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Abstract

This paper quantifies the macroeconomic consequences of the fiscal austerity program that preceded the Nazi power grab in Germany in 1933. Between 1930 and 1932, German Chancellor Heinrich Brüning enacted large expenditure cuts and tax increases against the backdrop of a depressed economy, global trade disintegration, and the rise of political extremism. We use a novel granular fiscal dataset to identify the macroeconomic effects of Brüning's austerity policies. We find that the austerity shocks reduced German GDP by more than four percent and caused an increase in unemployment by almost two million, paving the way for extremist parties' success.

JEL classification: C32, E62, E65, N14

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1 Introduction

Between March 30, 1930, and May 30, 1932, Chancellor Heinrich Brüning implemented a series of tax increases and cuts in government spending in the midst of a deep recession in Germany. When Brüning stepped down in May 1932, the Nazis had emerged as the dominant party, solidifying their position as the strongest political force in the July 1932 elections. Half a year later, in January 1933, Adolf Hitler was appointed Germany's new chancellor, and the darkest chapter of German history began.

It is rare for macroeconomists to observe mandatory wage cuts, reductions in unemployment insurance benefits, or a surprise stop to all public construction projects, especially in a depressed economy. Brüning's austerity policies offer a unique window into policy actions that are in many dimensions the opposite of the policy playbook in downturns. Contemporary observers like The Economist had little doubt about these effects. Regarding the austerity decree of December 8, 1931, the magazine wrote:

> "Coming on top of three previous Emergency Decrees, which have already reduced terribly the German standard of life, and imposed, as it is, in the middle of a crisis in which Germany has five million unemployed, her stock markets closed, her tale of bankruptcies mounting to catastrophic figures, and her whole economic system 'frozen' by credit restrictions and standstill agreements, this latest 'turn of the screw' will undoubtedly place a dangerous strain on the psychology of the German people."

The historical literature has shown that the political radicalization occurring during Brüning's term in office was partly caused by the austerity policies (Doerr et al., 2022; King et al., 2008; Kaltefleiter, 1968; Galofré-Vilà et al., 2021, among others). Similar links between extremist electoral success and fiscal consolidation occurred in Europe recently (see Duque Gabriel et al., 2023; Baccini and Sattler, 2024). On the economic side, whether Brüning had macroeconomic alternatives was hotly debated among postwar German economic historians – the so-called Borchardt-Holtfrerich controversy. Despite the prominence of this debate and the historical importance of the events, Brüning's austerity measures have so far not attracted much attention from quantitative macroeconomists using state-of-the-art methods and granular fiscal data. Existing studies like Cohn (1992) and Ritschl (2013) only worked with aggregate fiscal data and less cleanly identified fiscal shocks.

This paper studies the macroeconomic consequences of Brüning's austerity measures, combining new high-frequency granular fiscal and macroeconomic data with a narrative identification strategy. We estimate the output and employment effects of Brüning's austerity drive. For the period April 1927 to February 1935, we construct a monthly dataset of German federal government spending and tax revenues. We disaggregate central government spending into nine categories, among them social transfers, transfers to federal states, debt service, and reparation payments. High-frequency monthly data are needed to time the austerity shocks, while the granular structure of our spending data enables us to construct government spending and tax revenue variables free of budget items moving with the business cycle.

To estimate the effects of Brüning's austerity policies, we embed a narrative instrument in a Bayesian vector autoregressive model of the macroeconomy and estimate the dynamic effects of the austerity interventions on the German economy. We set up a dynamic endogenous system of the German economy, which includes government spending, taxes, output, prices, and interest rates. This system includes the endogenous responses of government expenditure and tax revenue to contemporaneous shocks to output, inflation and interest rates.

We introduce a narrative austerity variable into this system that captures the potential impact of austerity measures that were enacted during a specific month. We construct an austerity shock variable in the spirit of Romer and Romer (1989), Ramey and Shapiro (1998), Budnik and Rünstler (2020), and Boer and Lütkepohl (2021). It takes the value of unity at the announcement dates of the emergency decrees, specifically in the following months: 7:1930, 12:1930, 6:1931, 10:1931, and 12:1931. We make no ex-ante assumption about the nature of the shock, only that an event occurred that cannot be accounted for by the responses or other shocks to the system. The average impact of this event dummy is estimated within the model. The resulting impulse response functions (IRF) demonstrate that the shocks led to significant reductions in government spending and an increase in taxes in the following months. This is consistent with the interpretation that the event that occurred was indeed an austerity shock, as suggested by the historical sources.

Historical evidence shows that Brüning's austerity measures were not aimed at stabilizing the business cycle – we are looking at spending cuts and tax hikes in a deep recession after all. We show that Brüning's tax increases and expenditure cuts were motivated by ideological and political priorities related to the reparation regime and the inherited budget situation in the spirit of Romer

and Romer (2004, 2010). Moreover, by specifying the narrative variable as a dummy variable, we are relieved of the need to decide which part of the austerity packages is truly exogenous. Instead, our model traces how the endogenous variables deviate from their usual dynamics following the identified austerity shocks.

Our analysis points to severe economic effects of the austerity policies. In our benchmark specification, Brüning's fiscal policy shocks cumulatively decreased German GDP per capita by more than four percent and increased unemployment by almost two million. Brüning's policies earned him the nickname "Hunger Chancellor". In light of our results, this characterization appears justified. Brünings policies reduced output at a critical moment. As the historical literature shows, the political extremists and most importantly the Nazi party profited most from the economic and social fall-out of these policies.

Previous literature: Previous studies have examined fiscal policy during the Weimar Republic, including Cohn (1992)'s analysis of annual budget data, Borchardt (1979)'s argument about Brüning's constraints, and Ritschl (2013)'s evaluation of Germany's macroeconomic performance. Fisher and Hornstein (2002) used a neoclassical growth model to highlight fiscal policy's role in Germany's economic downturn. However, our study provides a unique quantitative analysis of Brüning's austerity measures using high-frequency data.

Our study also relates to research on state-dependent fiscal policy effects. Auerbach and Gorodnichenko (2012), Auerbach and Gorodnichenko (2013), and Jordà and Taylor (2016) found evidence for larger fiscal multipliers and output losses from consolidations during recessions. However, Barro and Redlick (2011) and Owyang et al. (2013) as well as Ramey and Zubairy (2018), using a military news variable for the US to identify fiscal policy shocks, find no systematically different fiscal multipliers during normal times versus times of economic slack. In the context of the Great Recession, House et al. (2020) employ a multi-country DSGE model to rationalize the varying recovery patterns observed across European countries. Their findings suggest that nations that implemented reductions in government spending experienced lower levels of economic activity. Guajardo et al. (2014) provide empirical evidence indicating that fiscal consolidations tend to have a less contractionary impact when implemented in economies with a high perceived risk of sovereign default. Our work contributes to this literature by providing a detailed empirical case study of fiscal consolidation during a severe economic downturn.

This paper is structured as follows. Section 2 delineates the historical background. Section 3 describes our new data and our empirical strategy. The results are presented in Section 4. Section 5 concludes.

2 The historical context: Brüning's chancellorship

Wait a while and just you'll see,
And Brüning will come up to you
With the ninth emergency decree
And make mincemeat out of you.
(German nursery rhyme, cited in Evans (2003))

The 1919 Treaty of Versailles required Germany to pay war reparations of 132 billion Goldmark, about 150 percent of GDP in 1919. Despite easing through the Dawes Plan (1924) and Young Plan (1929), reparations constrained Germany's finances throughout the 1920s and early 1930s (Borchardt, 1979; Feldman, 2005; Ritschl, 2013).

After the hyperinflation of 1923, the Weimar economy witnessed a short-lived boom in the mid-1920s. Tying the newly introduced currency to the gold standard bolstered confidence among international creditors, leading to significant investments in the country. The Dawes Plan, in effect from 1924 to 1929, regulated Germany's reparations from World War I. It prioritized foreign creditors claims over reparation obligations in case of a currency crisis, and delayed Germany's first full annual reparation payment of 2.5 million Reichsmark until 1929. Germany's economic decline began before the Great Depression, with activity slowing in 1928 as U.S. capital inflows – crucial for business and government – dried up (Eichengreen, 2015). By winter 1928/29, unemployment had reached two million (left panel in Figure 1). Monetary policy remained constrained by the gold standard and capital flight fears.

Brüning, a conservative member of the Catholic Centre Party, was appointed chancellor of the Weimar Republic on March 30, 1930. Instability had brought down 16 governments in the twelve years of the Weimar Republic. Brüning responded to the inherited budget situation with a series of tax increases and government spending cuts. Although he was familiar with proto-Keynesian countercyclical policy recommendations and recognized the stabilizing effects of work creation

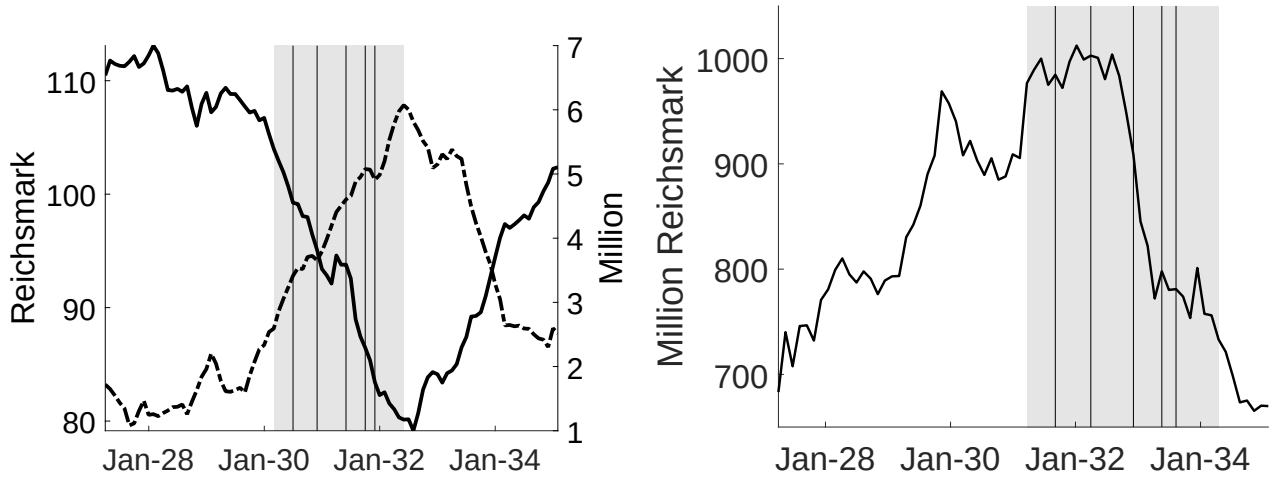

Figure 1: Left panel: German real GDP per capita in Reichsmark (bold solid line) and seasonal-adjusted unemployed in million between April 1927 and January 1933. The grey-shaded area marks Brüning's term in office. The announcement of Brüning's austerity decrees (July and December of 1930, and June, October, and December of 1931) is indicated by the vertical lines. Data sources: GDP: Albers (2018); unemployment: Humann (2011). Right panel: German total budget expenditures in million Reichsmark between April 1927 and January 1933 (12-month moving average). Authors' series.

and public investment on the business cycle (see, e.g., Büttner, 1989; Ritschl, 2016; Winkler, 2018), he faced severe constraints and opted for fiscal austerity measures, demonstrating to creditors that the reparation regime was unsustainable (see, e.g., Holtfrerich, 1982; Büttner, 1989; Evans, 2003). An alternative view discussed in the literature suggests that Brüning wanted to reassure external creditors by demonstrating the priority placed on debt service payments, increasing the likelihood of revising the Young Plan (among others, Borchardt, 1979; James, 1986; Ritschl, 2002b, 2016). Either way, the austerity programs were chiefly motivated by reparation politics and other external objectives. They were not intended to manage the business cycle short-term.

From March 1930 to May 1932, Brüning led two minority governments. Within 48 hours in office, in his first government declaration on April 1, 1930, Brüning told parliament that he was willing to circumvent parliament using presidential emergency decrees to push through his economic policy.[1] Ruling by emergency decree meant that details of the proposed measures were not discussed in parliament beforehand, but announced publicly.

[1]cf. Reichstagsprotokolle, 1928/30, p. 4730. Article 48 of the Weimar constitution enabled the President to take emergency measures without parliamentary consultation. Though parliament could repudiate these decrees by majority vote, this rarely happened as Brüning threatened to ask Hindenburg to dissolve parliament – which occurred on July 18, 1930. In the subsequent September 14, 1930 elections, the NSDAP became the second-strongest party behind the Social Democrats (Winkler, 2018).

2.1 Brüning's austerity policy

Brüning implemented his austerity policy using five emergency decrees. The right panel in Figure 1 shows the timing and expenditure decline during Brüning's term.

The five decrees implemented the following measures:[2]

July 26, 1930: The first emergency decree in late July 1930 introduced spending cuts and tax rises, including a supplementary income tax ("Reichshilfe"), increased income taxes on singles, and beer and citizen taxes. Unemployment insurance contributions rose and benefit criteria tightened.[3]

December 1, 1930: Further civil servant salary cuts and higher income, beer, and tobacco taxes.

June 5, 1931: The decree introduced a crisis tax as well as a salary cut for public sector employees and reduced unemployment insurance benefits and crisis support. It also increased the time span until eligibility for unemployment insurance payments and cut back on child supplements.

October 6, 1931: Further salary cuts and construction stop for all public buildings for two and a half years. Pension cuts of 5-75 percent for public employees.

December 8, 1931: Final austerity decree cut public salaries and enforced price, wage, and interest rate reductions. Ten percent rent cuts. Wages rolled back to 1927 levels and reduced 10-15 percent. Civil servant salaries cut nine percent. Sales tax increased from 0.85 to two percent and 25 percent tax on capital flight.

2.2 Motivation, constraints, alternatives

Historical evidence supports the view that Brüning's austerity measures were motivated by political objectives linked to reparations and inherited budget conditions, rather than short-run business cycle management. Two perspectives have shaped the historical debate, both supporting that Brüning acted with long-term orientation. One group argues that harsh austerity measures were deliberately chosen to deepen Germany's recession and demonstrate to allies that Germany was economically stretched to its limits, necessitating relief from its reparation burden (Holtfrerich, 1982; Büttner, 1989; Evans, 2003; Ferguson and Temin, 2003; Winkler, 2018, among others). The other group views the deflationary policy as demonstrating Germany's commitment to its international creditors, thereby ensuring the country's continued participation in the international economy (Borchardt, 1979; James,

[2]In nominal terms, total expenditures in the fiscal year 1931/1932 were, on average, 22 percent lower than in the previous fiscal year. The fiscal year extended from April 1 to March 31 the following year.

[3]James (1986) and Winkler (2018), among others, include a comprehensive treatment of the emergency decrees' content.

1986; Ritschl, 2002b, 2016). Both perspectives suggest that Brüning's deflationary policies were motivated by political preferences rather than short-term economic considerations regarding the business cycle.

Brüning expressed that ending reparations ranked high among his political preferences. In his memoirs, he stated, "(...) from the disease we could create our weapon" (Brüning, 1970, p. 309).[4] He also shared this view in meetings, stating that the economic crisis had positive effects for Germany in terms of reparations (Winkler, 2018, p. 438). While some cabinet members pushed for interim solutions, Brüning insisted on a complete solution to the reparation problem (Büttner, 1989; Winkler, 2018, p. 405).

In an influential essay, Borchardt (1979) argued that Brüning, facing a crushing public debt, had no alternative to austerity. Holtfrerich (1982) rebutted this, disputing that the debt burden originated from excessive wages and social transfers before 1929. The Borchardt-Holtfrerich debate was summed up by Ritschl (2001), who saw Borchardt's thesis largely confirmed, arguing that Germany's high foreign debt and reparation payments made reflationary policies impossible (Ritschl, 2002b). However, the debate about the economic problems of the Weimar Republic and Brüning's role continues (Köppen, 2014; Müller, 2014; Borchardt, 2015; Kailitz, 2015; Köster, 2015, amongst others).

3 Empirical strategy

Our empirical strategy leverages a new dataset to provide causal estimates of the macroeconomic impacts of Brüning's austerity policy. Our analysis focuses on the five emergency decrees issued during Brüning's chancellorship (March 1930 to May 1932), which encompassed all major austerity measures of this period.

3.1 The austerity shock instrument

We construct an austerity shock instrument based on the well-documented history of Brüning's fiscal policies, following the narrative approach of Ramey and Shapiro (1998), Romer and Romer (2010), Ramey (2011), and Guajardo et al. (2014). The previous section showed that the austerity

[4] Appendix E contains the original texts in German for all translated quotes.

decrees were motivated by Germany's dilemma of balancing reparations and foreign debt payments to reintegrate the country into world trade. Contemporary sources provide limited quantitative information about the emergency decrees' fiscal impact. Germany's leading newspaper, the *Vossische Zeitung*, reported projected figures for two decrees (July 1930 and June 1931), but these estimates were incomplete. Neither the government declaration accompanying the emergency decree of June 1931, the famous Tributaufruf, nor Büning himself, in his radio address for the December 1931 decree, refers to concrete amounts and sums, but stresses the measures' severity only generally. The decrees' complexity makes retrospective quantification challenging, as their effects varied based on multiple factors – for example, civil service salary reductions depended on employer, income category, family status, and location. Quantifying these cuts would require detailed micro-level income data unavailable for the Weimar Republic.

Following Romer and Romer (1989), Ramey and Shapiro (1998), and Budnik and Rünstler (2020), we use narrative information to construct our austerity shock variable, which takes the value of unity at the announcement dates of Brüning's emergency decrees in the *Reichs-Gesetzblatt*, the government gazette of the Weimar Republic (7:1930, 12:1930, 6:1931, 10:1931, 12:1931). Boer and Lütkepohl (2021) provide theoretical justification for such qualitative shock variables, demonstrating their efficiency in estimating structural shock impacts.

Some words concerning the timing of the dummy events are warranted. The consensus in modern macroeconomics is that expectations of economic agents play a pivotal role in fiscal policy effects (Perotti, 1999; Ramey, 2011; Corsetti et al., 2012; Kriwoluzky, 2012; Leeper et al., 2013, among others). According to this view, Brüning's austerity measures influenced agents' economic decisions already at announcement, not implementation. By combining our narrative identification scheme with our monthly dataset, we can address this issue: setting the dummy events precisely in the month of the decrees' announcement eliminates econometric concerns related to fiscal foresight effects.

To interpret our results as capturing the causal effects of Brüning's austerity policies, several assumptions are necessary. First, Brüning's emergency decrees enacting tax increases and spending cuts were discretionary policy actions not driven by short-term countercyclical motivations, but rather by longer term objectives. As argued above, the historical evidence clearly suggests that reparation obligations and continued access to foreign credit markets were the key motivating

factors. To mitigate potential endogeneity bias as much as possible, we construct fiscal policy variables that exclude components automatically influenced by the business cycle. This approach helps isolate the discretionary policy changes from automatic stabilizers, thereby strengthening our identification strategy and the causal interpretation of our results. To ensure our analysis captures the effects of Brüning's austerity measures rather than responses to contemporaneous shocks like the 1931 banking crisis or Britain's departure from the gold standard, we carefully examined the timing of each emergency decree. Our monthly dataset helps precisely identify these timing relationships. For instance, the June 1931 decree was planned in May, before the Austrian Creditanstalt's collapse triggered Germany's banking crisis, confirming it was not a reactive measure. Nevertheless, to account for potential confounding effects, we include a dummy variable for June 1931 to control for the banking crisis in all model specifications.

We conduct robustness checks by re-estimating our model without the June 1931 decree and by controlling for bank deposits, which helps capture the dynamics of the financial sector during this period. Our main results remain robust, reinforcing the causal interpretation of Brüning's austerity effects.

Regarding the pound sterling devaluation on September 20, 1931, historical evidence shows that the emergency decree issued on October 6, 1931, we use as event in our identification was not an immediate reaction to Britain's departure from the gold standard (Winkler, 2018). To address potential confounding effects from the pound devaluation, we conduct two additional robustness checks. First, we explicitly control for the exchange rate between the British and German currencies in our model. Second, we estimate a specification that excludes the emergency decree issued in December 1931. This exclusion helps rule out the possibility that our results are driven by a lagged reaction to the British devaluation aimed at increasing Germany's competitiveness via price and interest rate reductions.

3.2 A new dataset

Our analysis utilizes a new monthly dataset of German federal government budget and macroeconomic variables from Wagemann (1935). This high-frequency data is crucial for precisely timing the austerity shocks during Brüning's turbulent term, when fiscal policy was implemented through emergency decrees. The dataset's granularity allows us to decompose budget figures into consistent

categories, enabling more accurate analysis. We use this decomposition and construct government spending and tax revenue variables that relate to the cyclically-adjusted federal budget. We therefore remove components like reparation payments and debt payments, transfers to federal states and components that move with the business cycle directly, like automatic stabilizers. This ensures that the fiscal variables are free of endogenous fluctuation that could bias our estimates in case Brüning's austerity measures were motivated to some extent by cyclical considerations.

Germany's monthly federal government budget We expand upon Ritschl (2002b)'s quarterly budget figures by constructing a novel monthly dataset of federal revenues and expenditures for the late Weimar Republic. Our data, derived from Wagemann (1935)'s monthly series of regular and extraordinary budgets, aligns with Ritschl's quarterly figures when aggregated (see Appendix A). This higher-frequency data enables more precise analysis of the timing and impact of Brüning's austerity measures.

Our dataset starts with the aggregated monthly series of revenues and expenditures in Wagemann (1935).[5] They comprise the regular and the extraordinary budget and are organized in fiscal years. However, as the aggregated budget data also includes reparations and debt service, as well as cyclical components like social transfers and transfer payments to states and municipalities, we correct for these positions. Starting from April 1927, we decompose the total budget numbers into explicit items of the federal government budget and adjust the spending and revenue data accordingly. To decompose the aggregated series, we use the detailed accounts of the German federal government budget as published from April 1927 to 1931 in the *Statistisches Jahrbuch für das Deutsche Reich*. From 1932 on, we gather this information in various editions of *Wirtschaft und Statistik*.[6] Appendix B shows an extract from the primary sources.

As the item's declarations and compositions change over time in the statistical publications, we summarize them consistently in broader categories. Government expenditures split into nine categories and tax revenues into four. Table 1 provides an overview and Appendix C contains more details on the categories and the spending and tax revenue variables' composition. This budget decomposition allows us to construct a revenue and spending measure that relates to the cyclically-adjusted component of the federal budget::

[5] In particular, "Monatliche Einnahmen und Ausgaben des Reich", section XVIII. Öffentliche Finanzwirtschaft; A.
[6] After February 1935, detailed budget accounts are no longer reported.

$$\begin{aligned} \tau_t^* &= \tau_t - (s_t^f + s_t + b_t) \\ g_t^* &= w_t + a_t + d_t + o_t. \end{aligned} \tag{1}$$

The tax revenue measure (τ_t^*) consists of taxes, duties, and levies (τ_t, 1R in Table 1) minus the sum of tax transfers to federal states (s_t^f, 1E), social transfers (s_t, 2E), and interest and debt repayments (b_t, item of 6E).

The government spending measure (g_t^*) includes remuneration of civil servants and employees (w_t, 3E; 61 percent of spending variable), outlays on housing and assets (a_t, 4E; 2.5 percent), expenditures for military, police, and transportation (d_t, 5E; 23.7 percent), and outlays summarized as other expenditure (o_t, 9E; 12.8 percent). With our revenue and expenditure measures, we capture 43 and 41 percent of the total budget numbers.[7]

Table 1: Federal budget: categories

Government expenditures	Tax revenues
2E. Social transfers	2R. Capital income
3E. Remuneration of civil servants and employees	3R. Extraordinary taxes
4E. Housing, assets	4R. Other revenue
5E. Military, police, transportation	
6E. Debt and coverage of public deficit	
7E. War burdens	
8E. Reparations	
9E. Other expenditure	

Wagemann's handbook Monthly data on economic activity, prices, and interest rates for the last years of the Weimar Republic comes from a new statistical database that we compiled by digitizing

[7]In Appendix D, we show that federal and local government entities were similarly affected by Brüning's austerity measures. Hence, budget cuts at the federal level could not be compensated for by Germany's local governments.

the *Konjunkturstatistische Handbuch* of Wagemann (1935). This database contains over 500 monthly time series on macroeconomic and financial variables of the German economy from 1925 to 1935, covering various sectors and indicators. We make this dataset publicly accessible.

3.3 The economic effects of Brüning's austerity

To identify the effect of Brüning's austerity on the German economy, we order the austerity instrument first in a VAR model, a strategy pioneered by Kilian (2006) and Ramey (2011), and theoretically discussed in Plagborg-Møller and Wolf (2021). The VAR model with n endogenous variables expresses the observables y_t as projection on its past values and a reduced-form innovation:

$$y_t = B_0 + B(L)y_{t-1} + u_t, \quad u_t \sim \mathcal{N}(0, \Sigma_u), \tag{2}$$

where $B(L)$ denotes the reduced form VAR model coefficients, and B_0 the intercept term. u_t denotes the $n \times 1$ vector of reduced form errors with the corresponding variance-covariance matrix Σ_u. The reduced form errors u_t are related to the structural errors ϵ_t as follows:

$$u_t = A\epsilon_t, \quad \epsilon_t \sim \mathcal{N}(0, I_n). \tag{3}$$

The $n \times 1$ vector y_t collects the observables:

$$y_t = \begin{bmatrix} IV_t & g_t^* & \tau_t^* & gdp_t | ur_t & p_t & i_t \end{bmatrix}. \tag{4}$$

IV_t denotes the qualitative austerity variable with value of unity at the announcement dates of Brüning's emergency decrees; g_t^* denotes the logarithm of real government consumption and, τ_t^* the logarithm of real tax revenues. We rotate the fourth variable in the system and estimate the VAR model sequentially with (i) the logarithm of GDP per capita in first-differences (gdp_t) or (ii) the unemployment rate (ur_t). p_t is the logarithm of a wholesale price index in first-differences (WPI) and i_t denotes the Reichsbank discount rate.[8]

To identify the causal impact of Brüning's fiscal tightening measures, we construct an endogenous system that accounts for the dynamic interactions between government expenditure, tax income,

[8] Appendix F includes a detailed account on the data sources.

economic output, inflation, and interest rates. This system inherently captures the endogenous fiscal responses to the business cycle. The exogenous austerity indicator, motivated by historical evidence, is positioned first in the system. This ordering relies on the sole assumption that these austerity measures are not influenced by other economic shocks within the same month. To address potential endogeneity concerns, we utilize our newly compiled dataset to create fiscal policy indicators that exclude components automatically influenced by economic fluctuations, thus minimizing the confounding effects of automatic stabilizers.

To account for the peculiarities of the German budgeting process, we seasonally adjust the spending and tax data by regressing the variables on a dummy variable that takes the value of one in March of each year.[9] Our budget data covers the sample 1927:M4 to 1935:M2. To control for a large set of observables and policy lags despite the relatively short sample size, we adopt a Bayesian estimation. We employ a lag order of six and use the commonly used version of the Minnesota prior as Normal-Inverted Wishart distribution (e.g. Kadiyala and Karlsson, 1997). We use a marginal data density to select the hyperparameters of the prior distribution in a data-driven way. Appendix G outlines the details of the Bayesian estimation. In Appendix H, we demonstrate the robustness of our estimation results to various specifications, including alternative measures of economic activity and the price level, and controlling for bank deposits and the exchange rate between the British Pound and the Reichsmark. Furthermore, to alleviate concerns that the emergency decrees may have been influenced by short-term economic events like the German banking crisis of summer 1931 or Britain's departure from the gold standard, we show that our results remain qualitatively robust when excluding the emergency decree of June 1931 and the decree of December 1931.

We compute the dynamic responses of the austerity shock and evaluate the effect of Brüning's austerity policy on the German economy by analyzing the size and timing of the change in economic activity and unemployment associated with the emergency decrees. Representing the VAR model estimates in the form of counterfactuals allows us to examine how much change of GDP per capita and the unemployment rate can be attributed to the austerity shock at a given point in our sample. We follow Kilian and Lee (2014) to compute the historical decomposition during Brüning's term of office,

[9]March constitutes the last month in the fiscal year in which all still open items were posted. Each March, we observe spikes in the revenue and expenditure data. By seasonally adjusting the budget data, we avoid, because of these spikes, overestimating the effects of fiscal policy.

$$y_t = \sum_{s=0}^{t-1} \Phi_s \epsilon_{t-s} + \sum_{s=t}^{\infty} \Phi_s \epsilon_{t-s} \quad , \tag{5}$$

where Φ_s denotes the 6×6 matrix of structural impulse responses at lag $s = 0, 1, 2, ...$ We estimate Φ_s and ϵ_t from the data and express the fitted value of the structural VAR model as:

$$\hat{y}_t \approx \sum_{s=0}^{t-1} \hat{\Phi}_s \hat{\epsilon}_{t-s}. \tag{6}$$

We are interested in the fourth element of y_t, denoted by $y_{gdp,t|ur,t}$, which corresponds to GDP per capita or the unemployment rate. Let $y^s_{gdp,t|ur,t}$ denote the contribution of structural shock s to GDP per capita or unemployment at date t. Then, the counterfactual is defined as $y_{gdp,t|ur,t} - \hat{y}^s_{gdp,t|ur,t}$, where $\hat{y}^s_{gdp,t|ur,t}$ denotes the fitted value of GDP (unemployment) associated with shock s. For our analysis, we are interested in the effect of the first shock, the shock to the austerity instrument. The counterfactual series then indicates how GDP per capita or the unemployment rate would have evolved, had one been able to replace all realizations of the austerity shock in our sample with zeros, while keeping the remaining five structural shocks in the VAR model. If the counterfactual exceeds the observed time series, the austerity shock lowered the time series in this period. If it lies below the actual series, the austerity shock increased that series. The distance between the observed series and the counterfactual series tells us by how much austerity affected GDP or the unemployment rate at this point in time.

4 Results

How does the austerity shock we identify propagate to the macroeconomy? What would have been the state of Germany's economy in summer 1932 without Brüning's austerity measures? This section presents the transmission mechanism of the shock and the counterfactual exercise.

4.1 Impulse responses to the austerity shock

Figure 2 shows impulse responses to an austerity shock.[10] The posterior median response (bold line) and credible intervals (blue-shaded areas) show that the austerity shock decreases government spending over two years and initially increases tax revenues, though with wide credible bands for the latter. This asymmetric fiscal adjustment reflects the political economy constraints Brüning faced, prioritizing visible deficit reduction through expenditure cuts rather than potentially less contractionary revenue measures. These observed effects align with the expected outcomes of an austerity shock, lending credence to our identification approach.

The macroeconomic transmission mechanisms reveal the severity of contractionary fiscal policy during economic downturns. The austerity shock produces prolonged recessionary and deflationary effects. GDP per capita declines steadily for eight months and remains below its initial level for over two years, illustrating the significant contractionary impact of fiscal consolidation during economic weakness. Unemployment effects are persistent, peaking at a 0.18 percentage point increase after 13 months and remaining elevated for more than two years. This suggests that the austerity measures had severe consequences for the labor market, potentially exacerbating the already high levels of unemployment during the Great Depression. Prices decrease on impact and stay significantly below trend for more than two years.

In summary, the results indicate that the austerity shock identified through the qualitative proxy variable had severe contractionary effects on the German economy during the Great Depression era. A one standard deviation fiscal consolidation led to persistently lower GDP, higher unemployment, and deflationary pressures that lasted for over two years after the shock. Our estimated fiscal multipliers range from 1.9 to 2.7 depending on the time horizon, with a cumulative 24-month multiplier of 1.9. These estimates exceed typical peacetime estimates but align with upper bounds found during severe recessions (Blanchard and Leigh, 2013; Jordà and Taylor, 2016). The large magnitudes likely reflect Germany's constrained monetary policy under the gold standard and the extreme nature of simultaneous spending cuts and tax increases during a deflationary spiral.

The temporal dynamics of the transmission reveal important insights about how austerity operates during recessions. The delayed peak in unemployment effects — occurring 13 months after

[10] Figure 2 shows the impulse responses for GDP, spending, tax revenues, and the wholesale price index obtained from the VAR model that includes GDP. The complete set of impulse responses for the baseline specifications is shown in Appendix H.

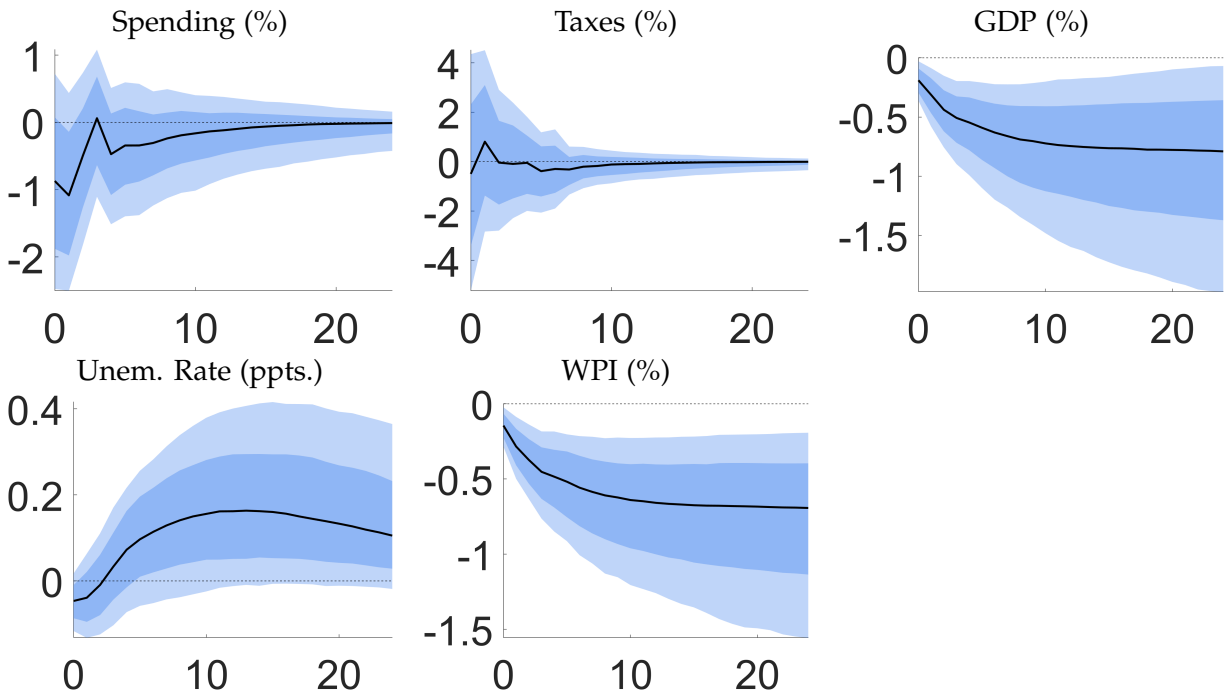

Figure 2: Impulse responses to an austerity shock. The black solid line depicts the median impulse response of the specified variable to a one standard deviation austerity shock. Blue shaded bands denote 68 percent and 90 percent credible sets

the shock rather than immediately — suggests that labor market adjustments unfolded gradually as firms exhausted other cost-cutting measures before laying off workers. The persistent deflationary pressures lasting over two years indicate that the fiscal contraction triggered a deflationary spiral, where falling prices increased real debt burdens and further depressed economic activity.

4.2 Cumulative effects on GDP and unemployment

Figure 3 shows counterfactual GDP per capita (dashed line: median estimate; blue shades: 68 percent and 90 percent credible sets) and observed GDP per capita (bold line) between Brüning's term of office and Hitler's appointment as chancellor in January 1933. For the first few months after Brüning took office, the two lines coincide almost perfectly, indicating that the austerity measures had minimal impact on the evolution of GDP initially. However, starting with the first emergency decree in summer 1930, which implemented significant spending cuts and tax hikes, a divergence emerges. Hence, for the lion's share of Brüning's chancellorship, austerity shocks had an decreasing effect on economic activity. The difference between counterfactual and observed GDP becomes statistically significant from the end of 1930 onward, coinciding with the implementation of the

second emergency decree in December 1930.

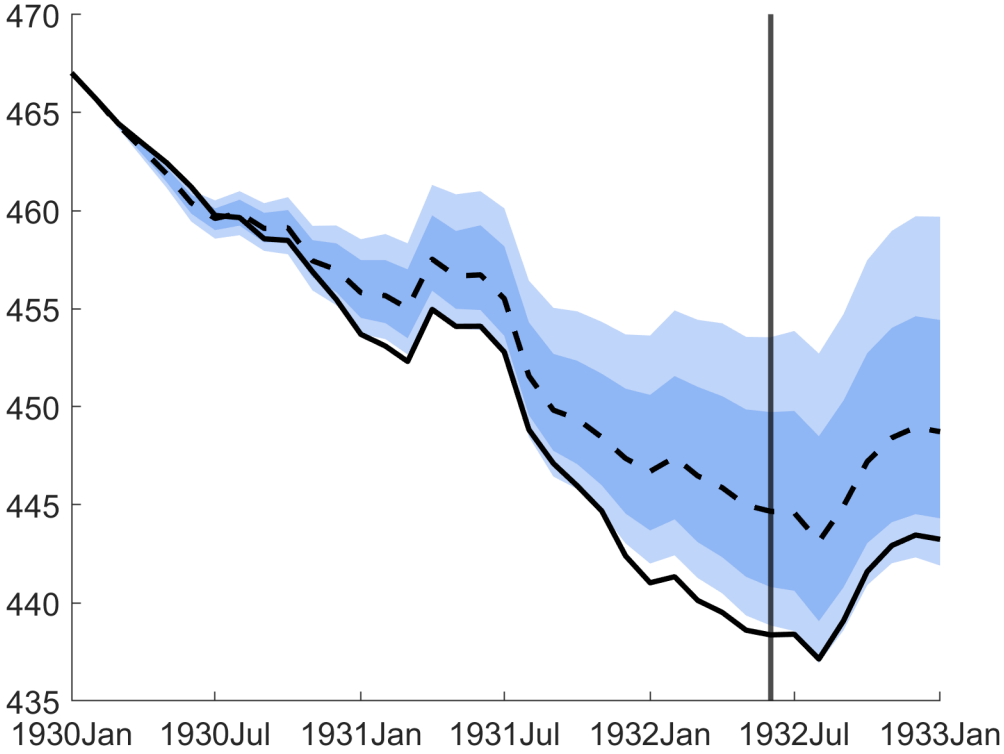

Figure 3: Counterfactual for GDP per capita (log x 100) computed between March 1930 and January 1933. The dashed line depicts median counterfactual GDP in the absence of austerity shocks, the dark-blue shaded area shows 68 percent credible bands, and the light-blue shaded area shows 90 percent credible bands. The bold line illustrates observed GDP. The vertical line indicates the end of Brüning's tenure in office.

Analyzing periods with statistically significant differences (90 percent level) between counterfactual and observed GDP, we estimate Brüning's austerity policies caused a cumulative GDP loss of 4.69 percent relative to 1932 levels (4.23 percent of 1931 GDP). To contextualize this magnitude: Brüning's policies amplified the existing economic decline by nearly five percentage points of GDP. This represents a massive economic loss during a period when every percentage point of output was crucial for maintaining social stability and employment.

The impact on unemployment, shown in Figure 4, reveals a similar pattern: while unemployment rates initially tracked the counterfactual closely in early 1930, the two diverged significantly following the implementation of austerity measures. This divergence implies that, in the absence of Brüning's austerity measures, German unemployment would have been considerably lower during the latter years of the Weimar Republic. Notably, the gap between the observed and counterfactual unemployment rates widens progressively over time, indicating that Brüning's fiscal policies had an

increasingly severe effect on exacerbating unemployment levels.

Our estimates show that Brüning's austerity policies resulted in an additional 1.94 million individuals becoming unemployed in Germany, representing 7.1 percent of the country's monthly average labor force in 1932.

These unemployment effects were concentrated during the critical final years of the Weimar Republic, when political extremism was gaining ground. Adding nearly two million unemployed to an already distressed labor market meant that by 1932, the combination of global depression and domestic austerity had created unprecedented social hardship, providing fertile ground for radical political movements promising economic relief.

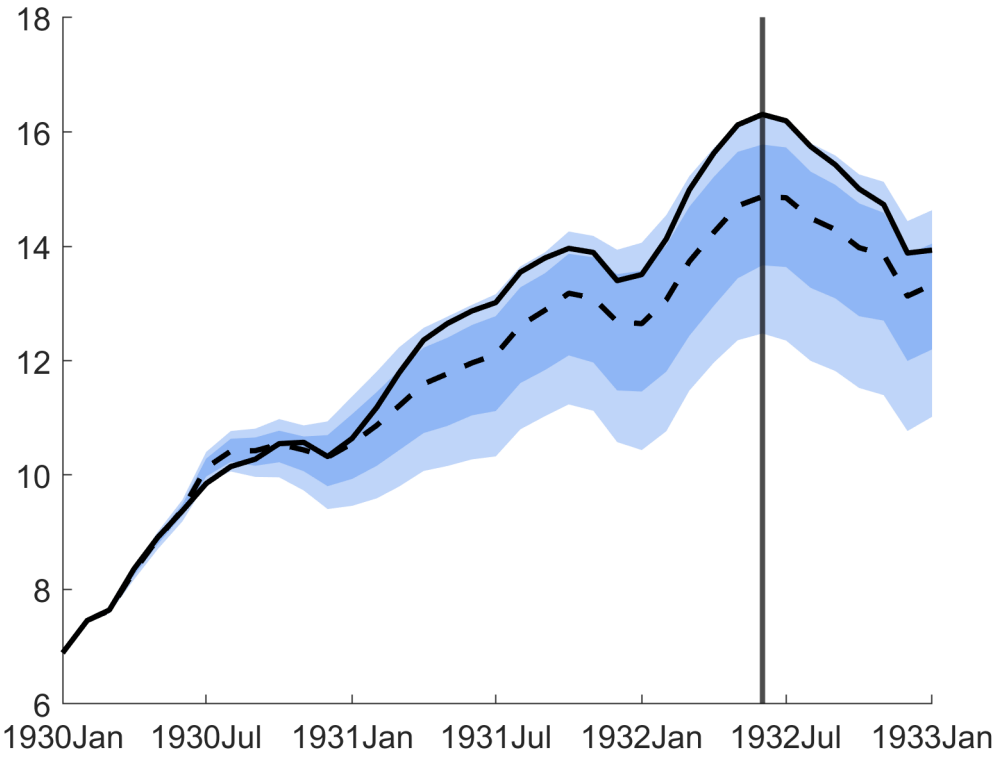

Figure 4: Counterfactual for the unemployment rate (%) computed between March 1930 and January 1933. The dashed line depicts median counterfactual unemployment in the absence of austerity shocks, the dark-blue shaded area shows 68 percent credible bands, and the light-blue shaded area shows 90 percent credible bands. The bold line illustrates the observed unemployment rate. The vertical line indicates the end of Brüning's tenure in office.

While our analysis focuses on the overall impact of Brüning's austerity decrees, which encompassed a combination of spending cuts and revenue adjustments, we do not examine the differential effects of specific policy instruments, such as tax increases versus spending reductions, as explored in studies like Alesina and Ardagna (2010). Nonetheless, our results echo the conclusions drawn by

Romer and Romer (2019), who argue that when confronted with high financial distress, policymakers should not allow debt burdens to unnecessarily dictate the fiscal response, as doing so can lead to much more severe and prolonged output losses in the aftermath of crises.

Our findings provide empirical evidence of how severe fiscal consolidation during recessions can deepen economic crises, supporting existing literature on the risks of austerity during downturns (e.g. Blanchard and Leigh, 2013; Jordà and Taylor, 2016; House et al., 2020). Brüning's policies serve as a stark historical example of how austerity can exacerbate recessionary pressures and hinder recovery.

5 Conclusion

This paper provides the first granular quantitative assessment of the macroeconomic consequences of Brüning's fiscal austerity measures during the Great Depression. Our central research question — did Brüning's policies deepen the German economic crisis, and by how much? — receives a clear and sobering answer: yes, decisively so.

Using a novel narrative identification strategy combined with high-frequency fiscal data, we demonstrate that Brüning's austerity measures reduced German GDP per capita by 4.7 percent and increased unemployment by 1.94 million individuals relative to what would have occurred without these policies. To contextualize these magnitudes: the GDP loss represents more than four percent of national output during an already severe recession, while the unemployment increase affected 7.1 percent of Germany's labor force — transforming an economic crisis into a social catastrophe.

Our findings contribute methodologically by demonstrating how narrative identification can be effectively combined with granular fiscal data to isolate discretionary policy effects from automatic stabilizers.

The broader implications extend beyond historical interest. Our results provide stark empirical evidence that fiscal consolidation during severe economic downturns can amplify rather than resolve economic crises. This finding resonates with contemporary debates about austerity policies during recessions and offers a historical precedent for understanding how fiscal retrenchment can exacerbate economic and social instability. The political consequences were profound: years of extreme economic distress alienated the German electorate from the established democratic system,

creating conditions that extremist movements exploited. The Nazis capitalized most effectively on this economic disillusionment, illustrating how economic policy failures can have far-reaching political ramifications. Brüning's austerity measures thus represent a cautionary tale about the dangers of procyclical fiscal policy during economic crises, with lessons that remain relevant for contemporary policymaking.

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Appendix A Comparison to Ritschl's federal government spending data

In Figure 5, we aggregate our monthly budget data to quarterly frequency and find that it corresponds well with the series in Ritschl (2002b).[11] During the late 1920s, we underestimate total Reich expenditures; however, both series move closely together.

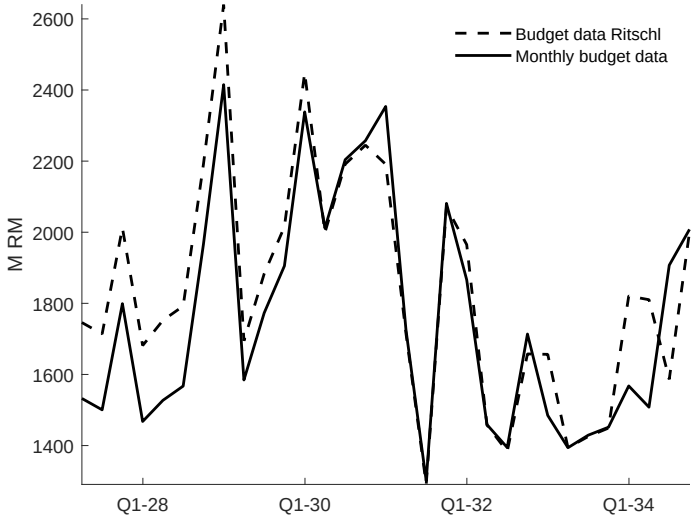

Figure 5: The dashed lines shows quarterly total federal expenditures as compiled by Ritschl (2002b). The bold line shows our monthly measure of total expenditures aggregated to quarterly frequency.

As Ritschl (2002a) notes, the official budgeting process somewhat masks the true extend of public finances because the German government tried to hide some of its outlays from international monitors. During the early 1930s and, hence, during Brüning's term of office, the series coincide almost perfectly. This comparison shows that the monthly data provides a very good account of federal government expenditures. If anything, the fact that we do not account for the hidden spending positions places a higher bar for our results.

[11]The benchmark series in Ritschl (2002b) consists of total expenditures by the federal government net of transfer payments to local governments and municipalities (Table A.6 "Die vierteljährlichen Einnahmen und Ausgaben des Reiches 1925 - 1938 (Mio. RM), A.6.35, "Reiner Finanzbedarf").

Appendix B Federal budget decomposition: extract from primary sources

Einnahmen und Ausgaben des Reichs	1931			
	Juli	Sept.	Oktober	April/Okt.
A. Ordentlicher Haushalt.				
I. Einnahmen	Mill. ℛℳ			
1. Steuern				
Steuern, Zölle usw. (Reichsanteil)[1]	673,7	324,4	676,7	3 376,0
Reparationssteuer der Reichsbahn	—	—	—	165,0
2. Erwerbsvermögen				
Aus den Vorzugsaktien der Reichsbahn	—	—	—	28,7
Überschuß v. Post u. Reichsdruckerei	14,6	19,9	19,8	129,5
Aus der Münzprägung[2]	— 0,1	— 4,3	— 3,0	— 13,7
3. Verwaltungseinnahmen	12,9	14,9	16,8	103,8
Summe der Einnahmen	701,1	354,9	710,3	3 789,3
II. Ausgaben				
1. Bezüge d. Beamten u. Angestellten[3]	59,6	60,9	61,5	433,2
2. Versorgung u. Ruhegehälter (einschl. Kriegsbeschädigtenrenten)	127,0	119,0	119,7	909,2
3. An die Länder für Schutzpolizei	15,8	15,8	16,1	111,1
4. Soziale Ausgaben				
Sozialversicherung	46,7	34,5	35,4	260,4
Zuweisung an die knappschaftliche Pensionsversicherung	—	—	26,3	28,0
Kleinrentnerfürsorge	8,0	—	10,0	18,0
Krisenunterstützung für Arbeitslose	54,6	49,6	61,6	357,5
Wertschaffende Arbeitslosenfürsorge	3,2	0,7	0,2	6,3
An Reichsanstalt f. Arbeitsvermittl.	2,7	2,4	3,1	17,7
Schaffung von Arbeitsmöglichkeiten u. Verstärkung der Krisenfürsorge	[6] .	[6] .	22,0	[6] 46,0
Zur Erleichterung der Wohlfahrtslasten der Gemeinden (GdeVbde)	—	—	32,0	32,0
5. Reichsschuld				
Verzinsung und Tilgung	24,2	5,0	12,9	104,4
Außerordentliche Tilgung der schwebenden Schuld	—	—	245,0	245,0
Anleiheablösung	2,4	2,1	5,3	48,2
6. Sächliche und sonstige Ausgaben (außer Kriegslasten)				
Heer	19,9	20,1	24,9	138,7
Marine	9,6	12,4	12,0	69,4
Verkehrswesen	14,6	11,6	10,5	75,1
Übrige Reichsverwaltung	[6] 22,2	[6] 40,9	[6] 24,7	[6] 162,2
7. Innere Kriegslasten[4]	16,3	22,4	53,3	196,9
8. Äußere Kriegslasten				
Reparationszahlungen[5]	6,1	6,0	6,8	428,6
Sonstige äußere Kriegslasten	9,1	8,3	8,3	62,5
Summe der Ausgaben	442,0	411,7	791,6	3 750,4
Ergibt Mehreinnahme (+), Mehrausgabe (—)	+259,1	—56,8	—81,3	+ 38,9
B. Außerordentlicher Haushalt.				
I. Einnahmen				
1. Verwaltungseinnahmen	0,5	0,3	0,8	10,6
2. Aus Anleihen	—	—	—	—
3. Aus dem Verkauf von Vorzugsaktien der Deutschen Reichsbahn-Gesellsch.	—	—	1,2	15,9
Summe der Einnahmen	0,5	0,3	2,0	26,5
II. Ausgaben				
1. Wohnungs- und Siedlungswesen	2,0	1,4	0,5	9,0
2. Verkehrswesen	8,4	7,4	7,5	46,8
3. Rückkauf v. Schuldverschreibungen usw. des Reichs	0,7	1,9	—	2,6
4. Innere Kriegslasten	1,3	0,9	5,0	11,3
5. Übrige Reichsverwaltung	2,0	— 2,1	0,1	11,7
Summe der Ausgaben	14,4	9,5	13,1	81,4
Ergibt Mehreinnahme (+), Mehrausgabe (—)	—13,9	— 9,2	—11,1	— 54,9

Figure 6: Detailed federal budget decomposition for selected months in the fiscal year 1931/1932, published in *Wirtschaft und Statistik* from January 1932.

Appendix C Constructing a monthly dataset of the German federal government

In this appendix, we not only specify how we group the various budget items on the expenditure and revenue sides but also outline how we construct the nominal government spending and tax revenues variables for estimating the macroeconomic effects of austerity. The grouping becomes necessary because the budget item's declarations and compositions change over time in the statistical publications (April 1927 - December 1931: Statistisches Jahrbuch für das Deutsche Reich; January 1932 - February 1935: Wirtschaft und Statistik). The budget items are listed by its original German term. The abbreviation "EO" in parenthesis behind selected items indicates that the item is part of the extraordinary budget.

Appendix C.1 Total expenditures

Total federal revenues are split into nine broad categories. The monthly nominal government spending variable corresponds to the sum of "Remuneration of civil servants and employees" (3E), "Housing, assets "(4E), "Military, police, transportation"(5E), and "Other expenditure" (9E).

1E Transfers to federal states

Steuerüberweisungen an die Länder
Überweisungen an die Länder

2E Social transfers

Sozialversicherung
Zuweisung an die knappschaftliche Pensionsversicherung
Für die Befreiung der Untertagearbeiter von der Arbeitslosenversicherung
Erwerbslosenfürsorge (unterstützende)
Kleinrentnerfürsorge
Krisenunterstützung für Arbeitslose
Arbeitslosenhilfe und Arbeitsbeschaffung
Schaffung von Arbeitsmöglichkeiten und Verstärkung der Krisenfürsorge
Wertschaffende Arbeitslosenfürsorge
Arbeitslosenversicherung
An Reichsanstalt für Arbeitsvermittlung und Arbeitslosenversicherung
Freiwilliger Arbeitsdienst usw.

Fettverbilligung
Zur Erleichterung der Wohlfahrtslasten der Gemeinden
Arbeitslosenversicherung (EO)
Wertschaffende Arbeitslosenfürsorge (EO)
Erwerbslosenfürsorge (produktive) (EO)

3E Remuneration of civil servants and employees

Besoldungen
Pensionen
Bezüge der Beamten und Angestellten (ausschl. Ruhegehälter)
Versorgung und Ruhegehälter einschl. der Kriegsbeschädigtenrenten

4E Housing, assets

Vorstädtische Kleinsiedlung für Erwerbslose
Wohnungs- und Siedlungswesen
Beteiligung an der Dresdner Bank
Beteiligung an der Akzept-Bank
Stützung der Landesbank der Rheinprovinz
Erwerb von Gelsenkirchen-Aktien
Wohnungs- und Siedlungswesen (EO)

5E Military, police, transportation

Heer - sächliche Ausgaben
Marine - sächliche Ausgaben
Verkehrswesen
Schutzpolizei
Verkehrswesen (EO)

6E Debt and coverage of public deficit

Reichsschuld: Verzinsung und Tilgung
Reichsschuld: Anleiheablösung
Ausserordentliche Tilgung der schwebenden Schuld
Tilgung in Ausführung des Gesetzes vom 23.10.1930
Rücklauf von Schuldverschreibungen
Zur Deckung der Fehlbeträge früherer Jahre
Rücklauf von Schuldverschreibungen usw. des Reiches (EO)
Einlösung von Schatzanweisungen usw. (EO)

7E War burdens

Innere Kriegslasten

Sonstige äußere Kriegslasten
Innere Kriegslasten (EO)

8E Reparations

Reparationszahlungen
Reparationszahlungen (EO)

9E Other expenditure

Münzprägung
Sonstiges
An die Bank für internationalen Zahlungsabgleich (Sondereinlage) (EO)
Zuschuß an den ordentlichen Haushalt (EO)
Sonstiges (EO)

Appendix C.2 Total revenues

Total federal revenues are split into four broad categories. The monthly nominal tax revenues variable is constructed as "Taxes, duties, levies" (1R) minus the sum of "Transfers to federal states" (1E), "Social transfers" (2E), and "Reichsschuld: Verzinsung und Tilgung"[12] in category 6E.

1R Taxes, duties, levies

Aus Steuern, Zöllen und Abgaben

2R Capital income

Aus der Münzprägung
Aus Anleihe
Anteil des Reichs am Reingewinn der Reichsbank
Überschuss der Post und Reichsdruckerei
Vorzugsdividende aus den Vorzugsaktien der Deutschen
Reichsbahn-Gesellschaft
Verzinsung aus den Vorzugsaktien der Deutschen Reichsbahn-Gesellschaft
Einnahmen aus Verkauf von Vorzugsaktien der Deutschen
Reichsbahn-Gesellschaft
Erlös aus der 5 % Anleihe von 1927 (EO)
Aus Anleihen und Betriebsmitteln (EO)
Aus dem Verkauf von Vorzugsaktien der Deutschen Reichsbahn-Gesellschaft (EO)

[12]Translation: *Reich debt: interest and debt repayments*

3R Extraordinary taxes

Reparationssteuer der Deutschen Reichsbahn-Gesellschaft

4R Other revenue

Sonstige Verwaltungseinnahmen
Verwaltungseinnahmen (EO)
Sonstiges (EO)

Appendix D Federal versus local government spending

In this appendix, we discuss how government spending in the Weimar Republic was divided between the federal government and local governments. We show that Brüning's austerity measures affected not only the federal government budget, but, in the same manner, the finances of states and municipalities. Hence, budget cuts at the federal level were not compensated by the local government.

In a first step, we use data from Ritschl (2002b) to examine the relative importance of federal and local authorities in total government expenditures. Table 2 provides an overview of how total expenditures were distributed across federal and local governments. Until 1933 the shares are remarkably constant, with the Reich accounting for about 40 % of total expenditures, while states and municipalities accounted for the remaining 60 %. Only in the last year of the sample does this pattern reverse.

Table 2: Share in spending (%) by Reich and local government

Year	Reich	Local
1925	37.19	62.81
1926	37.59	62.41
1927	36.78	63.22
1928	36.3	63.7
1929	38.21	61.79
1930	39.47	60.53
1931	38.16	61.84
1932	39.03	60.97
1933	42.54	57.46
1934	52.03	47.97

Notes: Ratios of government spending by Reich and local government. Data comes from Ritschl (2002b), Table A.12 "Die Ausgaben und Einnahmen des öffentlichen Sektors nach Kalenderjahren 1925 - 1938 (Mio. RM), II Sachausgaben und Transfers".

The fact that spending at both governmental levels was similarly affected by Brüning's austerity measures is illustrated in Figure 7, which plots nominal expenditures for the federal government as well as for all states and municipalities over time. Both series show drastic cutbacks in spending after 1930, which is consistent with the discussion in Galofré-Vilà et al. (2021) that the austerity policies trickled down from federal to local government. Between 1930 and 1932, Reich expenditures

decreased by 28 %, while the corresponding drop at the local level was similarly high at 26 %. The data clearly does not support the idea that spending cuts at the Reich level were offset by expansionary fiscal policy at the local level. What is equally interesting from Figure 7 is that expenditures by states and municipalities did not revert back to their pre-crisis levels, but remained low. Hence, given these considerations, investigating the economic impact of austerity with federal government data is ideal for two reasons. First, federal government data is available at the monthly frequency, while local government data exists only at annual basis. Second, federal budget data is not confounded by offsetting trends at the local government level.

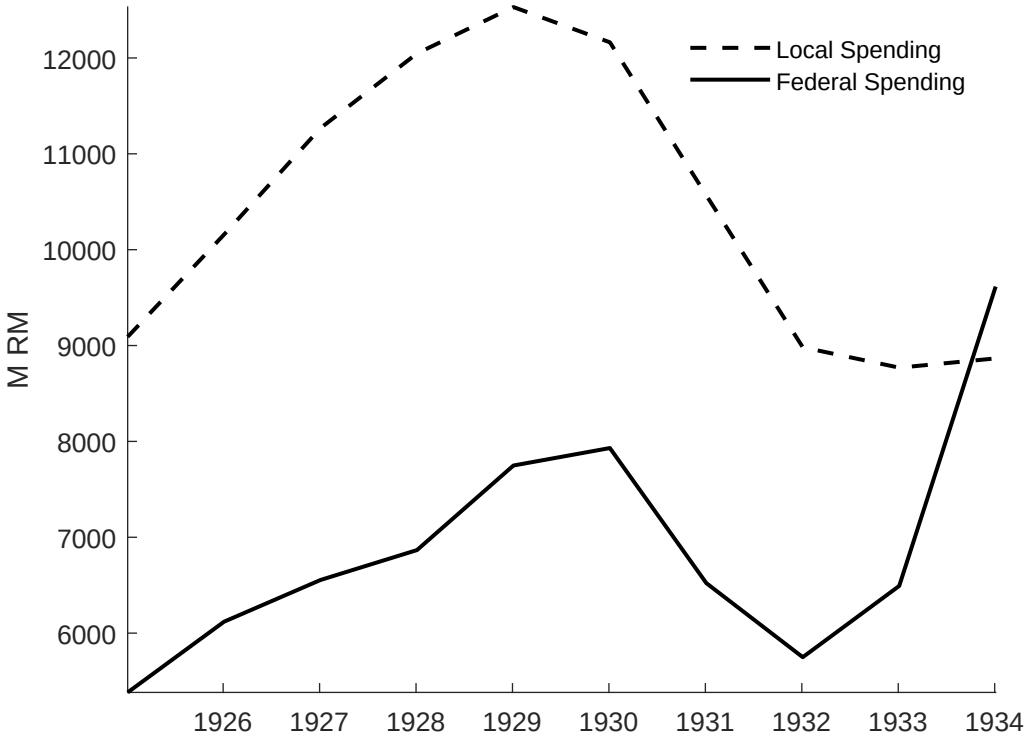

Figure 7: Nominal expenditures by the federal government and local authorities in million Reichsmark. Data comes from Ritschl (2002b), Table A.12, "Die Ausgaben und Einnahmen des öffentlichen Sektors nach Kalenderjahren 1925-1938 (Mio. RM)", "Sachausgaben und Transfers, Reich, LGH"

Appendix E German original text of translated statements

In this appendix, we provide the German original texts of the translated quotes.

- "(...) from the disease we could create our weapon."
  - Own translation. German original text: "Aus der Krankheit konnten wir unsere Waffe machen."
- "(...) the catastrophic world economic crisis has also positive effects for us in terms of reparations."
  - Own translation. German original text: "(...) die katastrophale Weltwirtschaftskrise reparationspolitisch für uns auch ihr Gutes habe."
- (...) "should not think, after accepting President Hoover's proposal, that all hardship in Germany would be relieved (...). (...) President Hoover's sign of confidence can only bear fruits, if the German people is determined to continue on her own strength the path of austerity in all areas."
  - Own translation. German original text: "Zu glauben, daß nach Annahme des Vorschlags des Präsidenten Hoover alle Nöte in Deutschland beseitigt wären, wäre die gefährlichste Illusion, in der sich das deutsche Volk wiegen könnte (...). (...) Der Vertrauensbeweis, der in dem weltgeschichtlichen Schritt des Präsidenten Hoover liegt, kann nur Früchte tragen, wenn das deutsche Volk fest entschlossen ist, aus eigener Kraft den Weg der grössten Sparsamkeit auf allen Gebieten weiterzugehen."

Appendix F Data description

In this appendix, we describe the variables that we use to estimate the VAR model. The frequency of all data is monthly.

Consumer prices: The CPI comes from Wagemann (1935), p. 107, "Reichsindexziffern der Lebenshaltungskosten", "Lebenshaltung insgesamt" (1913/14 = 100).

Deposits: Deposits comes from Wagemann (1935), p. 139, "Einlagen deutscher Kreditinstitute" and is denoted in million Reichsmark. For estimation, the time series is deflated by dividing through the arithmetic mean of the CPI and the WPI. The missing entries for December and January in each year are linearly interpolated.

Exchange rate GBP/RM: The exchange rate is retrieved from the Archival Currency Converter 1916–1940 provided from the University of Melbourne (https://canvasresources-prod.le.unimelb.edu.au/projects/CURRENCY_CALC/).

Industrial production: Industrial production is taken from Wagemann (1935), p. 52. The index is chained to 1928 and seasonally-adjusted for estimation.

Interest rate: The Reichsbank discount rate (Reichsbankdiskontsatz) is retrieved from Wagemann (1935), p. 109.

Government spending: Government spending is constructed from our newly assembled dataset on the German government budget. Appendix C contains the details. For estimation, the time series is seasonally adjusted and deflated by dividing through the arithmetic mean of the consumer price index (CPI) (Wagemann, p. 107) and the wholesale price index (WPI) (Wagemann, p. 99) to capture prices' demand and supply side.

GDP per capita: Monthly GDP per capita comes from Albers (2018), who constructs time series of seasonally adjusted real economic activity for a large panel of countries during the Great Depression. For details, we refer to his description of the estimation process. The basic idea is to estimate a common latent factor from a large number of monthly time series from Wagemann (1935) and use the estimated factor loadings to assign weights to the individual series.

Unemployment rate: The unemployment rate is computed as the ratio of unemployed over the labor force. Unemployment data comes from Humann (2011). The labor force is computed as the sum of unemployment and employment. Historical employment data for Germany is given in Pierenkemper (2015) on p. 145.

Tax revenues: Tax revenues are constructed from our newly assembled dataset on the German government budget. Appendix C contains the details. For estimation, the time series is seasonally adjusted and deflated by dividing through the arithmetic mean of the CPI and the WPI.

Wholesale prices: The WPI comes from Wagemann (1935), p. 99, "Indexziffern der Großhandelspreise", "Großhandelspreise insgesamt" (1913 = 100).

Appendix G Bayesian estimation

We employ a natural conjugate Normal inverse Wishart prior as outlined, for example, in Kadiyala and Karlsson (1997). The VAR model with n endogenous variables and p lags is given as:

$$Y = XB + U \quad \text{or} \quad y = (I_n \otimes X)b + u$$

with $y = vec(Y)$, $X = I_n \otimes X$, $b = vec(B)$, and $u = vec(U)$.

The prior for the VAR coefficients b is given by

$$b \sim \mathcal{N}(b_0, \Sigma \otimes \Phi_0).$$

b_0 is an $n(np+1) \times 1$ vector, Φ_0 is a $np+1 \times np+1$ diagonal matrix, and Σ is the VAR residual variance-covariance matrix. For b_0, we use values of 0 for cross variable coefficients and own first lag coefficients of all continuous variables, the austerity variable, the constant, and the crisis dummy. For Φ_0, we set for own and cross lag terms the variance as $\sigma^2_{n_{ij}} = \left(\frac{1}{\sigma_j^2}\right)\left(\frac{\lambda_1}{p^{\lambda_3}}\right)^2$ and the variance for the constant as $\sigma_c^2 = (\lambda_1\lambda_4)^2$, where σ_j^2 is the residual variance for variable j in the VAR model, approximated by univariate autoregressive regressions. λ_1 controls the overall tightness of the prior, λ_3 controls the lag decay, and λ_4 controls the tightness of the constant. We set $\lambda_3 = 1$ and $\lambda_4 = 10000$, and determine λ_1 with a marginal data density. The corresponding value for the baseline specification including GDP is $\hat{\lambda}_1 = 0.166$, and for the baseline specification including the unemployment rate, it is $\hat{\lambda}_1 = 0.245$.

The prior for the VAR covariance matrix Σ is given by

$$\Sigma \sim \mathcal{IW}(S_0, \alpha_0),$$

where S_0 is the $n \times n$ scale matrix for the prior, and α_0 stands for the prior degrees of freedom. We set $\alpha_0 = n + 2$ and S_0 as

$$S_0 = (\alpha_0 - n - 1) \begin{bmatrix} \sigma_1^2 & 0 & 0 & 0 \\ 0 & \sigma_2^2 & 0 & 0 \\ 0 & 0 & \ddots & 0 \\ 0 & 0 & 0 & \sigma_n^2 \end{bmatrix}.$$

The posterior is obtained as

$$\bar{B} = \bar{\Phi}[\Phi_0^{-1} B_0 + X'Y]$$

with

$$\bar{\Phi} = [\Phi_0^{-1} + X'X]^{-1}$$

and

$$\bar{\alpha} = T + \alpha_0$$

$$\bar{S} = Y'Y + S_0 + B_0 \Phi_0^{-1} B_0 - \bar{B} \bar{\Phi}^{-1} \bar{B}.$$

Draws from the posterior can be obtained by direct Monte Carlo sampling.

Appendix H Additional results

In this appendix, we show that our main results are robust to various alternatively plausible specifications, like variations of the austerity and crisis dummy, as well as alternative variables for economic activity and the price level.

Appendix H.1 Baseline specification: Impulse responses for VAR model with GDP

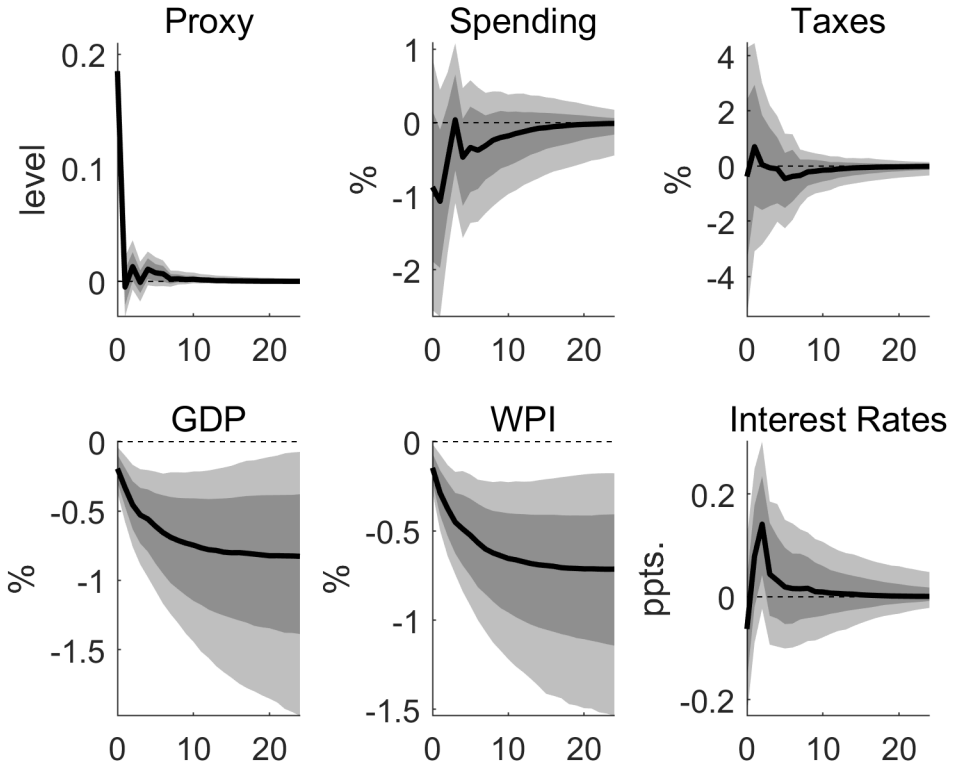

Figure 8: Impulse responses to an austerity shock. The solid line depicts the median impulse response of the specified variable to a one standard deviation austerity shock. Shaded bands denote 68 percent and 90 percent credible sets.

Appendix H.2 Baseline specification: Impulse responses for VAR model with unemployment rate

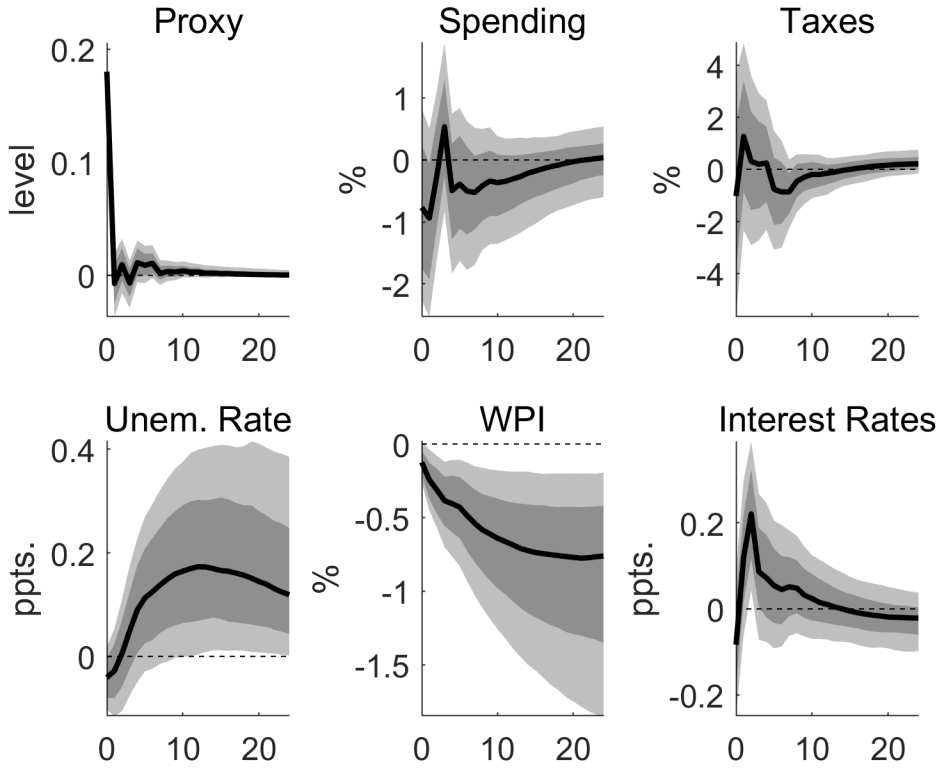

Figure 9: Impulse responses to an austerity shock. The solid line depicts the median impulse response of the specified variable to a one standard deviation austerity shock. Shaded bands denote 68 percent and 90 percent credible sets.

Appendix H.3 Robustness results: VAR model with GDP

Appendix H.3.1 Excluding emergency decree of June 1931 in austerity instrument

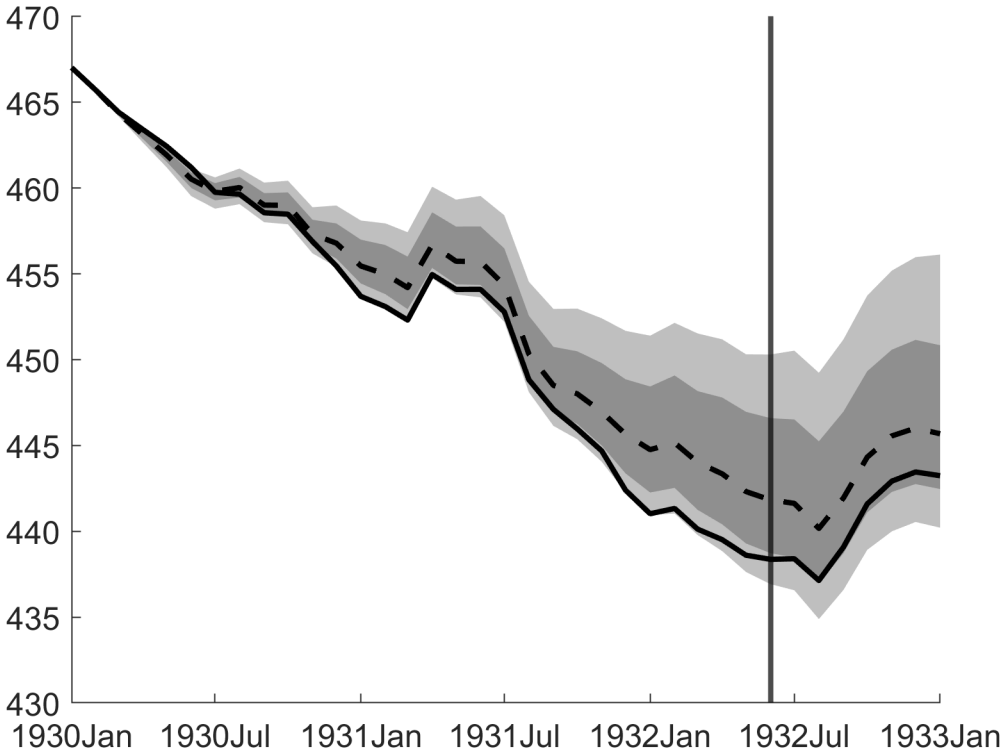

Figure 10: Counterfactual for GDP per capita (log x 100) computed between March 1930 and January 1933. The dashed line depicts median counterfactual GDP in the absence of austerity shocks, the dark-grey shaded area shows 68 percent credible bands, and the light-grey shaded area shows 90 percent credible bands. The bold line illustrates observed GDP. The vertical lines indicates the end of Brüning's tenure in office.

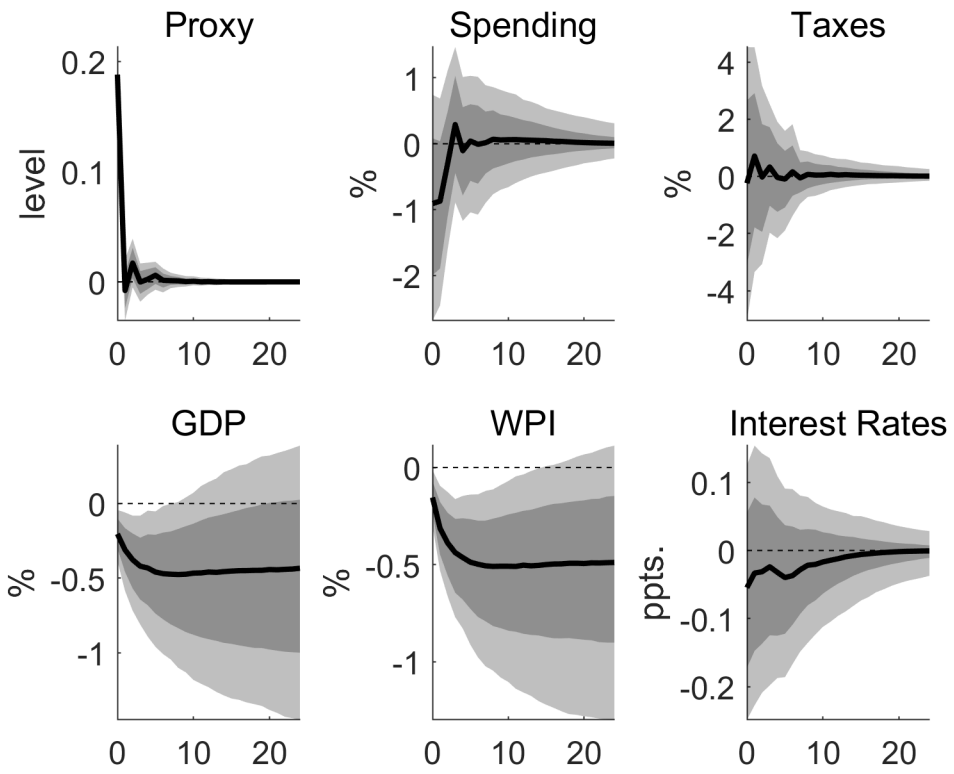

Figure 11: Impulse responses to an austerity shock. The solid line depicts the median impulse response of the specified variable to a one standard deviation austerity shock. Shaded bands denote 68 percent and 90 percent credible sets.

Appendix H.3.2 Excluding emergency decree of June 1931 in austerity instrument, five lags of crisis dummy (June 1931)

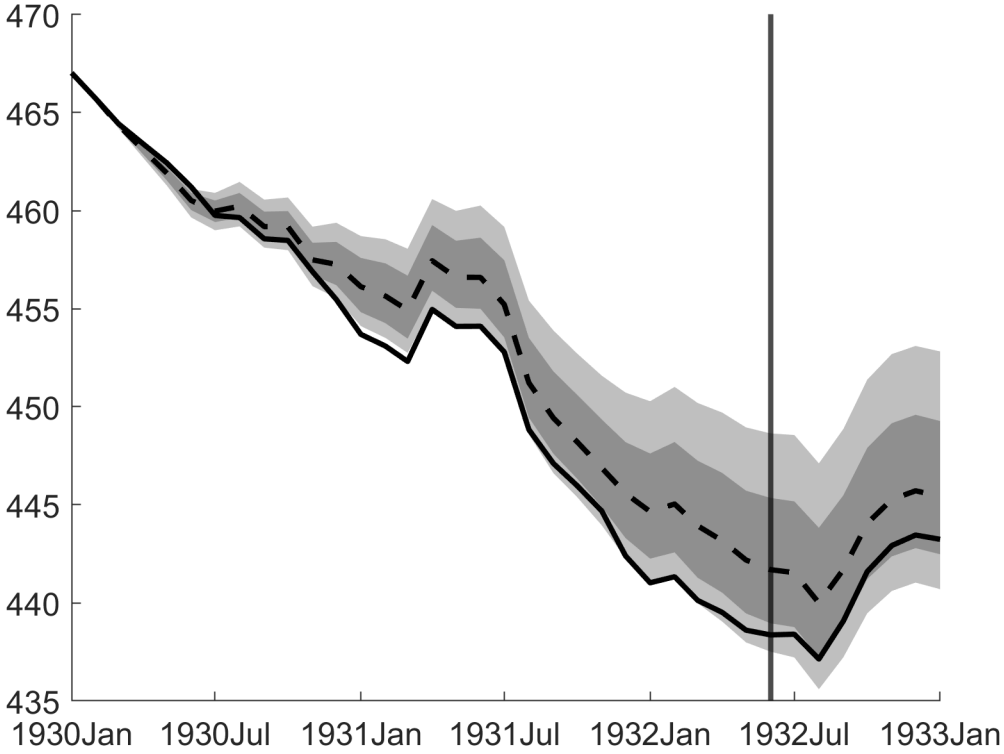

Figure 12: Counterfactual for GDP per capita (log x 100) computed between March 1930 and January 1933. The dashed line depicts median counterfactual GDP in the absence of austerity shocks, the dark-grey shaded area shows 68 percent credible bands, and the light-grey shaded area shows 90 percent credible bands. The bold line illustrates observed GDP. The vertical lines indicates the end of Brüning's tenure in office.

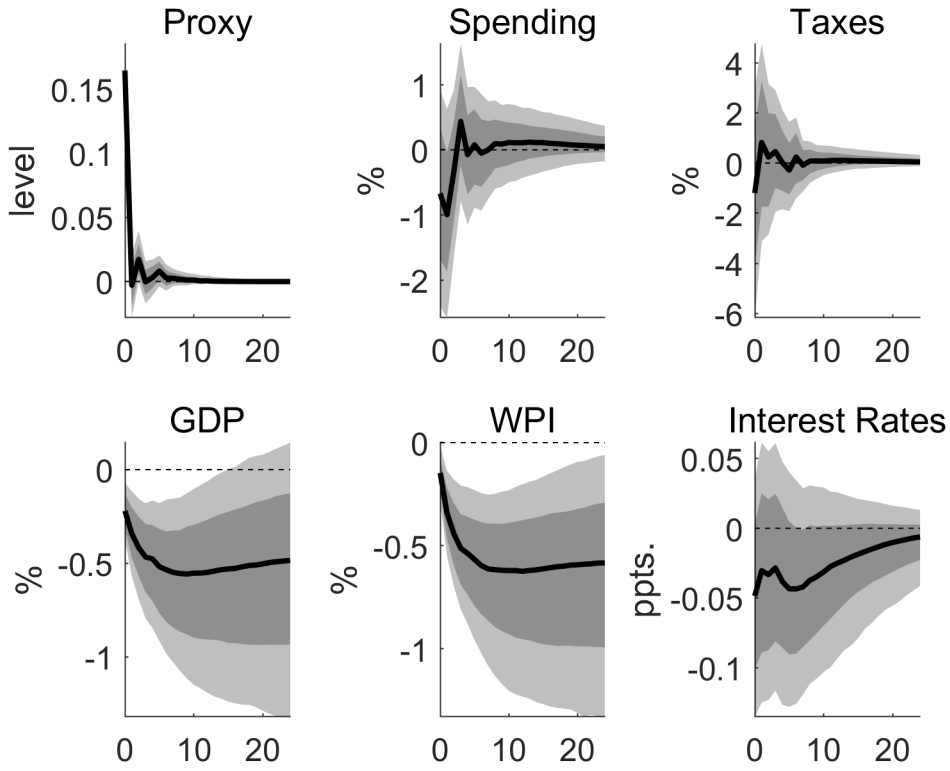

Figure 13: Impulse responses to an austerity shock. The solid line depicts the median impulse response of the specified variable to a one standard deviation austerity shock. Shaded bands denote 68 percent and 90 percent credible sets.

Appendix H.3.3 CPI, instead of WPI, as price indicator, and industrial production, instead of GDP

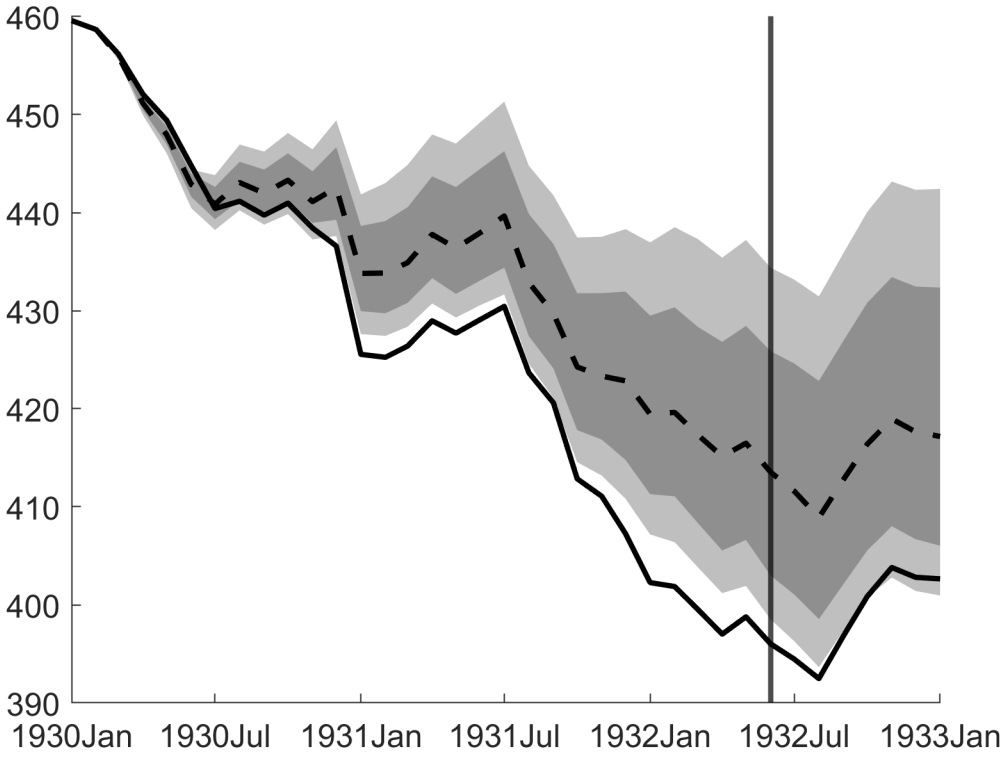

Figure 14: Counterfactual for industrial production (log x 100) computed between March 1930 and January 1933. The dashed line depicts median counterfactual industrial production in the absence of austerity shocks, the dark-grey shaded area shows 68 percent credible bands, and the light-grey shaded area shows 90 percent credible bands. The bold line illustrates observed industrial production. The vertical lines indicates the end of Brüning's tenure in office.

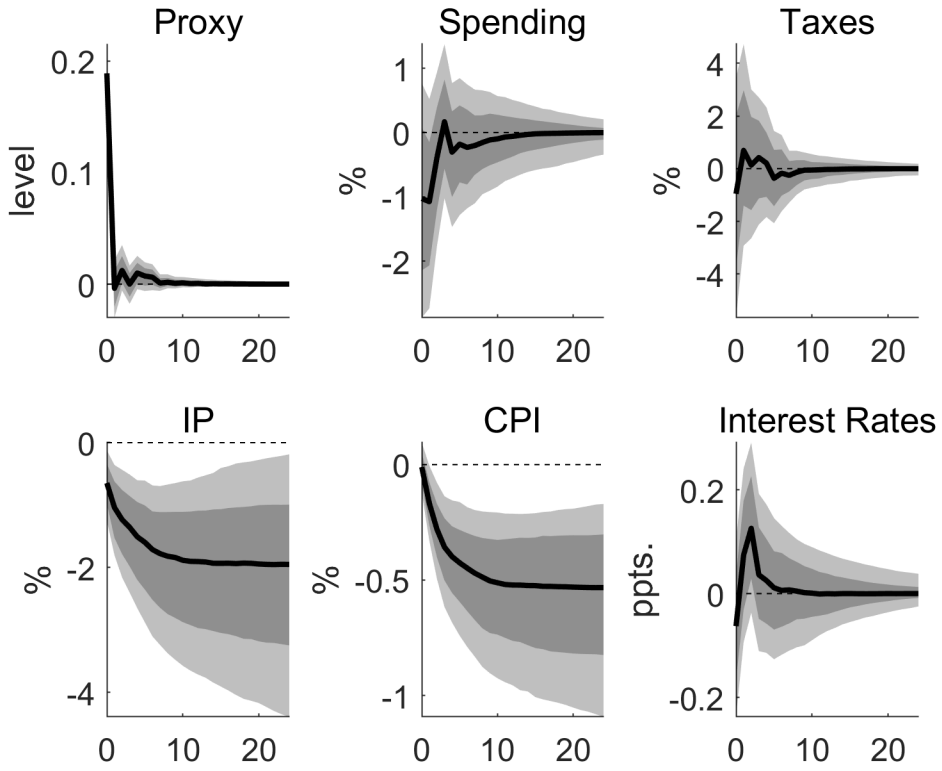

Figure 15: Impulse responses to an austerity shock. The solid line depicts the median impulse response of the specified variable to a one standard deviation austerity shock. Shaded bands denote 68 percent and 90 percent credible sets.

Appendix H.3.4 Estimation sample April 1927 to January 1933

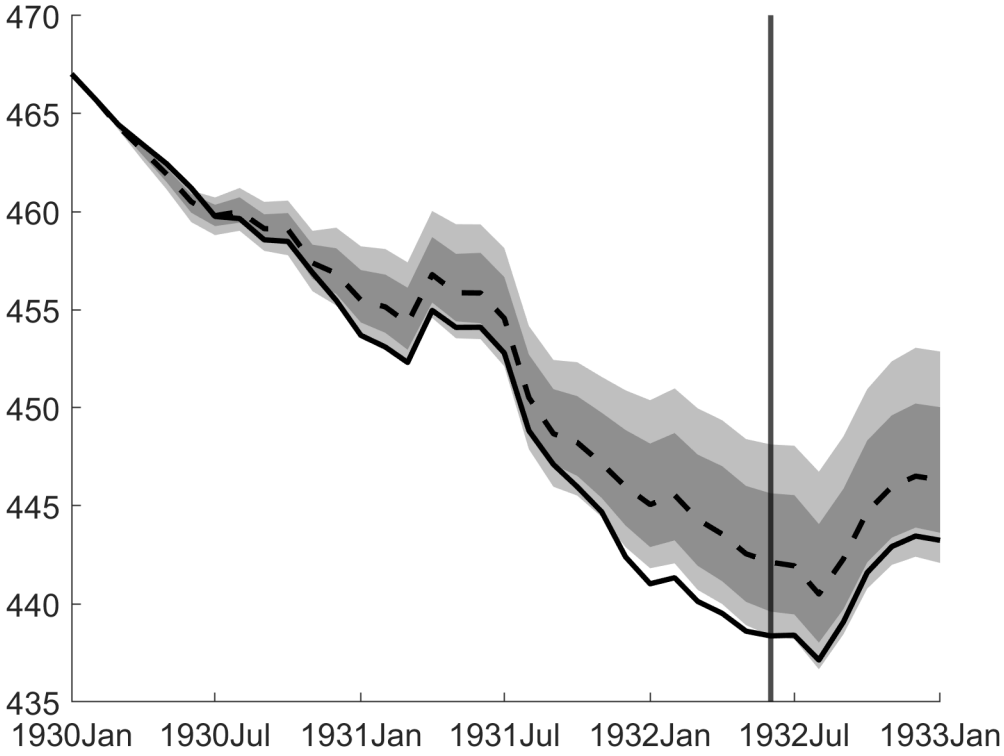

Figure 16: Counterfactual for GDP per capita (log x 100) computed between March 1930 and January 1933. The dashed line depicts median counterfactual GDP in the absence of austerity shocks, the dark-grey shaded area shows 68 percent credible bands, and the light-grey shaded area shows 90 percent credible bands. The bold line illustrates observed GDP. The vertical lines indicates the end of Brüning's tenure in office.

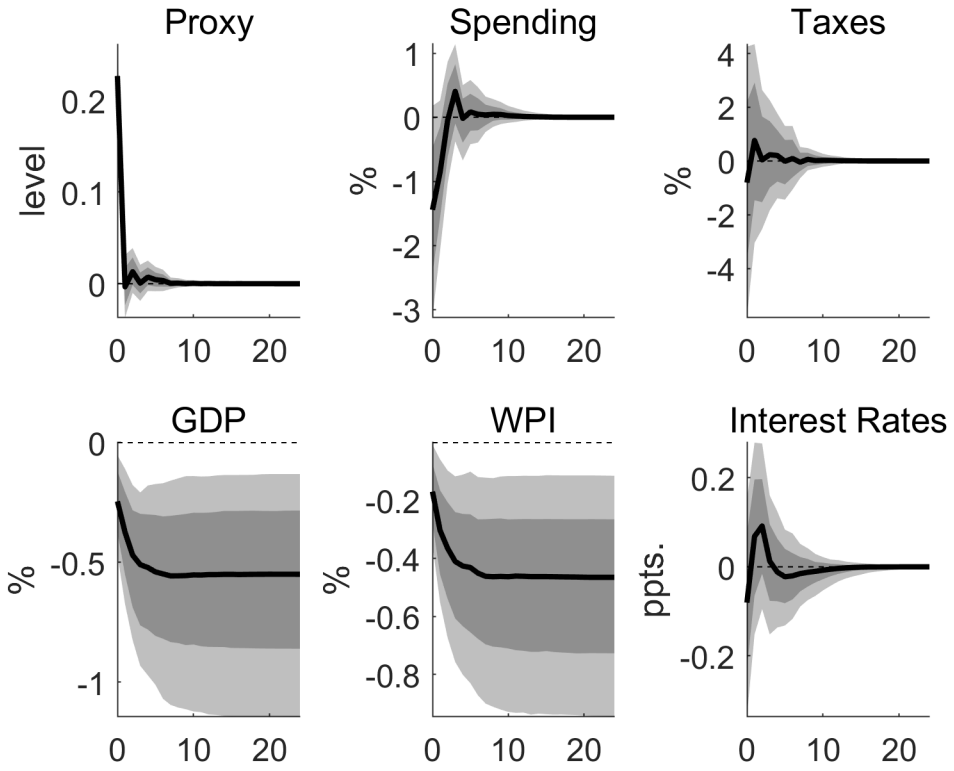

Figure 17: Impulse responses to an austerity shock. The solid line depicts the median impulse response of the specified variable to a one standard deviation austerity shock. Shaded bands denote 68 percent and 90 percent credible sets.

Appendix H.3.5 Controlling for deposits (estimation sample February 1928 to February 1935)

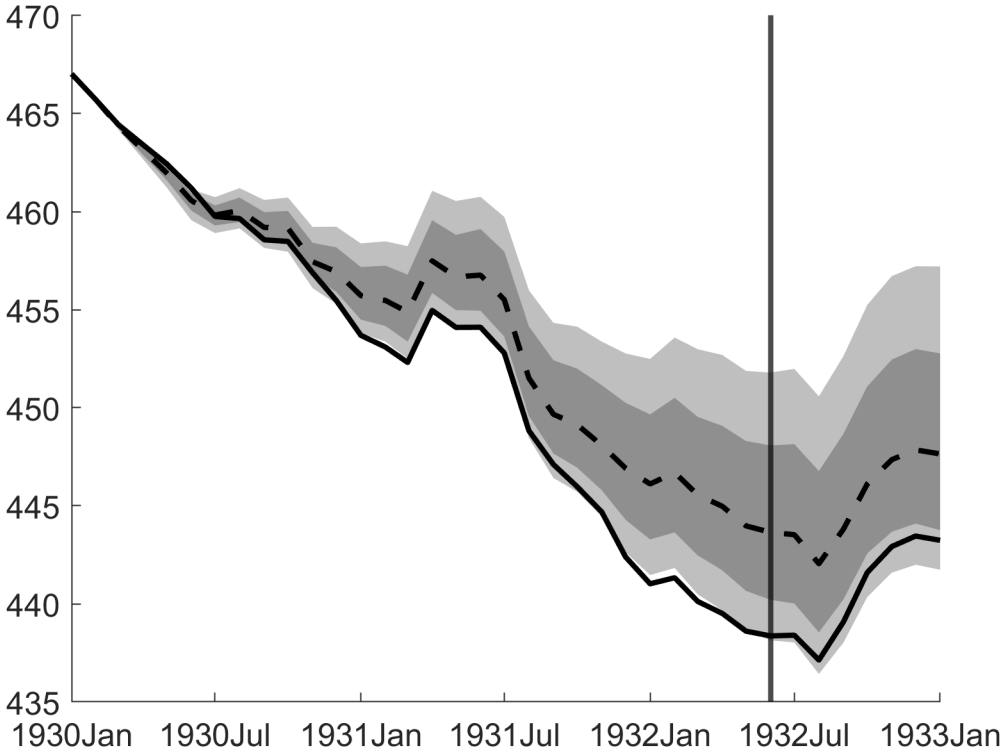

Figure 18: Counterfactual for GDP per capita (log x 100) computed between March 1930 and January 1933. The dashed line depicts median counterfactual GDP in the absence of austerity shocks, the dark-grey shaded area shows 68 percent credible bands, and the light-grey shaded area shows 90 percent credible bands. The bold line illustrates observed GDP. The vertical lines indicates the end of Brüning's tenure in office.

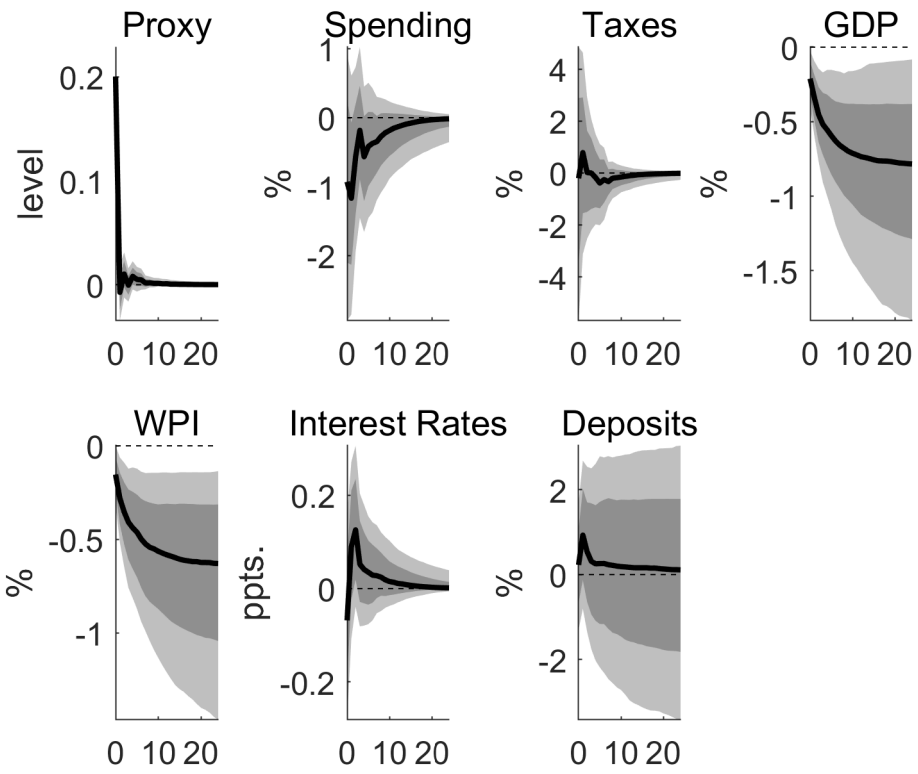

Figure 19: Impulse responses to an austerity shock. The solid line depicts the median impulse response of the specified variable to a one standard deviation austerity shock. Shaded bands denote 68 percent and 90 percent credible sets.

Appendix H.3.6 Controlling for exchange rate GBP/RM

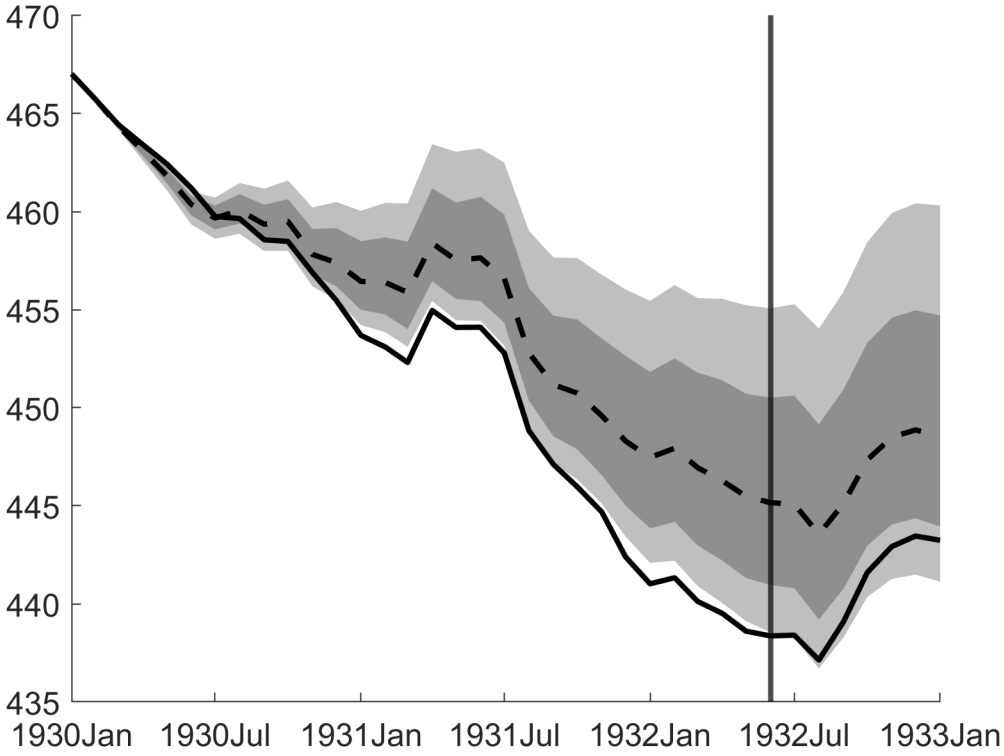

Figure 20: Counterfactual for GDP per capita (log x 100) computed between March 1930 and January 1933. The dashed line depicts median counterfactual GDP in the absence of austerity shocks, the dark-grey shaded area shows 68 percent credible bands, and the light-grey shaded area shows 90 percent credible bands. The bold line illustrates observed GDP. The vertical lines indicates the end of Brüning's tenure in office.

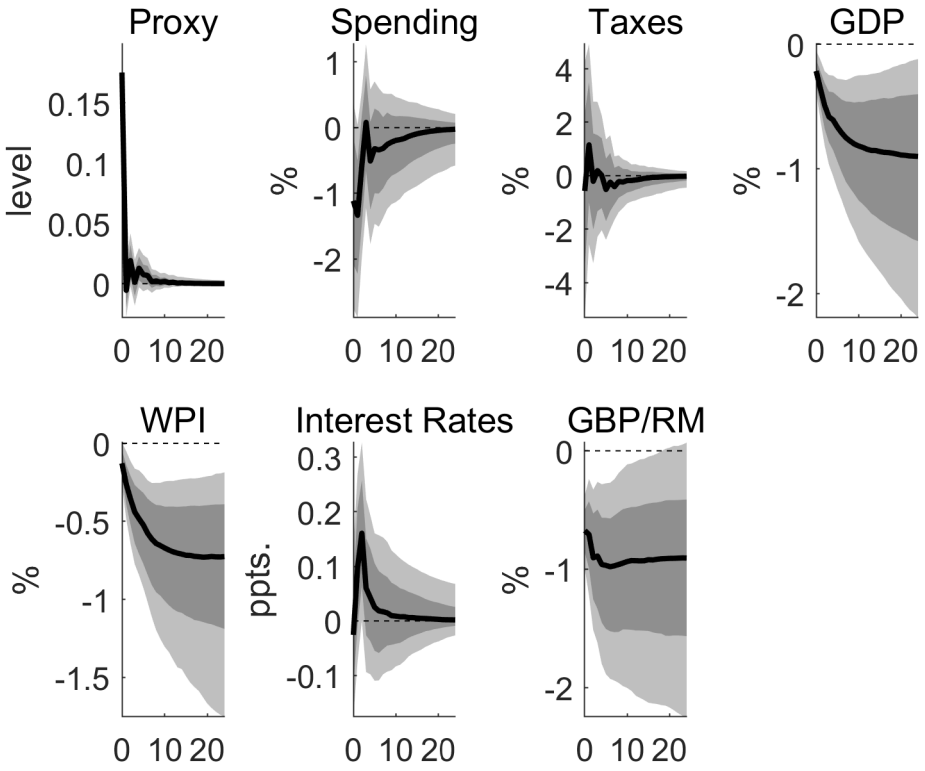

Figure 21: Impulse responses to an austerity shock. The solid line depicts the median impulse response of the specified variable to a one standard deviation austerity shock. Shaded bands denote 68 percent and 90 percent credible sets.

Appendix H.3.7 Excluding emergency decree of December 1931 in austerity instrument

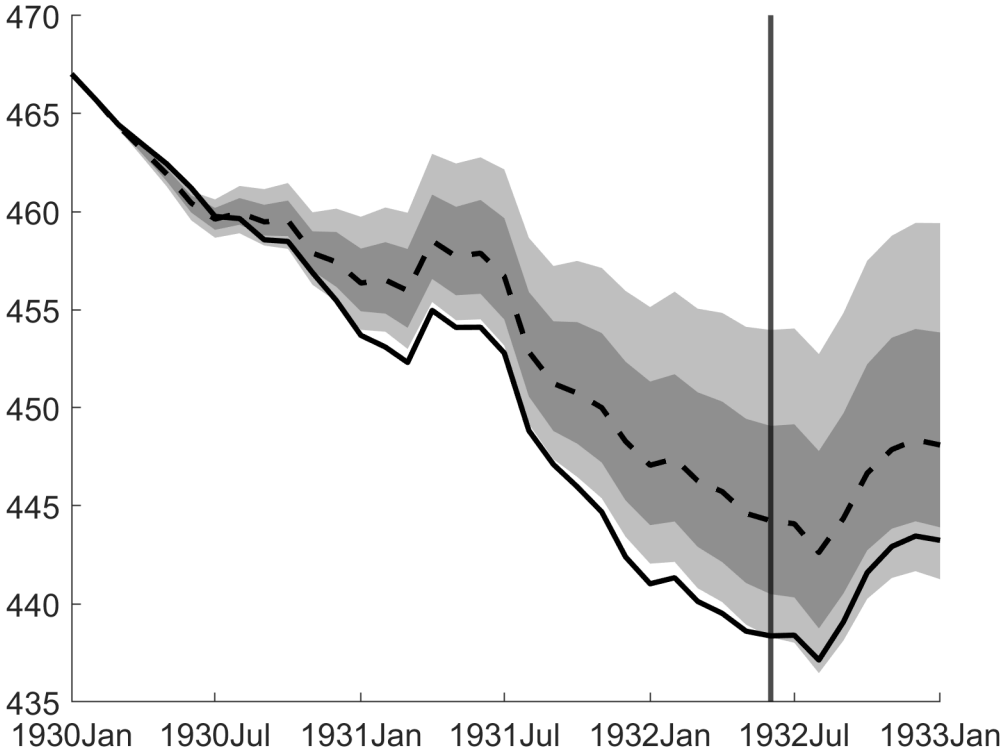

Figure 22: Counterfactual for GDP per capita (log x 100) computed between March 1930 and January 1933. The dashed line depicts median counterfactual GDP in the absence of austerity shocks, the dark-grey shaded area shows 68 percent credible bands, and the light-grey shaded area shows 90 percent credible bands. The bold line illustrates observed GDP. The vertical lines indicates the end of Brüning's tenure in office.

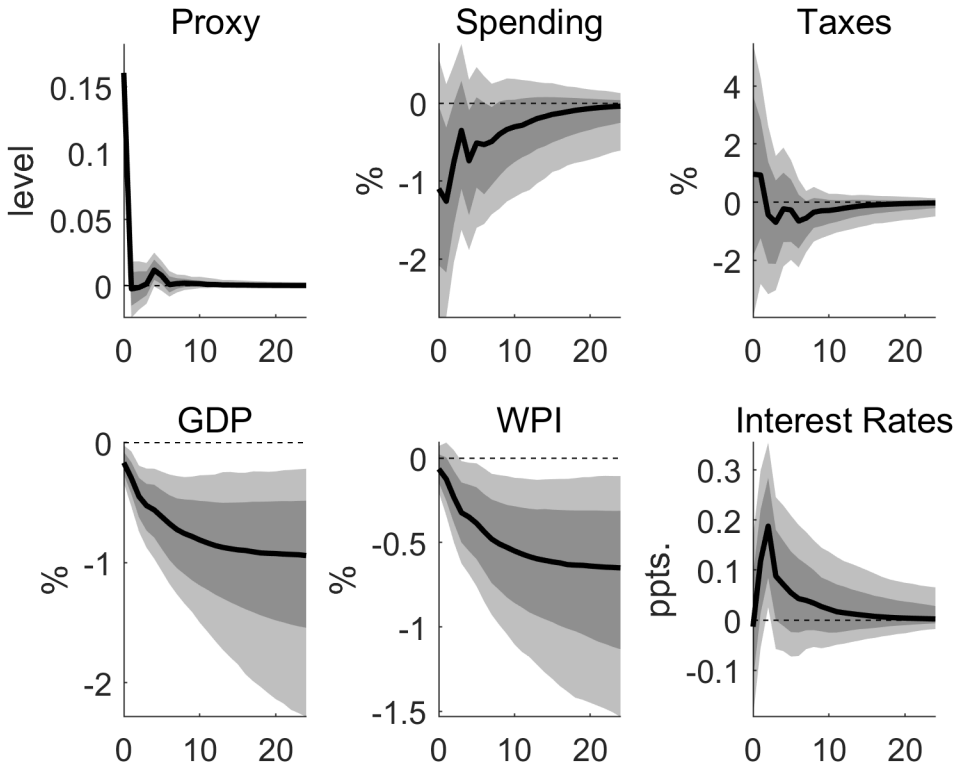

Figure 23: Impulse responses to an austerity shock. The solid line depicts the median impulse response of the specified variable to a one standard deviation austerity shock. Shaded bands denote 68 percent and 90 percent credible sets.

Appendix H.4 Robustness results: VAR model with unemployment

Appendix H.4.1 Excluding emergency decree of June 1931 in austerity instrument

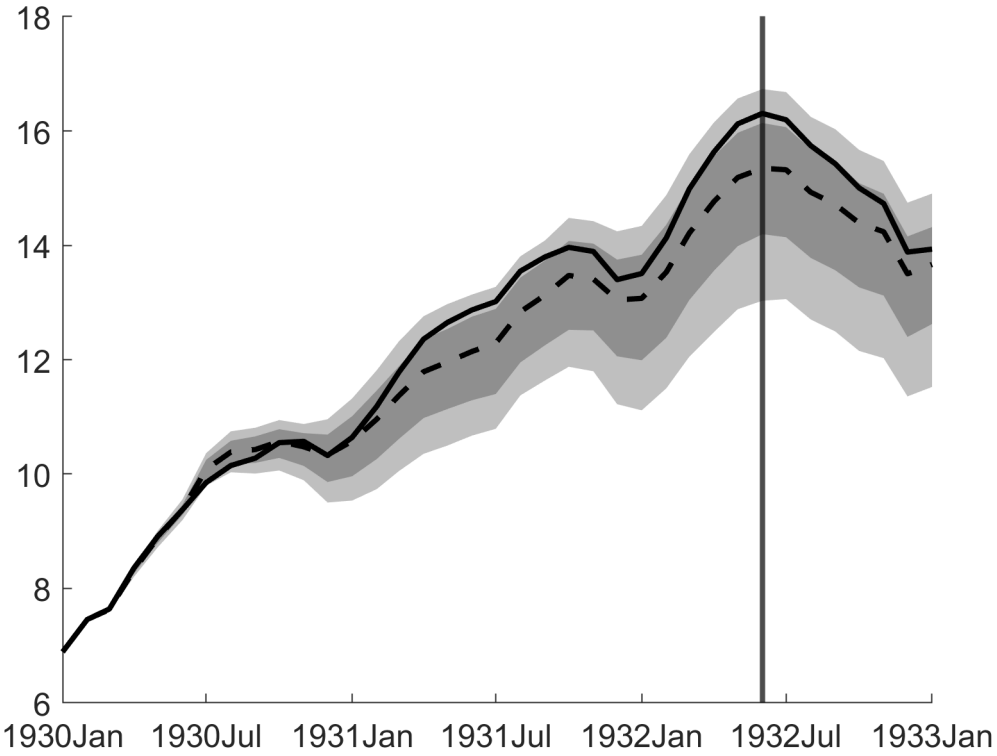

Figure 24: Counterfactual for the unemployment rate (%) computed between March 1930 and January 1933. The dashed line depicts median counterfactual unemployment in the absence of austerity shocks, the dark-grey shaded area shows 68 percent credible bands, and the light-grey shaded area shows 90 percent credible bands. The bold line illustrates the observed unemployment rate. The vertical lines indicates the end of Brüning's tenure in office.

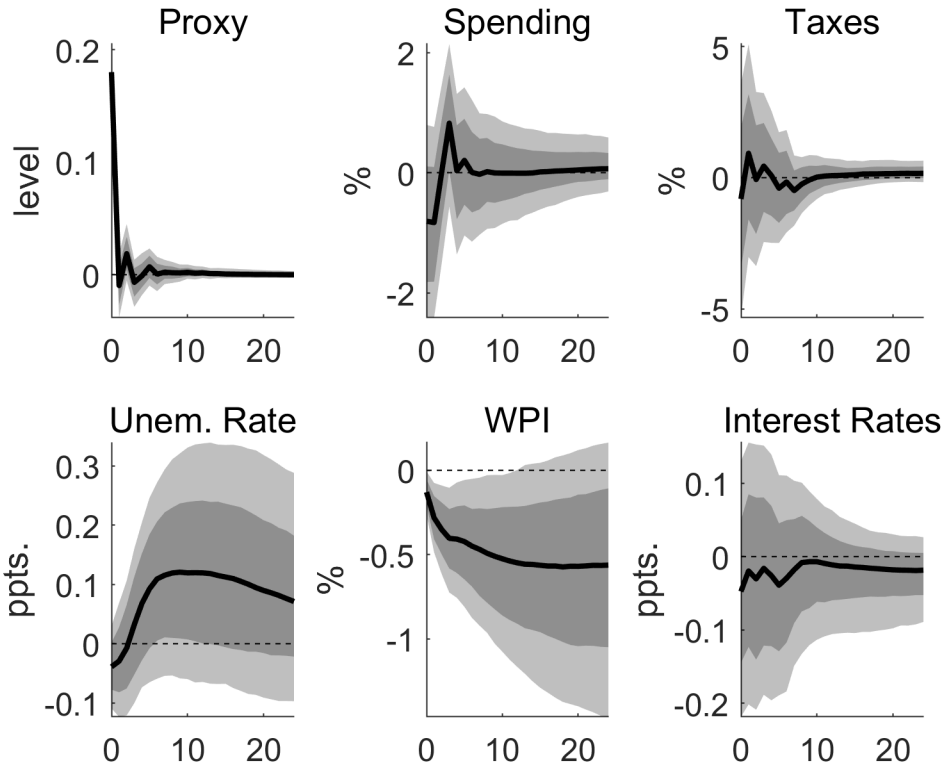

Figure 25: Impulse responses to an austerity shock. The solid line depicts the median impulse response of the specified variable to a one standard deviation austerity shock. Shaded bands denote 68 percent and 90 percent credible sets.

Appendix H.4.2 Excluding emergency decree of June 1931 in austerity instrument, five lags of crisis dummy (June 1931)

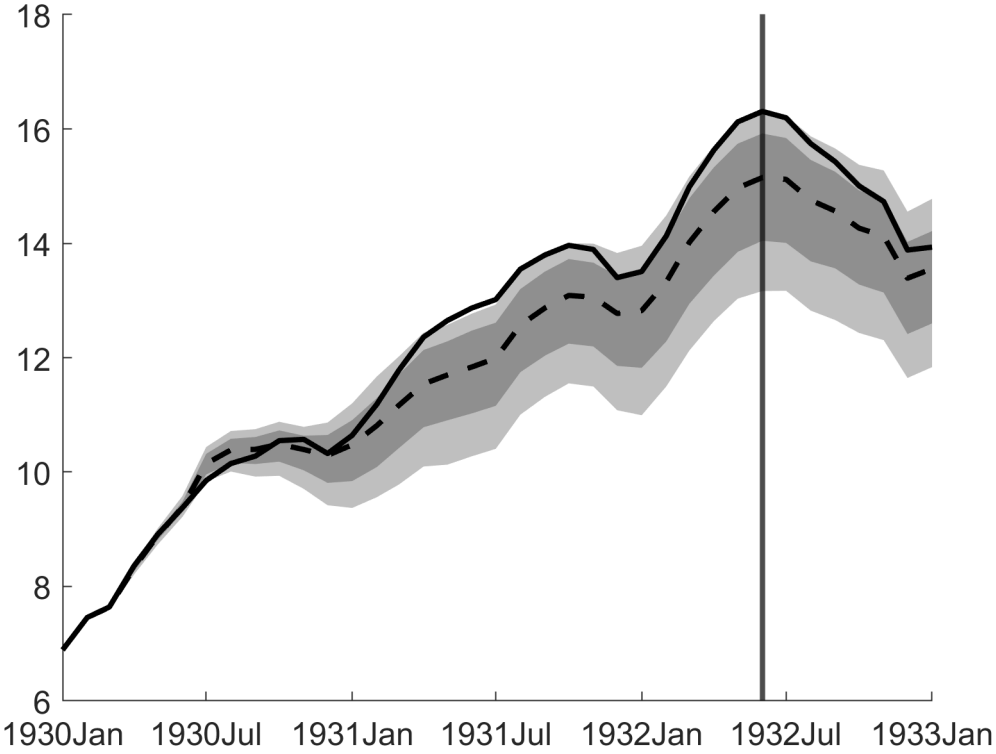

Figure 26: Counterfactual for the unemployment rate (%) computed between March 1930 and January 1933. The dashed line depicts median counterfactual unemployment in the absence of austerity shocks, the dark-grey shaded area shows 68 percent credible bands, and the light-grey shaded area shows 90 percent credible bands. The bold line illustrates the observed unemployment rate. The vertical lines indicates the end of Brüning's tenure in office.

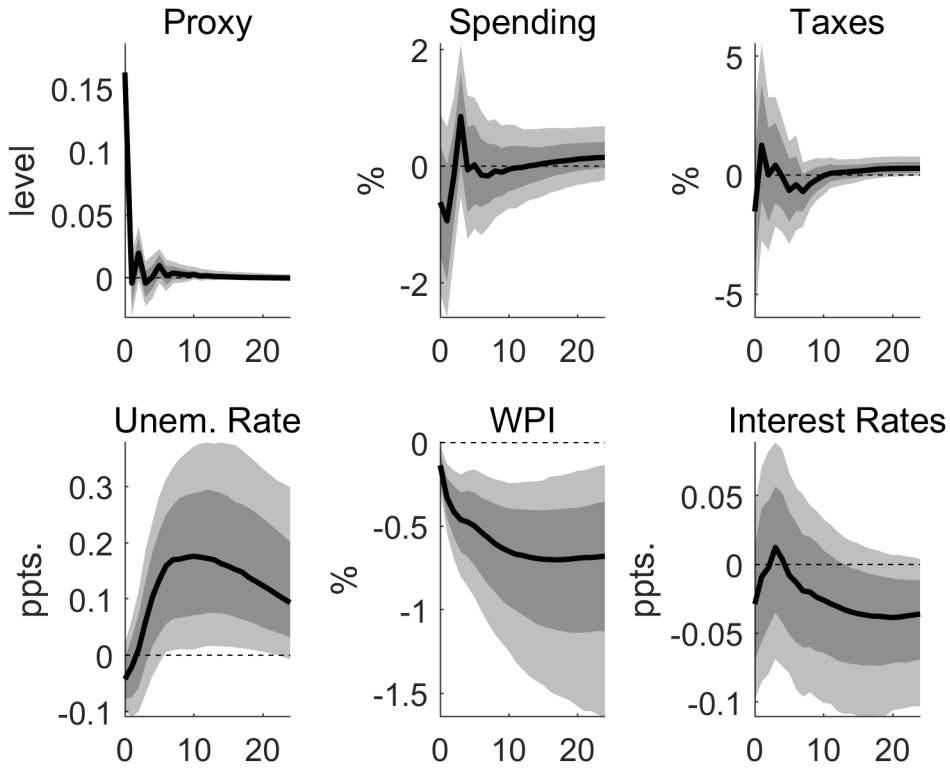

Figure 27: Impulse responses to an austerity shock. The solid line depicts the median impulse response of the specified variable to a one standard deviation austerity shock. Shaded bands denote 68 percent and 90 percent credible sets.

Appendix H.4.3 CPI, instead of WPI, as price indicator

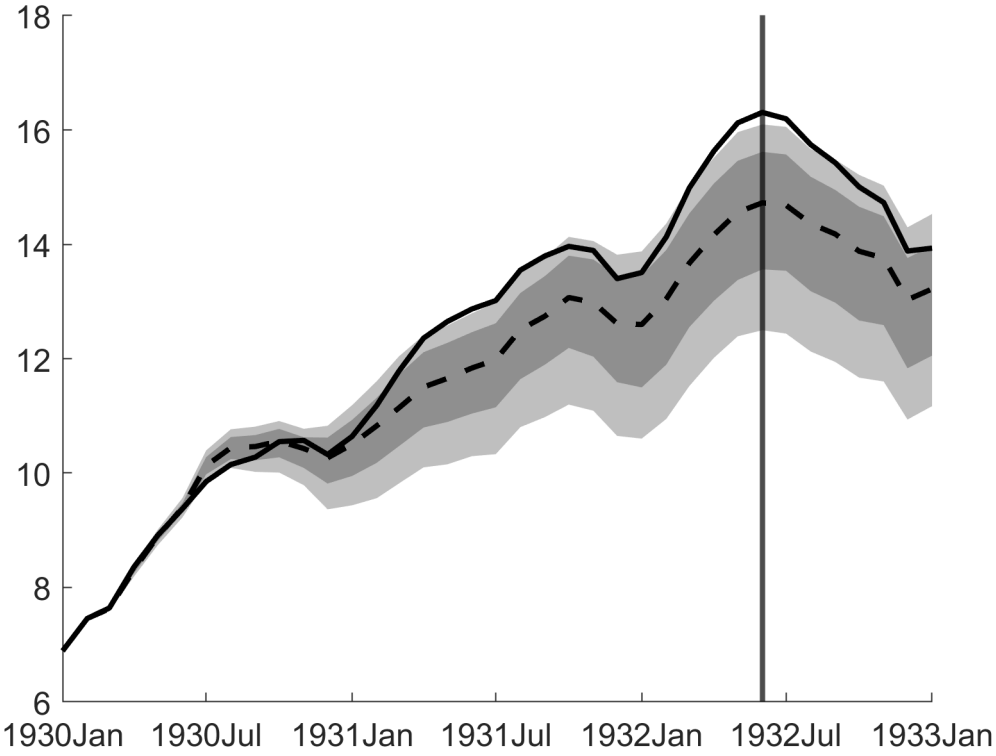

Figure 28: Counterfactual for the unemployment rate (%) computed between March 1930 and January 1933. The dashed line depicts median counterfactual unemployment in the absence of austerity shocks, the dark-grey shaded area shows 68 percent credible bands, and the light-grey shaded area shows 90 percent credible bands. The bold line illustrates the observed unemployment rate. The vertical lines indicates the end of Brüning's tenure in office.

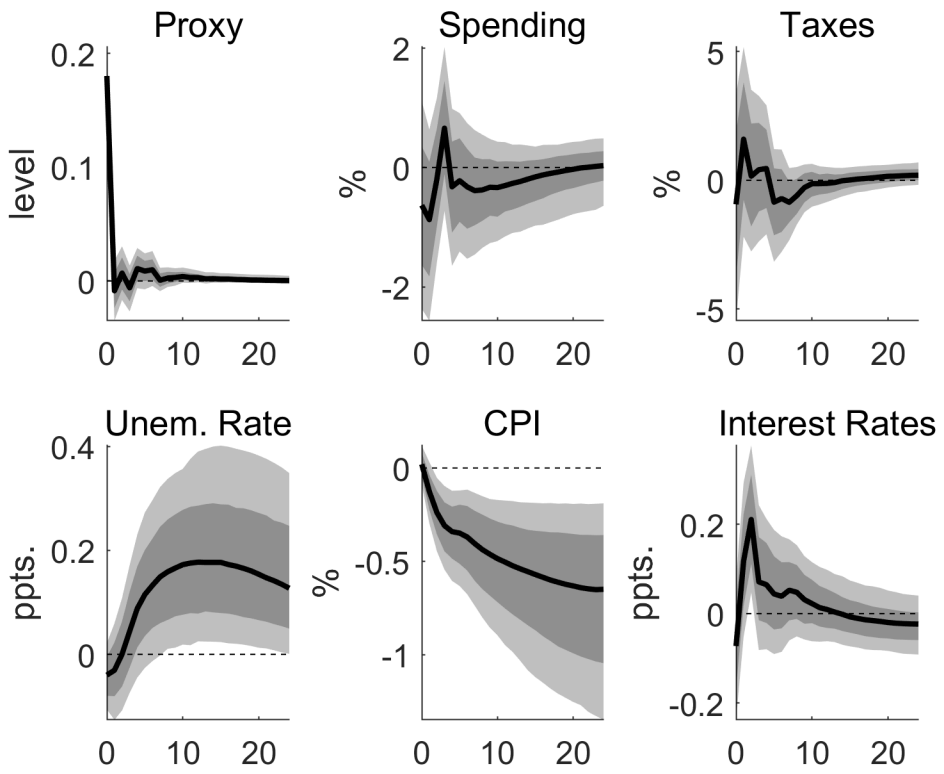

Figure 29: Impulse responses to an austerity shock. The solid line depicts the median impulse response of the specified variable to a one standard deviation austerity shock. Shaded bands denote 68 percent and 90 percent credible sets.

Appendix H.4.4 Estimation sample April 1927 to January 1933

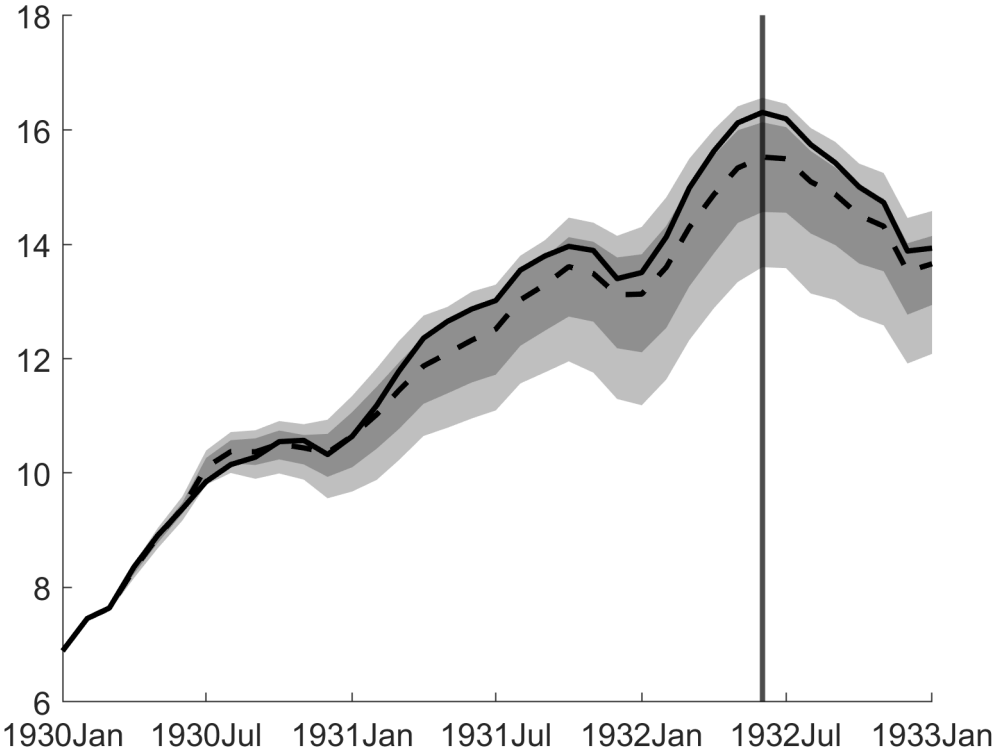

Figure 30: Counterfactual for the unemployment rate (%) computed between March 1930 and January 1933. The dashed line depicts median counterfactual unemployment in the absence of austerity shocks, the dark-grey shaded area shows 68 percent credible bands, and the light-grey shaded area shows 90 percent credible bands. The bold line illustrates the observed unemployment rate. The vertical lines indicates the end of Brüning's tenure in office.

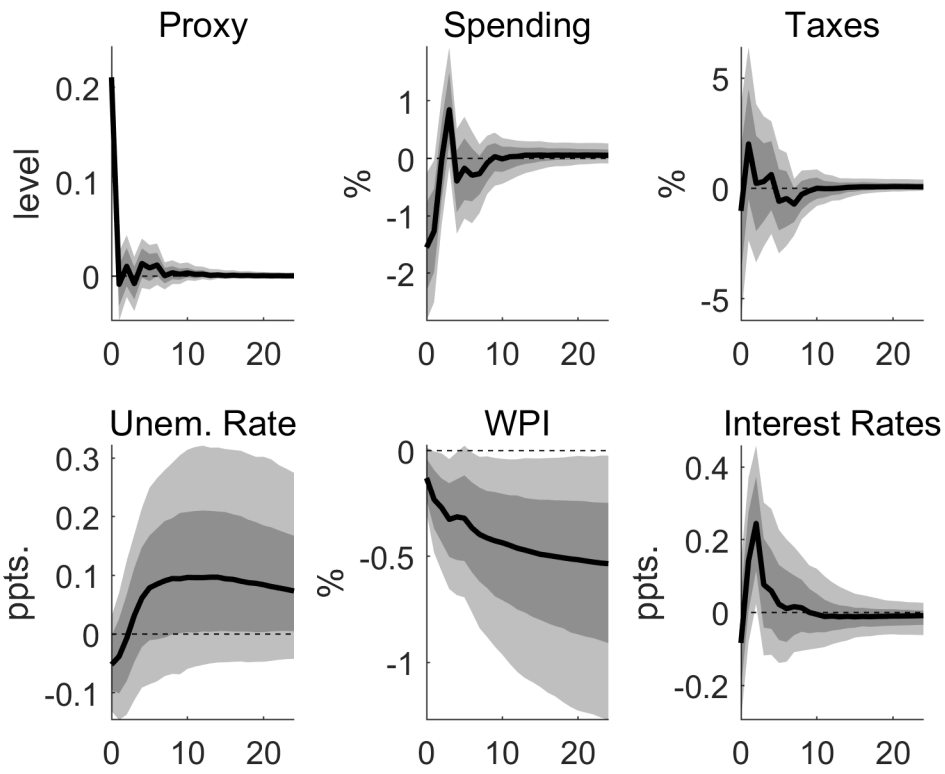

Figure 31: Impulse responses to an austerity shock. The solid line depicts the median impulse response of the specified variable to a one standard deviation austerity shock. Shaded bands denote 68 percent and 90 percent credible sets.

Appendix H.4.5 Controlling for deposits (estimation sample February 1928 to February 1935)

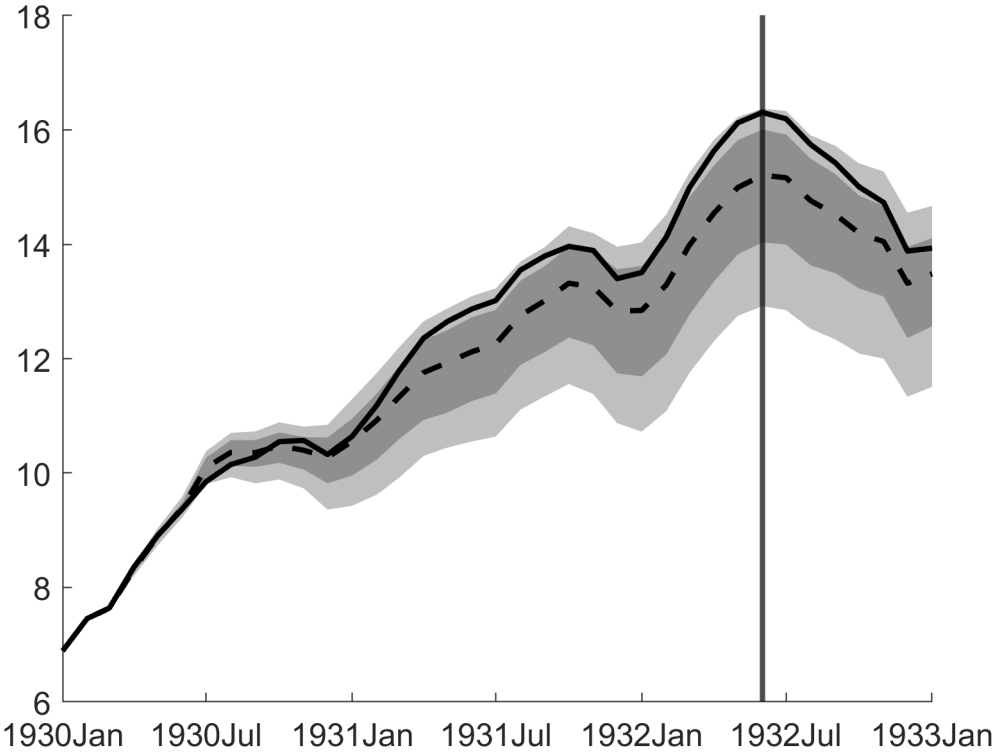

Figure 32: Counterfactual for the unemployment rate (%) computed between March 1930 and January 1933. The dashed line depicts median counterfactual unemployment in the absence of austerity shocks, the dark-grey shaded area shows 68 percent credible bands, and the light-grey shaded area shows 90 percent credible bands. The bold line illustrates the observed unemployment rate. The vertical lines indicates the end of Brüning's tenure in office.

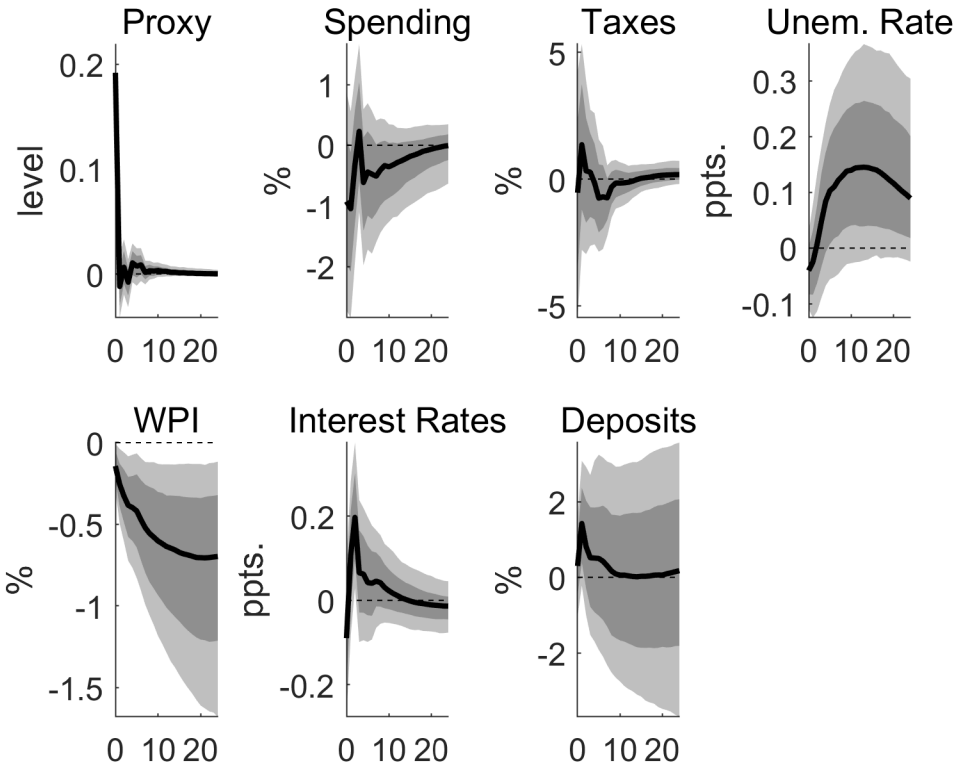

Figure 33: Impulse responses to an austerity shock. The solid line depicts the median impulse response of the specified variable to a one standard deviation austerity shock. Shaded bands denote 68 percent and 90 percent credible sets.

Appendix H.4.6 Controlling for exchange rate GBP/RM

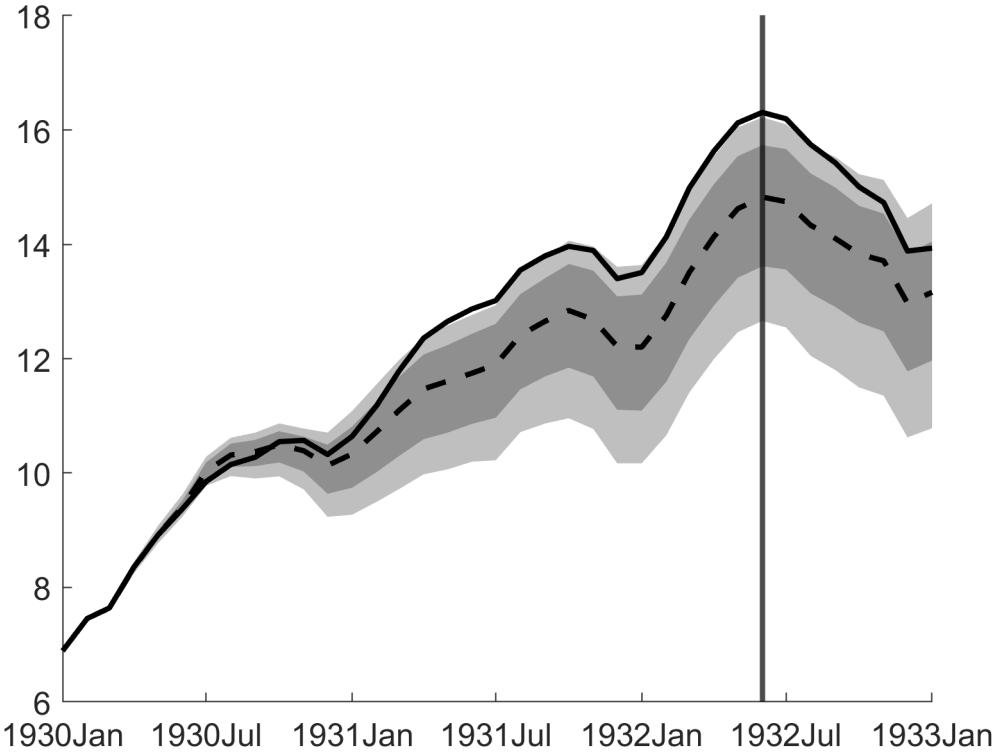

Figure 34: Counterfactual for the unemployment rate (%) computed between March 1930 and January 1933. The dashed line depicts median counterfactual unemployment in the absence of austerity shocks, the dark-grey shaded area shows 68 percent credible bands, and the light-grey shaded area shows 90 percent credible bands. The bold line illustrates the observed unemployment rate. The vertical lines indicates the end of Brüning's tenure in office.

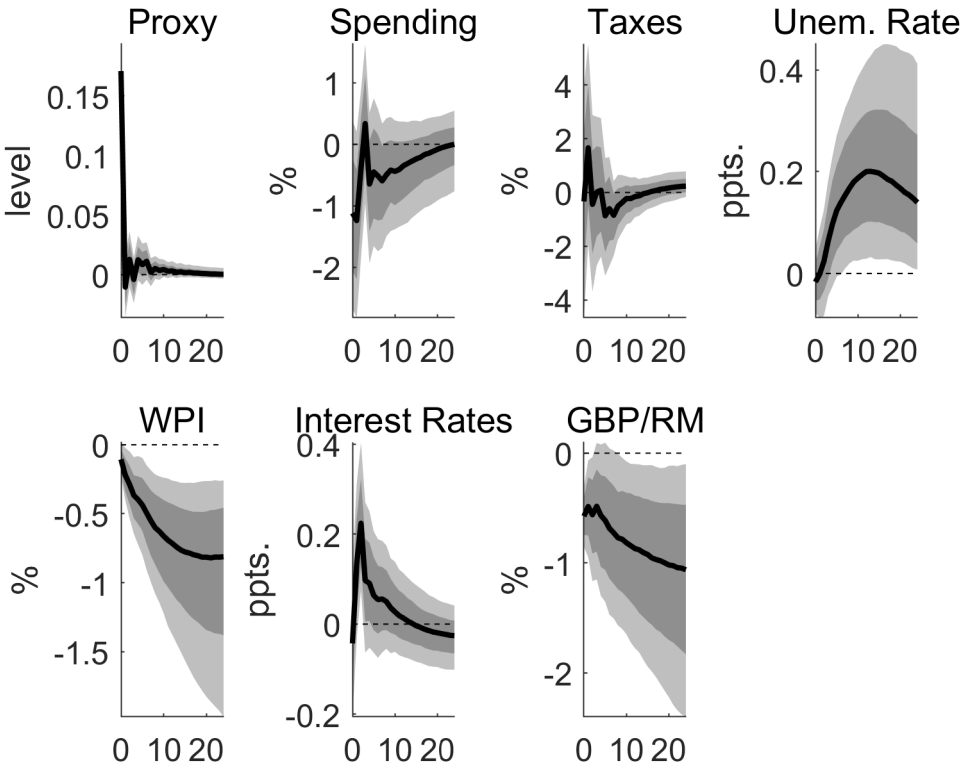

Figure 35: Impulse responses to an austerity shock. The solid line depicts the median impulse response of the specified variable to a one standard deviation austerity shock. Shaded bands denote 68 percent and 90 percent credible sets.

Appendix H.4.7 Excluding emergency decree of December 1931 in austerity instrument

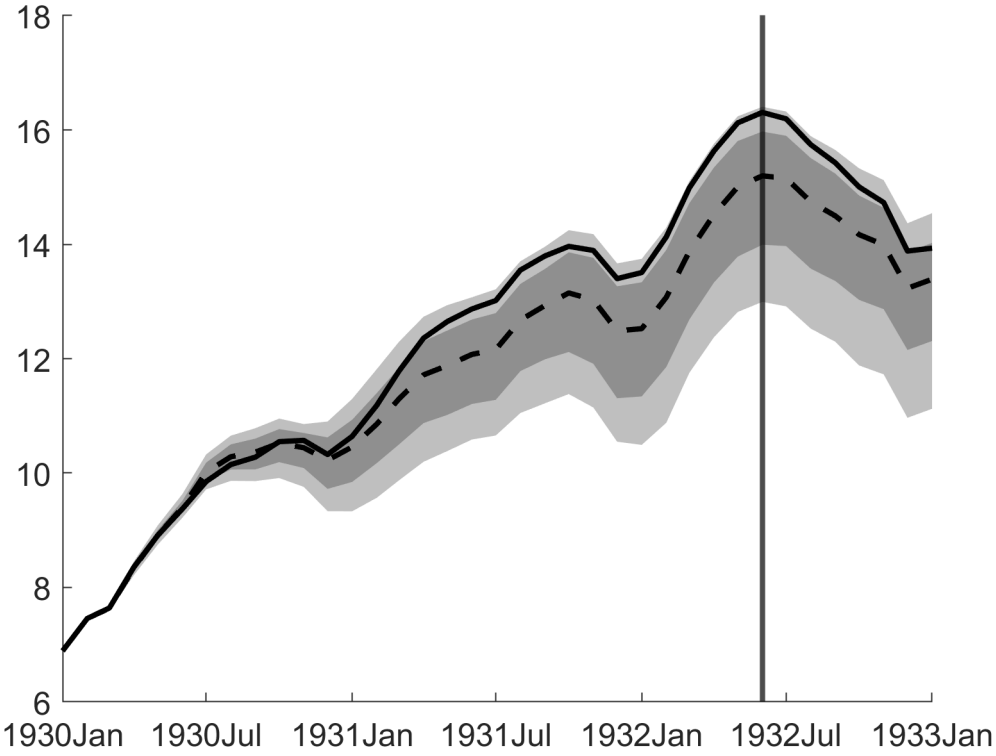

Figure 36: Counterfactual for the unemployment rate (%) computed between March 1930 and January 1933. The dashed line depicts median counterfactual unemployment in the absence of austerity shocks, the dark-grey shaded area shows 68 percent credible bands, and the light-grey shaded area shows 90 percent credible bands. The bold line illustrates the observed unemployment rate. The vertical lines indicates the end of Brüning's tenure in office.

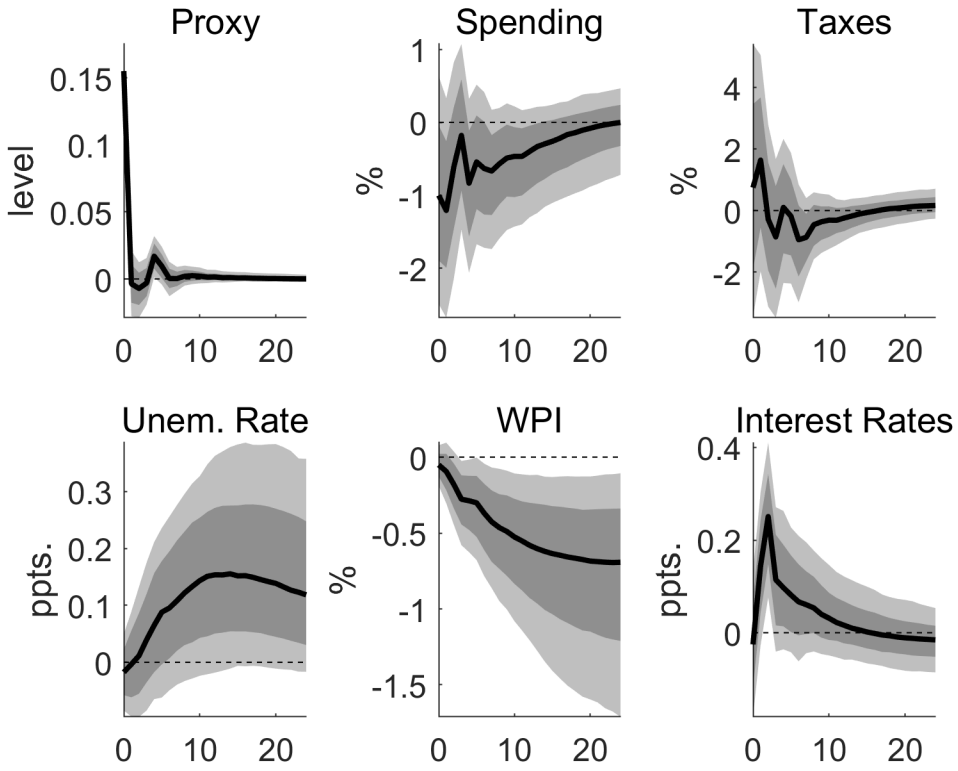

Figure 37: Impulse responses to an austerity shock. The solid line depicts the median impulse response of the specified variable to a one standard deviation austerity shock. Shaded bands denote 68 percent and 90 percent credible sets.

Abstrakt

Tento článek kvantifikuje makroekonomické důsledky fiskálního úsporného programu, který předcházel převzetí moci nacisty v Německu v roce 1933. V letech 1930 až 1932 německý kancléř Heinrich Brüning zavedl rozsáhlé škrty ve vládních výdajích a zvýšení daní na pozadí hospodářské deprese, rozpadu světového obchodu a vzestupu politického extremismu. Využíváme nový detailní fiskální datový soubor k identifikaci makroekonomických dopadů Brüningovy úsporné politiky. Zjišťujeme, že úsporné šoky snížily německý HDP o více než čtyři procenta a způsobily nárůst nezaměstnanosti téměř o dva miliony lidí, čímž připravily půdu pro úspěch extremistických stran.

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