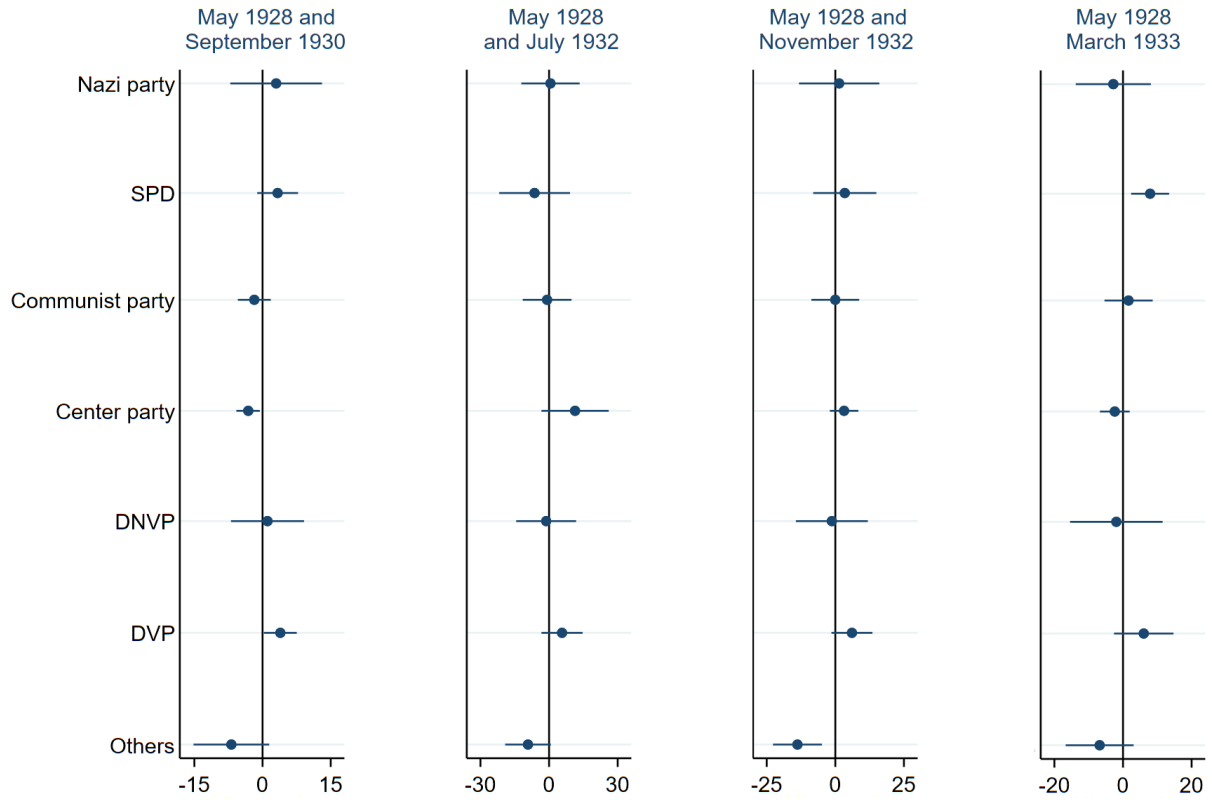
Outcome variable is the percentage change of the valid votes cast going to the Nazi Party (or other parties) in two different elections. Models for each party and election change are estimated independently. In the election of 1933, the DNVP presented as part of the *Kampffront Schwarz-Weiß-Rot*, which was an electoral alliance of three parties: the DNVP, the *Stahlhelm*, and the *Landbund*. Hyperinflation is the percentage change in the cost-of-living index (*Teuerungsraten*) from 1913 to the average November 1923-January 1924 (in logarithms). Other controls include the location of the cities by its latitude and longitude, population in 1919, and the share of blue collar, share of Protestant and share of Jewish, all of 1925. All variables are measured at the city level. Robust standard errors are clustered at the state-level. See equation 1 and text for details on methods. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 1: Hyperinflation and mortality

	Adut mortality	Infant mortality	Infant mortality (national)	Infant mortality (foreign)	Amenable mortality
	(1)	(2)	(3)	(4)	(5)
Hyperinflation (logs)	0.157***	0.217***	0.222***	0.288	0.306***
	(0.049)	(0.071)	(0.072)	(0.215)	(0.085)
Number of cities	331	331	331	331	331
Number of observations	11,647	11,421	11,342	4,126	11,647
Adjusted R^2	0.959	0.374	0.354	0.555	0.632
Year-month fixed effects	Y	Y	Y	Y	Y
City fixed effects	Y	Y	Y	Y	Y
Population weighted	Y	Y	Y	Y	Y

Outcome variable is the monthly crude death rate as specified in the table (in logarithms). This is a panel with monthly data from June 1921 to September 1924. I compute a variable called *amenable mortality* that combines the total number of deaths from influenza, meningitis, scarlet fever, tuberculosis and whooping cough per thousand population. Hyperinflation is the monthly level in the cost-of-living index (*Teuerungsraten*), expressed in logarithms. All regressions include city and date fixed effects (year-month fixed effects), and are weighted by the size of the city-population with standard errors (in parentheses) clustered at the state-level. See equation 2 and text for details on methods. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

	Number of deportees			Letters to *Der Stürmer*		
	OLS	OLS	OLS	ML	ML	ML
	(1)	(2)	(3)	(4)	(5)	(6)
Hyperinflation Dec. 1923 (logs)	4.843***	4.082***	2.888***	1.748***	1.262**	0.859
	(0.738)	(0.806)	(0.745)	(0.469)	(0.584)	(0.584)
Number of cities	201	201	201	180	180	180
Latitude and longitude	N	Y	Y	N	Y	Y
City controls	N	N	Y	N	N	Y

Outcome variable in columns 1-3 is the number of deportations of German Jews from each city from 1933 to 1945 (in logarithms) and in columns 4-6 the number of letters to the newspaper *Der Stürmer* between 1935 and 1938 (also in logarithms). Hyperinflation is the level of the cost-of-living index (*Teuerungsraten*) in December 1923 (in logarithms). Other controls include the location of the cities by its latitude and longitude, population in 1919, and the share of blue collar, share of Protestant and share of Jewish, all of 1925. All variables are measured at the city level with robust standard errors clustered at the state-level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Figure A1. Prices and Nazi voting

Prices 1/1920

☐	314
☐	390
■	470

Prices 1/1921

☐	803
☐	915
■	1046

Prices 1/1922

☐	1,352
☐	1,583
■	1,818

Prices 1/1923

☐	93,030
☐	111,882
■	131,782

Prices 1/1924

☐	78,377,146,910,000
☐	92,975,147,400,000
■	1,079,412e+14

Nazis 3/1933

☐	25.7%
☐	40.8%
■	56.2%
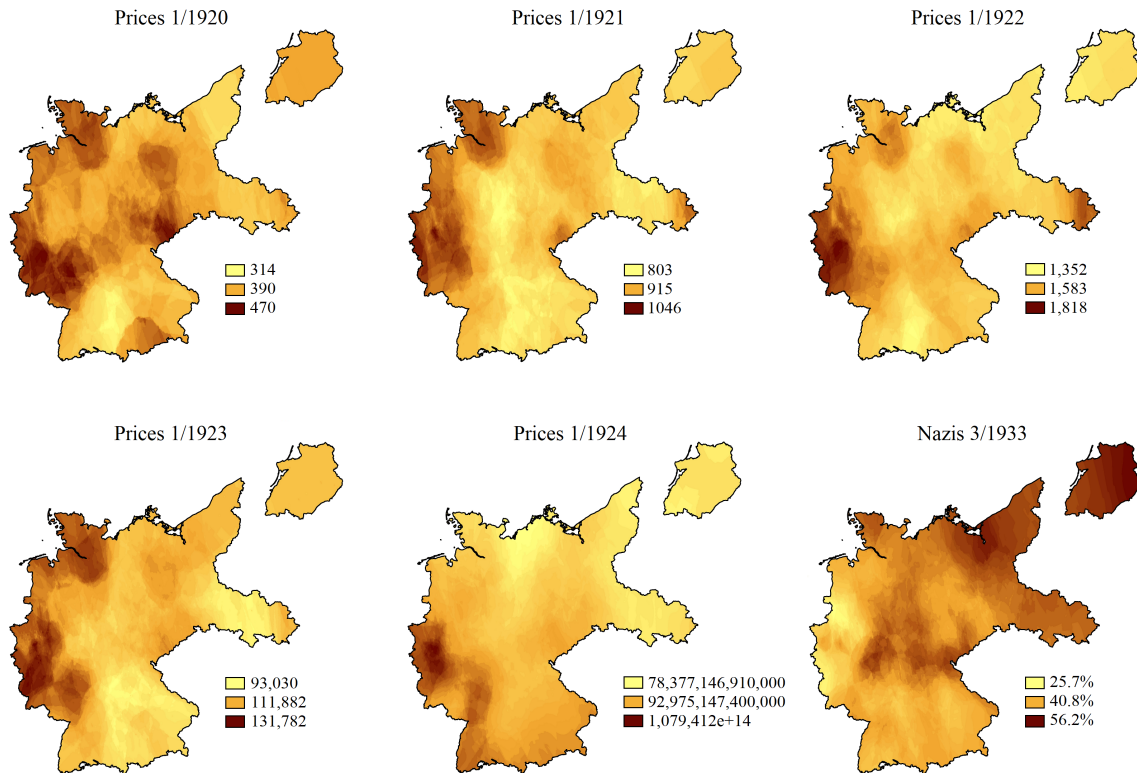
The first five maps display the spatial distribution of the variable cost-of-living index (*Teuerungsraten*) across German cities in January of each year. The later one displays the vote share of the Nazi party in the 1933 election. I use the coordinates of these cities to interpolate the outcomes of these variables across space using the Kriging method (also known as the Wiener–Kolmogorov prediction). Basically, I interpolate values using a Gaussian process of regression, giving the best linear unbiased prediction of the intermediate values. I use 30 natural breaks in the data by the different Jenks. Jenk classes are based on natural groupings inherent in the data, whose boundaries are set where there are relatively big differences in the data values.

Figure A2. Fascism, Inflation and Mass Misery.
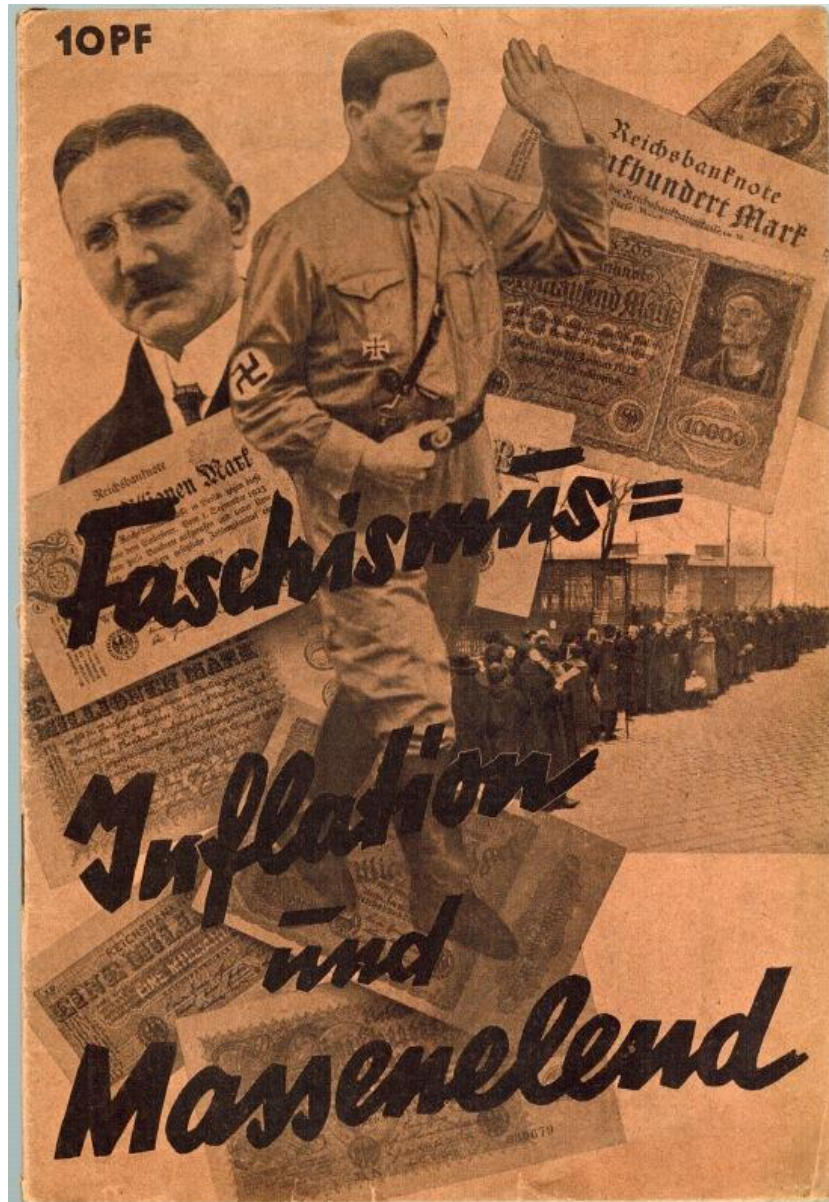
Speech by Comrade Neubauer in the Saalbau Friedrichshain Berlin on October 19, 1931. Published by the Central Committee. [*Faschismus = Inflation und Massenelend. Rede des Genossen Neubauer im Saalbau Friedrichshain, Berlin am 19. Oktober 1931*]

Figure A3. "Hyperinflation" and "Inflation" in German-language texts.
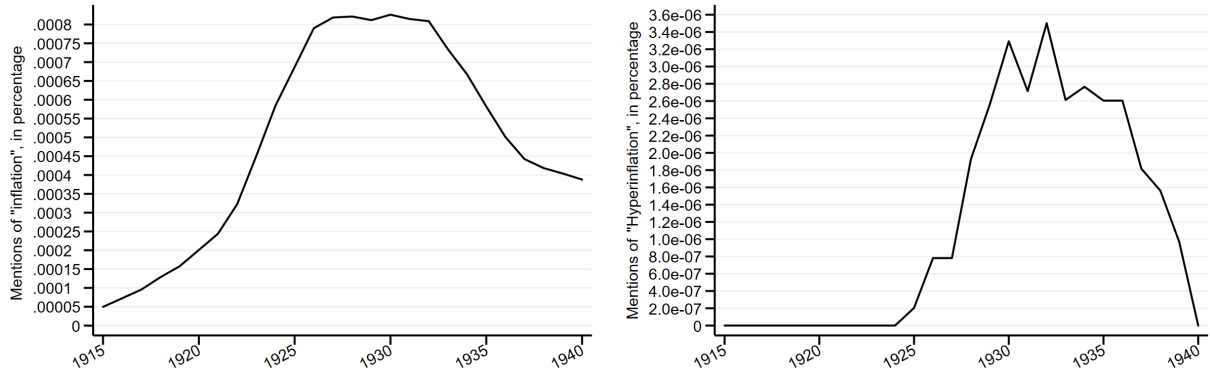
This figure shows mentions of "Hyperinflation" and "Inflation" in German-language texts between 1915 and 1940, using the Google Books' tool of Ngram Viewer.

Figure A4. Hyperinflation.
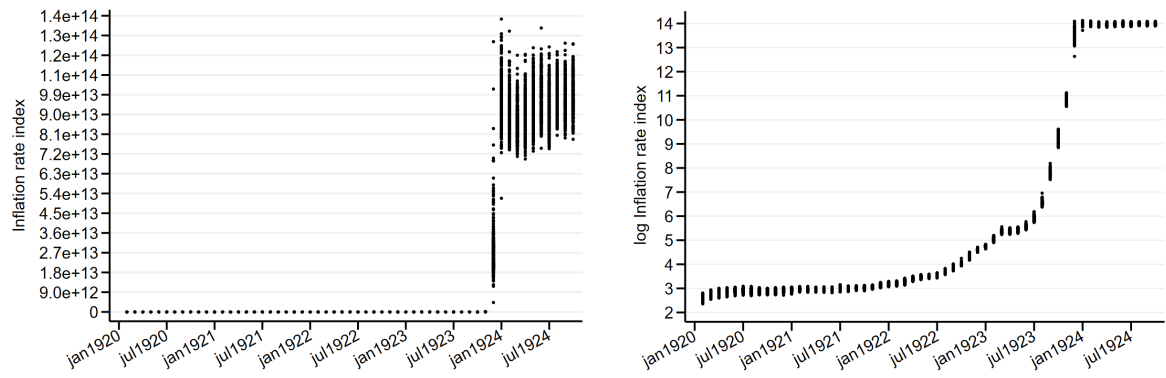
This figure shows the monthly development of the variable cost-of-living index (*Teuerungsraten*) across German cities, without and with a logarithm transformation.

Figure A5. Robustness using different deltas.
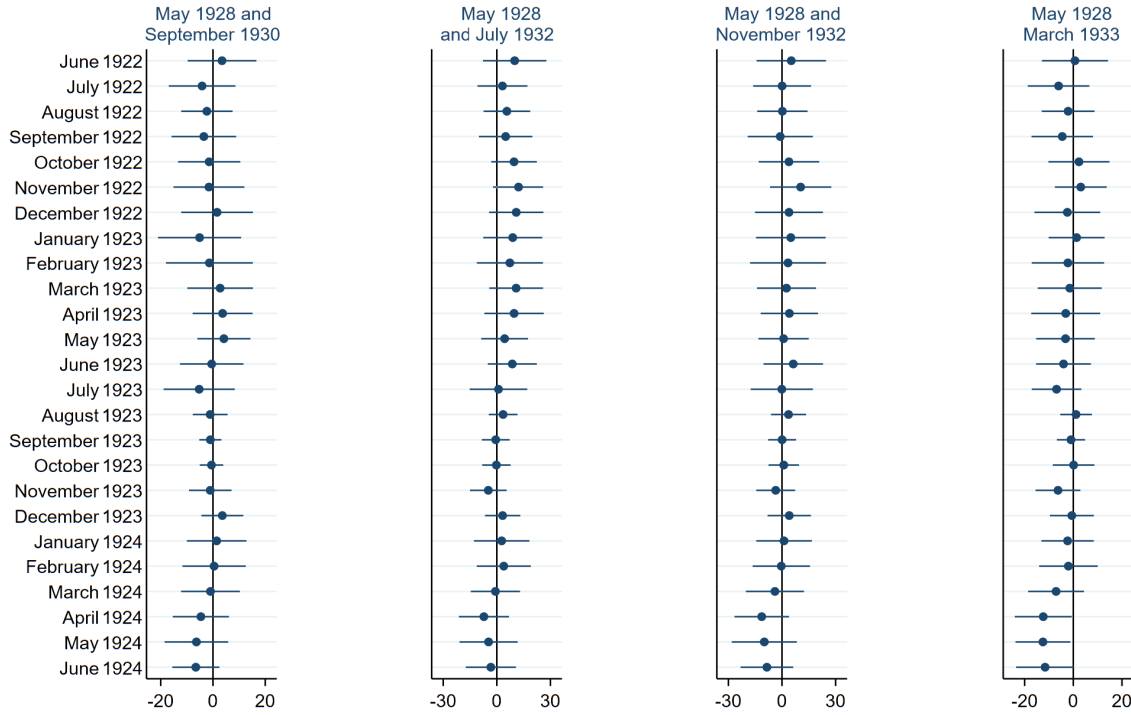
Outcome variable is the percentage change of the valid votes cast going to the Nazi Party in two different elections. Models for each election and hyperinflation change are estimated independently. Hyperinflation is the percentage change in the cost-of-living index (*Teuerungsraten*) from 1913 to the different months starting in June 1922 (in logarithms). The first coefficient computes the difference of the cost-of-living index from 1913 to June 1922, the second one from 1913 to July 1922, the third one from 1913 to August 1922, and so on until the difference from 1913 to June 1924. Other controls include the location of the cities by its latitude and longitude, population in 1919, and the share of blue collar, share of Protestant and share of Jewish, all of 1925. All variables are measured at the city level. Robust standard errors are clustered at the state-level.

Figure A6. Robustness to dropping one city at a time.
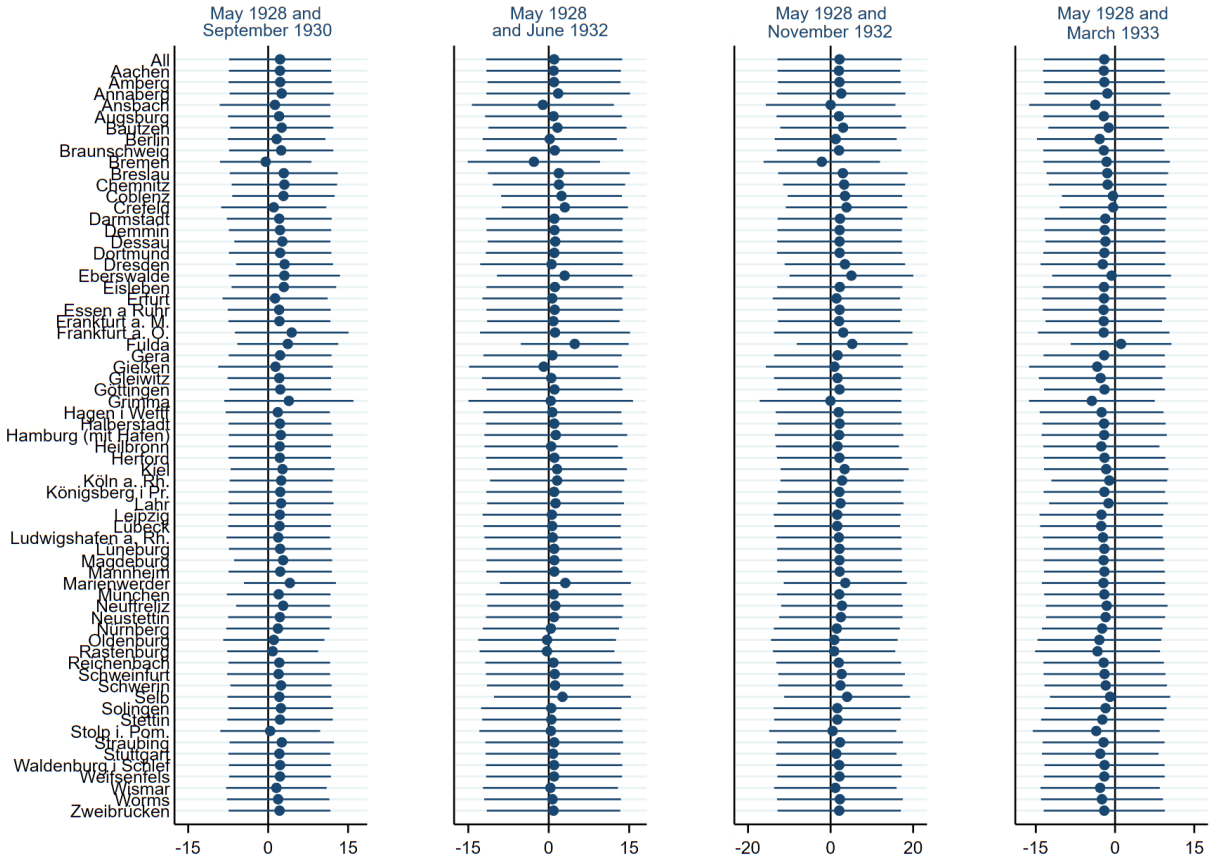
Outcome variable is the percentage change of the valid votes cast going to the Nazi Party in two different elections. This figure is a robustness to dropping each of the cities of the sample, where the name of the city is the one excluded in the regression. Models for each excluded city and election change are estimated independently. I use a balanced sample dropping cities with missing details on the electoral outcome or the cost-of-living index (*Teuerungsraten*). Hyperinflation is the percentage change in the cost-of-living index from 1913 to the average November 1923-January 1924 (in logarithms). Other controls include the location of the cities by its latitude and longitude, population in 1919, and the share of blue collar, share of Protestant and share of Jewish, all of 1925. All variables are measured at the city level. Robust standard errors are clustered at the state-level.

Figure A7. Food prices and Nazi voting (differences from 1928).
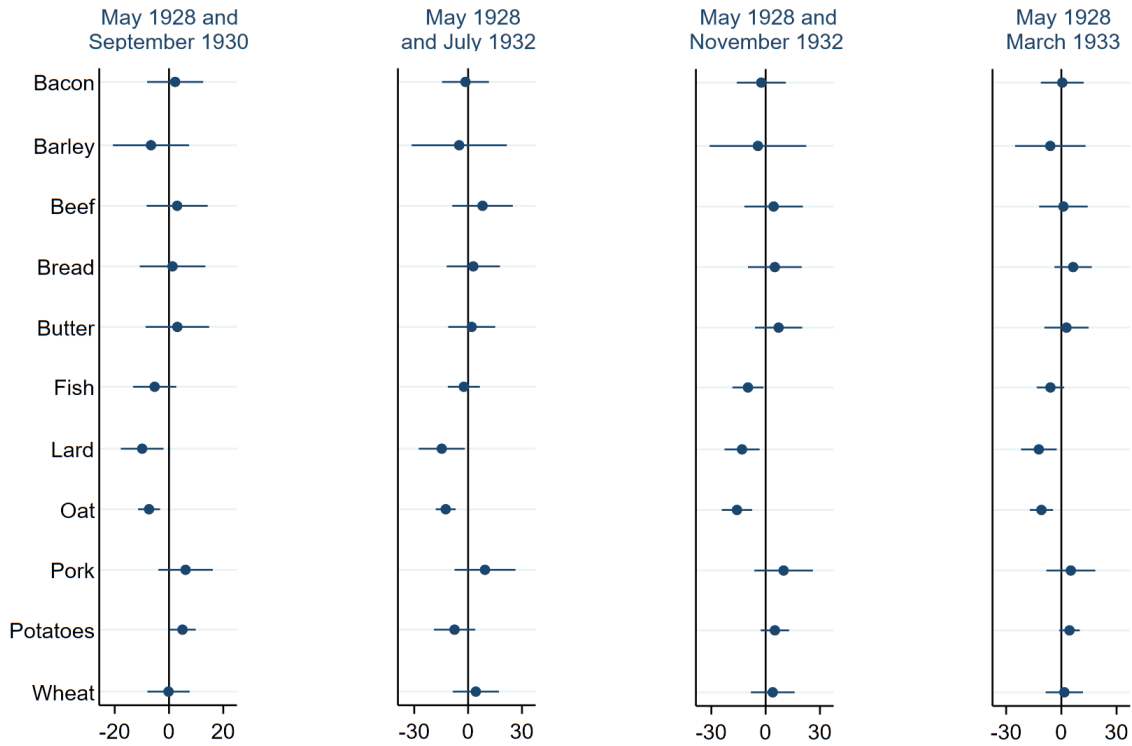
Outcome variable is the percentage change of the valid votes cast going to the Nazi Party in two different elections. Models for each commodity and election change are estimated independently. Hyperinflation is the percentage change in the prices of 11 items (i.e., bacon, barley, beef, bread, etc.) from 1913 to the average November 1923-January 1924 (in logarithms). Other controls include the location of the cities by its latitude and longitude, population in 1919, and the share of blue collar, share of Protestant and share of Jewish, all of 1925. All variables are measured at the city level. Robust standard errors are clustered at the state-level.

Table A1: Descriptive statistics

	N	Mean	SD	Min	Max	P25	P50	P75
NS Electoral data								
NS votes, 1928	397	3.16	3.79	0.09	24.74	0.92	1.84	3.63
NS votes, 1930	397	19.59	7.91	3.17	47.03	13.73	19.59	25.09
NS votes, 7/1932	289	38.34	10.80	9.85	70.61	31.05	39.61	45.25
NS votes, 11/1932	294	33.68	10.30	6.92	66.49	26.80	33.37	40.09
NS votes, 1933	397	42.61	10.11	13.65	80.78	35.61	43.51	49.05
△ NS votes 1928–1930	397	16.43	6.72	2.64	43.12	11.45	16.05	21.20
△ NS votes 1928–7/1932	289	34.89	10.39	9.67	70.18	28.26	36.39	42.01
△ NS votes 1928–11/1932	294	30.25	9.77	6.74	65.89	23.59	30.64	36.34
△ NS votes 1928–1933	397	39.45	9.66	13.47	76.50	32.95	39.78	45.57
Other parties								
Volksrechtspartei, 1928	397	2.16	1.91	0.08	13.98	0.84	1.55	2.88
NSFB 5/1924	397	3.92	4.67	0.00	37.73	1.07	2.28	4.78
DVFP, 5/1924	397	8.32	8.40	0.32	48.61	2.46	5.67	10.96
SPD votes, 1928	397	30.16	11.60	3.00	60.33	20.85	30.77	38.52
SPD votes, 1930	397	24.66	10.75	1.62	55.53	16.07	23.87	32.31
SPD votes, 7/1932	289	22.74	9.44	5.44	49.51	14.87	22.40	30.06
SPD votes, 11/1932	294	21.19	8.80	5.00	48.57	13.52	20.66	27.92
SPD votes, 1933	397	19.17	8.72	1.52	46.00	12.10	18.58	25.42
Other variables								
Population 1918 (thous.)	594	47.18	176.36	2.40	3,803.77	11.56	16.73	30.81
Share Protestant 1925	397	65.22	31.03	1.01	99.38	40.03	78.40	91.05
Share Jewish 1925	397	0.91	1.00	0.00	10.47	0.31	0.66	1.13
Share blue collar 1925	397	41.85	13.24	11.86	161.00	34.29	40.54	47.34
Distance to the Ruhr (km)	594	313.32	235.19	2.00	1,038.00	105.00	298.00	432.00
NS join 1932 (thous.)	594	17.09	55.46	0.00	476.00	4.00	7.00	13.00
NS join 1933 (thous.)	594	4.52	13.54	0.00	115.00	1.00	2.00	4.00
Mortality								
Crude death rate 1921	226	12.39	2.91	3.93	22.64	10.39	11.82	13.74
Crude death rate 1922	226	13.04	2.62	6.30	23.20	11.08	12.84	14.49
Crude death rate 1923	226	12.57	2.63	6.19	23.12	10.70	12.12	13.92
Infant mortality rate 1921	226	138.04	49.27	37.23	363.29	108.43	127.18	155.99
Infant mortality rate 1922	226	130.55	34.31	51.30	250.62	109.51	124.16	148.77
Infant mortality rate 1923	226	131.57	38.46	40.38	347.70	109.69	128.03	147.02
Prices								
Prices 1913 (yearly mean)	71	89.73	9.71	68.87	115.83	82.84	89.05	97.01
Prices 1/1920	566	405.08	57.01	228.52	641.52	368.16	402.48	440.03
Prices 6/1920	577	801.05	97.69	525.24	1,230.55	730.84	796.79	871.60
Prices 1/1921	585	913.82	84.04	702.00	1,201.00	850.00	912.00	969.00
Prices 6/1921	584	905.59	87.92	718.00	1,425.00	845.50	895.00	954.00
Prices 1/1922	582	1,580.59	139.55	1,244.00	2,028.00	1,476.00	1,571.00	1,676.00
Prices 6/1922	559	3,506.15	305.25	2,725.00	4,469.00	3,291.00	3,491.00	3,694.00
Prices 1/1923	550	113,244.60	13,030.10	79,861.00	158,342.00	104,057.00	112,619.00	122,644.00
Prices 6/1923	550	771,296.38	129,334.74	547,703.00	1.52e06	684,274.00	741,588.00	847,237.00
Prices 1/1924	287	9.16e13	9.13e12	7.39e13	1.28e14	8.57e13	9.07e13	9.73e13
Prices 6/1924	287	9.35e13	9.01e12	7.44e14	1.21e14	8.62e13	9.30e13	1.00e14

Table A2: Hyperinflation and Nazi voting (differences from 1928)

	△NS 1928 and 1930			△NS 1930 and 7/1932			△NS 1930 and 11/1932			△NS 1928 and 1933		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Baseline (Fig. 3)												
△ Hyper. (logs)	-3.34	2.48	3.00	-13.81	-0.40	0.63	-11.61	-1.22	1.39	-14.48*	-2.50	-2.82
	(5.97)	(5.08)	(5.96)	(9.85)	(7.73)	(7.54)	(9.17)	(7.86)	(8.65)	(8.09)	(5.36)	(6.47)
Number of cities	71	71	71	67	67	67	67	67	67	71	71	71
R^2	0.00	0.22	0.34	0.03	0.32	0.66	0.02	0.22	0.53	0.04	0.39	0.62
Latitude and long.	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y
City controls	N	N	Y	N	N	Y	N	N	Y	N	N	Y
City-level clustering												
△ Hyper. (logs)	-3.34	2.48	3.00	-13.81	-0.40	0.63	-11.61	-1.22	1.39	-14.48*	-2.50	-2.82
	(5.14)	(4.88)	(5.41)	(9.04)	(8.31)	(6.89)	(8.43)	(9.12)	(7.52)	(7.66)	(6.15)	(5.16)
Number of cities	71	71	71	67	67	67	67	67	67	71	71	71
R^2	0.00	0.22	0.34	0.03	0.32	0.66	0.02	0.22	0.53	0.04	0.39	0.62
Latitude and long.	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y
City controls	N	N	Y	N	N	Y	N	N	Y	N	N	Y
Provincial FEs												
△ Hyper. (logs)	-5.93	-3.33	-4.87	7.23	12.05	-0.33	10.25	16.04	9.17	-3.21	4.04	-8.38
	(19.60)	(21.06)	(26.82)	(24.34)	(26.67)	(26.64)	(22.33)	(26.16)	(31.02)	(17.95)	(20.22)	(19.62)
Number of cities	71	71	71	67	67	67	67	67	67	71	71	71
R^2	0.78	0.79	0.82	0.87	0.89	0.92	0.83	0.86	0.89	0.85	0.89	0.92
Latitude and long.	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y
City controls	N	N	Y	N	N	Y	N	N	Y	N	N	Y
State-level FEs												
△ Hyper. (logs)	-3.04	-3.57	-8.25	3.26	3.38	-6.95	2.90	2.89	-8.94	-5.52	-5.37	-16.26**
	(9.21)	(9.40)	(11.43)	(13.67)	(15.19)	(9.69)	(12.82)	(13.71)	(12.34)	(11.04)	(11.83)	(7.73)
Number of cities	71	71	71	67	67	67	67	67	67	71	71	71
R^2	0.50	0.50	0.62	0.71	0.72	0.89	0.68	0.70	0.86	0.74	0.75	0.87
Latitude and long.	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y
City controls	N	N	Y	N	N	Y	N	N	Y	N	N	Y
Population weighted												
△ Hyper. (logs)	-3.77	7.83	-0.06	-9.92	16.59	2.47	-11.42	11.94	2.81	-12.14	11.94	1.68
	(6.29)	(6.20)	(4.76)	(15.70)	(13.53)	(7.20)	(13.29)	(10.66)	(8.26)	(11.30)	(8.91)	(5.79)
Number of cities	71	71	71	67	67	67	67	67	67	71	71	71
R^2	0.01	0.21	0.47	0.02	0.33	0.80	0.03	0.29	0.69	0.04	0.39	0.75
Latitude and long.	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y
City controls	N	N	Y	N	N	Y	N	N	Y	N	N	Y

Outcome variable is the percentage change of the valid votes cast going to the Nazi Party in two different elections. Models for each election change are estimated independently. Hyperinflation is the percentage change in the cost-of-living index (*Teuerungsraten*) from 1913 to the average November 1923-January 1924 (in logarithms). Other controls include the location of the cities by its latitude and longitude, population in 1919, and the share of blue collar, share of Protestant and share of Jewish, all of 1925. All variables are measured at the city level. Clustering standard errors at the city-level (panel 2) account for the fact that shocks within the same city may be correlated. Otherwise, robust standard errors are clustered at the state-level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table A3: Hyperinflation and Nazi voting in the different elections

	May 1928	September 1930	July 1932	November 1932	March 1933
	(1)	(2)	(3)	(4)	(5)
△ Hyperinflation (logs)	6.415	3.072	-7.079	-5.078	-8.066
	(3.805)	(5.985)	(11.333)	(10.169)	(9.311)
Number of cities	71	71	67	67	71
R^2	0.033	0.003	0.008	0.005	0.014

Outcome variable is the share of the valid votes cast going to the Nazi Party in the different elections. Hyperinflation is the percentage change in the cost-of-living index (*Teuerungsraten*) from 1913 to the average November 1923-January 1924 (in logarithms). These are just unconditional correlations with robust standard errors clustered at the state-level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table A4: Hyperinflation and Nazi voting (differences from 1930)

	△ NS 1930 and 7/1932			△ NS 1930 and 11/1932			△ NS 1930 and 1933		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
△ Hyperinflation (logs)	-9.628	-4.196	-3.188	-6.548	-3.007	-0.179	-11.138*	-4.973	-5.819
	(7.096)	(6.602)	(5.839)	(6.288)	(5.498)	(5.678)	(5.491)	(5.533)	(6.735)
Number of cities	67	67	67	67	67	67	71	71	71
R^2	0.031	0.163	0.552	0.017	0.055	0.425	0.054	0.226	0.405
Latitude and longitude	N	Y	Y	N	Y	Y	N	Y	Y
City controls	N	N	Y	N	N	Y	N	N	Y

Outcome variable is the percentage change of the valid votes cast going to the Nazi Party in two different elections. Models for each election change are estimated independently. Hyperinflation is the percentage change in the cost-of-living index (*Teuerungsraten*) from 1913 to the average November 1923-January 1924 (in logarithms). Other controls include the location of the cities by its latitude and longitude, population in 1919, and the share of blue collar, share of Protestant and share of Jewish, all of 1925. All variables are measured at the city level. Robust standard errors are clustered at the state-level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table A5: Hyperinflation and Nazi voting (differences from 1928)

	△ NS 1928 and 1930			△ NS 1928 and 7/1932			△ NS 1928 and 11/1932			△ NS 1928 and 1933		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Standardized variables												
△ Hyperinflation	-0.4	0.3	0.3	-1.6	-0.1	0.2	-1.3	-0.2	0.2	-1.6*	-0.3	-0.3
	(0.7)	(0.6)	(0.7)	(1.1)	(0.9)	(0.8)	(1.0)	(0.9)	(1.0)	(0.9)	(0.6)	(0.7)
Hyperbolic sine transf.												
△ Hyperinflation	-5.2	-1.9	0.5	-16.2**	-8.7	-3.3	-13.8*	-8.0	-2.0	-15.6**	-8.2*	-4.8
	(4.2)	(3.9)	(4.8)	(7.6)	(6.1)	(6.1)	(7.0)	(6.0)	(6.4)	(5.9)	(4.4)	(5.4)
Number of cities	71	71	71	67	67	67	67	67	67	71	71	71
Latitude and longitude	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y
City controls	N	N	Y	N	N	Y	N	N	Y	N	N	Y

Outcome variable is the percentage change of the valid votes cast going to the Nazi Party in two different elections. Hyperinflation is the percentage change in the cost-of-living index (*Teuerungsraten*) from 1913 to the average November 1923-January 1924. In the first panel I report standardized variables (without logarithms), with a mean of zero and a standard deviation of one, so coefficients across models are directly comparable. In the second panel, instead of logarithms, I compute the hyperbolic sine transformation of the hyperinflation variable. Other controls include the location of the cities by its latitude and longitude, population in 1919, and the share of blue collar, share of Protestant and share of Jewish, all of 1925. All variables are measured at the city level. Robust standard errors are clustered at the state-level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

<div align="center">Table A6: SPD and radio listeners</div>

	(1)	(2)
Radio signal strength	0.369***	0.350***
	(0.047)	(0.057)
SPD vote share × Radio signal	0.035***	0.033***
	(0.003)	(0.004)
Number of cities	71	71
R^2	0.567	0.612
Hyperinflation	Y	Y
Latitude and longitude	Y	Y
City controls	N	Y

Outcome variable is the percentage change of the valid votes cast going to the Social Democratic Party between 1928 and 1933. Hyperinflation is the percentage change in the cost-of-living index (*Teuerungsraten*) from 1913 to the average November 1923-January 1924 (in logarithms). Other controls include the location of the cities by its latitude and longitude, population in 1919, and the share of blue collar, share of Protestant and share of Jewish, all of 1925. Radio signal strength data are from Adena et al. (2015). All variables are measured at the city level. Robust standard errors are clustered at the state-level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table A7: Determinants of Hyperinflation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Population 1919 (logs)	-0.018**											
	(0.008)											
WW1 participants (logs)		-0.002										
		(0.011)										
Protestants			-0.001									
			(0.001)									
Catholics				0.001								
				(0.001)								
Jews					-0.012							
					(0.013)							
Blue-collars						0.001						
						(0.002)						
Matal workers (logs)							0.000					
							(0.008)					
Paper workers (logs)								-0.035				
								(0.021)				
Chemical workers (logs)									0.006			
									(0.008)			
Ruhr										-0.000*		-0.000
										(0.000)		(0.000)
Latitude											0.001	-0.005
											(0.010)	(0.010)
Longitude											-0.011	0.008
											(0.007)	(0.011)
Number of cities	71	58	71	71	70	71	40	21	24	71	71	71
R^2	0.047	0.000	0.021	0.024	0.030	0.005	0.000	0.085	0.016	0.135	0.100	0.143

Outcome variable is hyperinflation measured as the percentage change in the cost-of-living index (*Teuerungsraten*) from 1913 to the average November 1923-January 1924 (in logarithms). Population, WW1 participants, number of workers in the metal, paper and chemical industries are also log-transformed. The variable Ruhr is the Euclidian distance from each city to the Ruhr's area (in km). The number of Protestants, Catholics, Jewish, and blue collars are presented as a share of the total population. I removed one observation from the share of Jewish as a potential outlier. Robust standard errors are clustered at the state-level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table A8: Hyperinflation and Nazi voting by different quantiles (differences from 1928).

	△ NS 1928 and 1930					△NS 1928 and 7/1932					△ NS 1928 and 11/1932					△ NS 1928 and 1933				
	Q10	Q25	Q50	Q75	Q90	Q10	Q25	Q50	Q75	Q90	Q10	Q25	Q50	Q75	Q90	Q10	Q25	Q50	Q75	Q90
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
△ Hyperinflation	7.2	1.6	-0.2	1.1	9.3	-7.6	0.3	2.2	3.1	2.8	10.7	6.4	-3.7	-4.8	0.5	-10.0	8.1	3.1	-9.3	2.4
(logs)	(11.8)	(7.9)	(6.6)	(8.6)	(7.4)	(15.1)	(14.6)	(6.4)	(6.0)	(6.9)	(19.7)	(15.2)	(20.7)	(9.6)	(16.8)	(22.5)	(7.2)	(5.1)	(11.9)	(14.3)
Number cities	71	71	71	71	71	67	67	67	67	67	67	67	67	67	67	71	71	71	71	71
R^2	0.264	0.281	0.328	0.331	0.234	0.568	0.648	0.627	0.603	0.628	0.426	0.504	0.500	0.480	0.516	0.536	0.575	0.604	0.564	0.584
Lat/Longitude	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
City controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Outcome variable is the percentage change of the valid votes cast going to the Nazi Party in two different elections. Models for election change are estimated independently and by different quantiles. I used the Stata command qreg2 reporting standard errors and t-statistics that are asymptotically valid under heteroskedasticity. Hyperinflation is the percentage change in the cost-of-living index (*Teuerungsraten*) from 1913 to to the average November 1923-January 1924 (in logarithms). Other controls include the location of the cities by its latitude and longitude, population in 1919, and the share of blue collar, share of Protestant and share of Jewish, all of 1925. All variables are measured at the city level. Standard errors are clustered at the state-level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table A9: Hyperinflation, social structure and Nazi voting

	Share Protestants		Share Catholics		Share Jews		Share agriculture workers		Share industry & manufactures		Share trade transport		Share self-employed		Share blue-collar	
	Below	Above	Below	Above	Below	Above	Below	Above	Below	Above	Below	Above	Below	Above	Below	Above
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
△ Hyperinflation	-1.43	-2.50	-2.68	-1.00	3.29	-7.57	-12.81	1.82	-1.43	-2.50	-2.68	-1.00	3.29	-7.57	-12.81	1.82
(logs)	(6.76)	(12.26)	(12.86)	(6.54)	(10.96)	(6.90)	(10.19)	(6.61)	(6.76)	(12.26)	(12.86)	(6.54)	(10.96)	(6.90)	(10.19)	(6.61)
Number of cities	38	33	24	47	26	45	34	37	38	33	24	47	26	45	34	37
R^2	0.41	0.28	0.31	0.41	0.29	0.47	0.43	0.38	0.40	0.28	0.31	0.41	0.29	0.47	0.43	0.38
Lat/Longitude	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Outcome variable is the percentage change of the valid votes cast going to the Nazi Party between 1928 and 1933. Models for each control group are estimated independently. Hyperinflation is the percentage change in the cost-of-living index (*Teuerungsraten*) from 1913 to the average November 1923-January 1924 (in logarithms). Other controls include the location of the cities by its latitude and longitude, population in 1919, and the share of blue collar, share of Protestant and share of Jewish, all of 1925. All variables are measured at the city level. Robust standard errors are clustered at the state-level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table A10: Hyperinflation and *Volksrechtspartei* voting in 1928

	(1)	(2)	(3)	(4)
△ Hyperinflation (logs)	3.214***	3.517***	3.755***	4.330***
	(1.068)	(1.114)	(0.737)	(1.084)
Number of cities	70	70	70	70
R^2	0.053	0.099	0.332	0.547
Latitude and longitude	N	Y	Y	Y
City controls	N	N	Y	Y
Population weighted	N	N	N	Y

Outcome variable is the share of the valid votes cast going to the *Volksrechtspartei* in the 1928 election. Hyperinflation is the percentage change in the cost-of-living index (*Teuerungsraten*) from 1913 to the average November 1923-January 1924 (in logarithms). Other controls include the location of the cities by its latitude and longitude, population in 1919, and the share of blue collar, share of Protestant and share of Jewish, all of 1925. All variables are measured at the city level. I dropped one observation as a potential outlier. Robust standard errors are clustered at the state-level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A11: Hyperinflation and National Socialist Freedom Movement and German *Völkisch* Freedom Party voting in May 1924

	National Socialist Freedom Movement				German *Völkisch* Freedom Party				Both			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
△ Hyperinflation (logs)	0.114	-1.381	2.105	1.712	-4.741	-5.466	-1.373	-2.125	-4.627	-6.847	0.732	-0.413
	(5.319)	(4.205)	(4.808)	(5.354)	(9.407)	(11.721)	(8.377)	(10.094)	(14.581)	(15.859)	(12.900)	(15.140)
Number of cities	71	71	71	71	71	71	71	71	71	71	71	71
R^2	0.000	0.003	0.027	0.063	0.004	0.006	0.052	0.092	0.002	0.006	0.039	0.079
Population weighted	N	Y	N	N	N	Y	N	N	N	Y	N	N
Latitude and longitude	N	N	Y	Y	N	N	Y	Y	N	N	Y	Y
City controls	N	N	N	Y	N	N	N	Y	N	N	N	Y

Outcome variable is the percentage change of the valid votes cast going to the National Socialist Freedom Movement (columns 1-4), the German *Völkisch* Freedom Party (columns 5-8) and their combined efforts (columns 9-12) in the May 1924 election. Hyperinflation is the percentage change in the cost-of-living index (*Teuerungsraten*) from 1913 to the average November 1923-January 1924 (in logarithms). Other controls include the location of the cities by its latitude and longitude, population in 1919, and the share of blue collar, share of Protestant and share of Jewish, all of 1925. All variables are measured at the city level. Robust standard errors are clustered at the state-level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table A12: Hyperinflation and Nazi voting (differences from May 1924)

	△ NS 1924 and 1928			△ NS 1924 and 1930			△ NS 1924 and 7/1932			△ NS 1924 and 11/1932			△ NS 1924 and 1933		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
△ Hyperinflation (logs)	11.042	4.593	6.227	7.699	7.070	9.230	-2.341	3.517	7.069	0.598	3.373	8.223	-3.438	2.097	3.411
	(13.412)	(13.014)	(14.869)	(11.872)	(11.318)	(12.658)	(10.872)	(13.007)	(17.161)	(10.313)	(11.653)	(16.269)	(12.608)	(14.153)	(18.078)
Number of cities	71	71	71	71	71	71	67	67	67	67	67	67	71	71	71
R^2	0.013	0.055	0.087	0.005	0.034	0.065	0.000	0.096	0.234	0.000	0.037	0.166	0.001	0.065	0.139
Latitude and longitude	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y
City controls	N	N	Y	N	N	Y	N	N	Y	N	N	Y	N	N	Y

Outcome variable is the percentage change of the valid votes cast going to the Nazi Party in two different elections. Nazi voting in the May 1924 election is measured as total valid votes cast going to the National Socialist Freedom Movement and the German *Völkisch* Freedom Party. Models for each election change are estimated independently. Hyperinflation is the percentage change in the cost-of-living index (*Teuerungsraten*) from 1913 to the average November 1923-January 1924 (in logarithms). Other controls include the location of the cities by its latitude and longitude, population in 1919, and the share of blue collar, share of Protestant and share of Jewish, all of 1925. All variables are measured at the city level. Robust standard errors are clustered at the state-level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table A13: Hyperinflation and Nazi membership

	Nazi new entrants 1932			Nazi new entrants 1933		
	(1)	(2)	(3)	(4)	(5)	(6)
$\triangle$ Hyperinflation (logs)	-32.164	-38.444	-21.473	-8.128	-8.492	-4.198
	(29.195)	(29.691)	(25.977)	(6.558)	(6.416)	(5.689)
Number of cities	71	71	71	71	71	71
R^2	0.018	0.046	0.119	0.016	0.028	0.102
Latitude and longitude	N	Y	Y	N	Y	Y
City controls	N	N	Y	N	N	Y

Outcome variable is the flow of new entrants to the Nazi party in 1932 and 1933. Hyperinflation is the percentage change in the cost-of-living index (*Teuerungsraten*) from 1913 to the average November 1923-January 1924 (in logarithms). The same overall results hold if I compute the outcome variable as the number of new members as the share of the population in 1919 or simply the log of new members. Other controls include the location of the cities by its latitude and longitude, population in 1919, and the share of blue collar, share of Protestant and share of Jewish, all of 1925. All variables are measured at the city level. Robust standard errors are clustered at the state-level. . *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table A14: Real Wages and Nazi voting (differences from 1928)

	△ NS 1928 and 1930			△ NS 1928 and 7/1932			△ NS 1928 and 11/1932			△ NS 1928 and 1933		
	Beta	SE	N	Beta	SE	N	Beta	SE	N	Beta	SE	N
Hourly wages												
Construction (worker), logs	-2.635	(1.827)	188	-1.733	(2.450)	161	-3.008	(3.005)	166	-4.627**	(2.166)	188
Construction (bricklayer), logs	-2.557	(2.293)	163	-2.087	(3.697)	143	-1.569	(4.087)	147	-4.805	(3.232)	163
Metal (lathe), logs	-3.570	(2.149)	160	-4.225	(2.563)	132	-1.993	(3.129)	136	-3.610*	(1.914)	160
Metal (foundry), logs	-5.789	(4.672)	67	-3.322	(2.550)	56	-3.459	(2.841)	58	-6.678**	(2.645)	67
Chemical (worker), logs	1.469	(2.461)	73	-5.581	(3.418)	57	-4.436	(2.952)	58	3.624	(4.696)	73
Earnings												
Construction (worker), logs	-2.211	(1.457)	187	-0.979	(2.262)	161	-2.851	(2.517)	165	-5.299***	(1.664)	187
Construction (bricklayer), logs	-3.132	(2.062)	163	-1.791	(2.839)	143	-0.912	(2.963)	147	-4.769*	(2.483)	163
Metal (lathe), logs	-1.694	(2.075)	159	-3.228	(2.291)	132	-1.753	(2.435)	135	-2.605	(1.900)	159
Metal (foundry), logs	-4.755	(4.100)	64	-3.117	(2.316)	55	-4.005	(2.708)	57	-3.876	(2.769)	64
Chemical (worker), logs	3.485	(2.469)	73	0.873	(2.353)	57	1.300	(3.397)	58	5.928	(4.610)	73

Outcome variable is the percentage change of the valid votes cast going to the Nazi Party in two different elections. Models for the different industries and occupations are estimated independently. Real wages are based on the industries and occupations described in the table and divided by the cost-of-living index (*Teuerungsraten*) at the time when the survey was conducted (in logarithms). Other controls include the location of the cities by its latitude and longitude, population in 1919, and the share of blue collar, share of Protestant and share of Jewish, all of 1925. All variables are measured at the city level. Robust standard errors are clustered at the state-level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table A15: Hyperinflation and cause-specific mortality

	Influenza	Meningitis	Scarlet fever	TB	Whooping cough
	(1)	(2)	(4)	(5)	(6)
Hyperinflation (logs)	0.320***	0.285*	0.224**	0.279**	0.352*
	(0.072)	(0.148)	(0.110)	(0.112)	(0.198)
Number of observations	11,647	11,647	11,647	11,647	11,647
Adjusted R^2	0.704	0.929	0.918	0.813	0.745
Year-month fixed effects	Y	Y	Y	Y	Y
City fixed effects	Y	Y	Y	Y	Y
Population weighted	Y	Y	Y	Y	Y

Outcome variable is the monthly cause-specific crude death rate as specified in the table (in logarithms). This is a panel with monthly data from June 1921 to September 1924. Hyperinflation is the monthly level in the cost-of-living index (*Teuerungsraten*), expressed in logarithms. All regressions include city and date fixed effects (year-month fixed effects), and are weighted by the size of the city-population with standard errors (in parentheses) clustered at the state-level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table A16: Mortality and Nazi voting (differences from 1928)

	△ NS 1928 and 1930		△ NS 1928 and 7/1932		△ NS 1928 and 11/1932		△ NS 1928 and 1933	
	Adults	Infants	Adults	Infants	Adults	Infants	Adults	Infants
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
△ CDR 1921/23	0.004	0.001	0.037	-0.021	0.055	-0.030	0.031	-0.016
	(0.027)	(0.014)	(0.041)	(0.037)	(0.048)	(0.031)	(0.048)	(0.021)
Number cities	224	224	224	224	224	224	224	224
Lat/Lon	Y	Y	Y	Y	Y	Y	Y	Y
City controls	Y	Y	Y	Y	Y	Y	Y	Y

Outcome variable is the percentage change of the valid votes cast going to the Nazi Party in two different elections. Models for each election and age group are estimated independently. As defined in the table, mortality is computed as the percent-age change in the crude death rates or infant mortality rates between 1921 and 1923. Other controls include the location of the cities by its latitude and longitude, population in 1919, and the share of blue collar, share of Protestant and share of Jewish, all of 1925. All variables are measured at the city level. Robust standard errors are clustered at the state-level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$