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The Political Costs of Austerity

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Abstract

Using a novel regional database covering over 200 elections in several European countries, this paper provides new empirical evidence on the political consequences of fiscal consolidations. To identify exogenous reductions in regional public spending, we use a Bartik-type instrument that combines regional sensitivities to changes in national government expenditures with narrative national consolidation episodes. Fiscal consolidations lead to a significant increase in extreme parties' vote share, lower voter turnout, and a rise in political fragmentation. We highlight the close relationship between detrimental economic developments and voters' support for extreme parties by showing that austerity induces severe economic costs through lowering GDP, employment, private investment, and wages. Austerity-driven recessions amplify the political costs of economic downturns considerably by increasing distrust in the political environment.

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1 Introduction

Anti-establishment and EU-skeptic parties have gained significant support since the Great Recession and the subsequent European Sovereign Debt Crisis. Higher vote shares for these parties have increased partisan conflict and led to more fragmented parliaments. The resultant polarized political environment is economically significant, as political tension is generally associated with higher policy uncertainty and lower economic growth (Azzimonti 2011, 2018; Funke et al. 2020; Carozzi et al. 2022). Interestingly, the rise in support for extreme parties occurred in a period of significant fiscal policy interventions. In particular, several European countries have implemented large-scale fiscal consolidation measures to reduce high levels of public debt, thereby averting the risk of sovereign default. The massive reductions in public spending faced significant opposition and resulted in an anti-austerity movement. In this paper, we empirically investigate the causal link between fiscal consolidations and rising polarization and provide new evidence on the political costs of fiscal austerity.

To this end, we assemble a novel regional dataset on election outcomes that provides detailed voting results on regional, national, and European elections. We combine data from Schakel (2013) with information from various national and regional sources. Our final dataset covers 124 European regions from 8 countries and spans from 1980 to 2015. We collect data on more than 200 elections; roughly 20 elections per region and, on average, one election every two years. Thus, our dataset provides considerable granular variation in election outcomes for estimating the causal effect of fiscal consolidations on voting behavior. We rely on party classifications by Funke et al. (2016) and Algan et al. (2017) to define parties at the far-right and far-left of the political spectrum. Our data supports the main narrative of a significant correlation between fiscal consolidations and extreme voting. In particular, we find a strong increase in extreme parties' vote share across European regions in the years after the Great Recession and the Sovereign Debt Crisis.

To test for the causal relationship between austerity and voting outcomes, we identify exogenous changes in regional public spending using a Bartik-type instrument (Bartik 1991) that combines *regional* sensitivities to changes in *national* government expenditures with the narrative

national consolidation measure proposed by Alesina et al. (2020). The narrative series contains only those changes in the national primary balance-to-GDP ratio that are motivated by a desire to reduce budget deficits. The identified fiscal actions represent responses to past decisions and economic conditions rather than to current and prospective conditions. Therefore, there should be no systematic correlation between the identified national fiscal actions and other developments that affect economic activity in the short term. This narrative approach has been used in several studies to gauge the economic effects of fiscal consolidations at the national level (Guajardo et al. 2014; Jordà and Taylor 2016; Alesina et al. 2019). In contrast to these approaches, we use the narrative series as the shift component in a Bartik instrument to identify exogenous reductions in government spending at the regional level. We further employ an instrumental variable local projections approach to estimate the causal effect of reductions in regional public spending on election outcomes. Importantly, our Bartik measure provides a strong instrument for regional government spending reductions, with a first-stage F-statistic well above the critical threshold, suggesting that weak instruments are unlikely to be a concern for our analysis.

Our results show that fiscal consolidations are associated with significant political costs: a 1% reduction in regional public spending leads to an increase in extreme parties' vote share of around 3 percentage points. The higher vote share captured by extreme parties coincides with a fall in voter turnout together with an increase in the total votes for these parties. Thus, in response to fiscal consolidations, fewer people vote and those who do, exhibit a higher tendency to vote for extreme parties. In addition, austerity increases fragmentation, which, based on previous evidence on the negative economic impact of partisan conflict (Azzimonti 2011; Funke et al. 2020), suggests that austerity affects economic outcomes through a more polarized political environment. We use a forecast error variance decomposition (FEVD) exercise to quantify the magnitude of regional cuts in public spending in driving more extreme voting. Our results suggest that around 6% of the variation in extreme parties' vote share is indeed due to fiscal consolidations, which further highlights the importance of austerity in understanding shifts in voters' preferences toward the more extreme ends of the political spectrum.

We conduct a battery of robustness checks to verify our findings. The results still hold for different samples and also remain unaffected when changing the construction of the national austerity measure or the share variable of the Bartik instrument. Notably, the rise in extreme parties' vote share to fiscal consolidations persists when dropping the Great Recession period and the subsequent years of the European Debt Crisis, which makes us confident that the political costs of austerity are not merely driven by the extreme events in the recent past but describe a general pattern in the data.

When differentiating between election types and far-left and far-right parties, we find only mild differences in political outcomes. While austerity leads to the largest shift toward extreme parties for regional elections, the movement away from more traditional parties is also present for national and European elections. Moreover, although both extremes gain vote shares as a result of fiscal consolidations, far-right parties experience a slightly stronger rise in voters' support. We further test for potentially important state dependencies and find that the increase in extreme parties' vote share is larger when the fiscal consolidation is implemented during a recession as opposed to a period of expansion. In addition, the effects are somewhat stronger in rural and poor regions. The political costs of austerity also significantly depend on the political leaning of the party implementing the consolidation measure. We find that the increase in extreme voting is much larger when the consolidation is implemented by a centre-left government. In contrast, the effect is barely significant when centre-right parties cut public spending.

To rationalize our main findings on the political consequences of austerity, we also estimate the economic effects of fiscal consolidations at the regional level. Austerity leads to a significant fall in regional output, employment, investment, durable consumption, and wages. Furthermore, the reduction in public spending lowers the labor income share thereby inducing a redistribution of income away from working households. These contractionary effects of austerity support previous evidence on the economic impact of fiscal consolidations conducted at the national level (Guajardo et al. 2014; Jordà and Taylor 2016). Moreover, these findings highlight the close relationship between detrimental economic developments and voters' support for extreme parties.

Finally, we try to understand whether austerity-driven recessions yield different political outcomes than general economic downturns do. We differentiate between recessions that coincide with fiscal consolidations ("austerity recessions") and those not related to austerity ("non-austerity recessions") and estimate the response of extreme parties' vote share in both episodes of economic slack. Our estimates imply that austerity recessions lead to a significantly larger increase in the vote share for extreme parties than other recessions. In addition, in a recession that coincides with a fiscal consolidation, a reduction in regional government spending implies a larger increase in extreme voting compared to lowering public spending in non-austerity recessions. We relate this result to a potential trust channel of fiscal consolidations by showing that people's trust in the government deteriorates much more strongly during austerity recessions compared to non-austerity recessions. This might point toward a "doom loop" between distrust in the political system and more extreme voting following fiscal consolidations. In sum, austerity-driven recessions are special in the sense that they considerably amplify the political costs of economic downturns by creating more distrust in the political environment.

Related literature. Our paper is related to several strands of literature. We mainly contribute to a growing body of work on the economic drivers of populism. Guriev (2018), Guiso et al. (2019, 2020), Berman (2021), Baccini and Sattler (2021) and Guriev and Papaioannou (2022) provide a good overview on the causes of populism in Europe and other advanced economies by analyzing both demand- and supply-side explanations of populism and focusing on economic grievance–based explanations. Regarding right-wing populism, the usual economic explanations focus on how globalization and trade integration have generated discontent and division among citizens by making life more insecure for the working and middle classes (Colantone and Stanig 2018; Rodrik 2020; Pastor and Veronesi 2021). On the other hand, left-wing populism seems to be more related to specific economic considerations coming from neoliberalism and economic policies. In particular, the left-wing rise after the Great Recession in Europe was fueled by massive anti-austerity movements in Greece (Stavrakakis and Katsambekis 2014), Portugal (Accornero

and Ramos Pinto 2015), and other European countries (Calossi 2016; Della Porta et al. 2017).

Focusing on austerity, there are several papers worth mentioning. Ponticelli and Voth (2020) use a panel dataset for 25 European countries covering the period 1919 to 2008 to show a clear link between the magnitude of expenditure cutbacks and increases in social unrest. Focusing on the "age of austerity" in the UK, Bray et al. (2022) show that for each £100 loss per working age adult, racially or religiously motivated crimes rose by approximately 5-6% between 2013 and 2015. In contrast to both of these papers, we investigate how austerity affects voting behaviour and provide robust evidence that fiscal consolidations significantly increase extreme parties vote share.

In addition, Hübscher et al. (2021b) presents survey evidence that in Germany, Spain, Portugal, and Italy a government's re-election chances greatly decrease if it proposes austerity measures with voters objecting strongly to spending cuts, while Alesina et al. (2021) argue that an austerity package worth 1% of GDP reduces the vote share of the leader's party by about 7%. These findings materialize the idea that austerity-fueled social unrest contributed to a feeling of disconnect from the established political parties and institutions and encouraged voters to support more extreme policy positions or engage in protest voting (Myatt 2017; Panunzi et al. 2020; Hübscher et al. 2021a). We add to this literature by testing the hypothesis on the link between austerity, distrust in the government, and more extreme voting. In particular, we show that trust in the government significantly falls in response to a fiscal consolidation and even much stronger than in normal economic recessions which indeed supports the idea that the trust channel is important to understand voters movements towards more extreme parties.

We also contribute to the literature evaluating the economic effects of fiscal policy, and, in particular, the effects of narratively identified austerity episodes (Devries et al. 2011; Guajardo et al. 2014; Alesina et al. 2015; Jordà and Taylor 2016; Alesina et al. 2018, 2020). Our main contribution is the evaluation of the economic costs of austerity at the regional level by combining regional government spending data with narratively identified spending-based austerity measures at the national level.

The closest related work to our study are the papers by Fetzer (2019); Galofré-Vilà et al. (2021). Fetzer (2019) shows that austerity-induced welfare reforms in the UK led to a rise in support for the UK Independent Party and for Leave in the referendum on European Union membership. Galofré-Vilà et al. (2021) study the link between fiscal austerity and Nazi electoral success and find that areas more affected by austerity had relatively higher vote shares for the Nazi Party. However, our analysis differs in several important dimensions compared to these studies. First, while Fetzer (2019) and Galofré-Vilà et al. (2021) each focus on one single country (UK and Germany) and particular voting episodes, we provide novel evidence spanning 8 European countries on the severe political costs of austerity. The significant time and cross-sectional variation that we use enables us to investigate the relationship between extreme voting and austerity without relying on unique voting events like the Brexit vote or the rise of the Nazi party in the turbulent years before World War II and allows further quantification of the economic significance of fiscal consolidations in explaining extreme voting. Second, our detailed election and party classifications permit us to undertake an in-depth analysis on potentially significant differences across European, national, and regional elections and between extreme parties on the left and right. Importantly, whereas Fetzer (2019) and Galofré-Vilà et al. (2021) study the voting results of particular far right parties (UKIP and NSDAP), we find that austerity explains a larger share in the variation of left-extreme parties compared to right-extreme ones. Third, we also provide a thorough investigation on the economic costs of austerity and thus highlight the close relationship between economic developments and voters' support for extreme parties. Finally, we combine our election outcomes with detailed survey data and show that the political costs of economic downturns are considerably amplified during austerity-fueled recessions because electors decrease their trust levels towards the government.

The remainder of the paper is organized as follows. Section 2 describes the economic and political data used in the analysis. Section 3 presents the empirical methodology and discusses the identification strategy. Section 4 shows our empirical results. Finally, Section 5 concludes.

2 Data

In our analysis, we draw on a broad set of annual data covering the period from 1980 to 2015 for 124 regions in eight European countries: Austria, Finland, France, Germany, Italy, Portugal, Spain, and Sweden. In the following, we describe the main variables used in our analysis. Table A.1 in the Appendix provides more information on the regional structure and A.2 provides additional information regarding data definitions and sources.

2.1 Economic data

To measure regional economic developments, we rely on data from the Annual Regional Database of the European Commission's Directorate General for Regional and Urban Policy (ARDECO), which is a highly disaggregated dataset across sectoral and regional dimensions. The database contains several long time-series indicators for European regions at different statistical scales and expands the Cambridge Econometrics Dataset used by much of the literature on European regional dynamics.

The database provides regional measures for output (gross domestic product (GDP) and gross value added (GVA)), investment, earnings, hours worked, and employment for different economic sectors like industry, construction, financial, non-financial, and non-market services. The dataset is an annual panel covering the period 1980–2017 for the European Union (EU) and some European Free Trade Association (EFTA) and candidate countries. By construction, ARDECO's regional data is consistent with the commonly used national accounts data.[1] In particular, the regional ARDECO time series are constructed in such a way that the country aggregates equal the corresponding time series in the National Accounts reported by the annual macro-economic database of the European Commission's Directorate General for Economic and Financial Affairs (AMECO).[2]

The data are divided into NUTS (Nomenclature of Territorial Units for Statistics) regions.

[1] See Lequiller and Blades (2014) for more details on the construction of the National Accounts data.
[2] See Gabriel et al. (2023) and Appendix A.1 for more information.

NUTS is a geocode standard for referencing the subdivisions of countries for statistical purposes. The hierarchy of three NUTS levels (NUTS 1, 2, 3) is established by Eurostat in agreement with each member state, and for most countries the respective NUTS level corresponds to a specific administrative division within the country. ARDECO provides all data series at these regional disaggregation levels except for NUTS 3, for which it reports only population, employment, GDP, and GVA.

Official data on final consumption expenditure of the general government (henceforth, government spending) is not available at the European regional level. Hereinafter, in the spirit of Brueckner et al. (2022) and closely following Gabriel et al. (2023), we use the sum of GVA and intermediate consumption of the non-market sector as a proxy for government spending. GVA of the non-market sector is computed as the sum of compensation to employees (including social contributions), consumption of fixed capital (which measures the decline in the value of fixed assets owned as a result of normal wear, tear, and obsolescence), and taxes less subsidies on production. Because GVA of the non-market sector does not include intermediate consumption, which is, however, one of the main components of government spending, we use input-output (IO) tables from the PBL EUREGIO database to calculate regional intermediate consumption shares of the non-market sector, which we then add to the GVA of the non-market sector.

Our regional measure (GVA plus intermediate consumption of the non-market sector) is a valid proxy for government spending for several reasons. First, as previously mentioned, ARDECO's regional data is consistent with the national accounts data by construction. By definition, there exists a close link between government spending and the GVA of the non-market sector. Consequently, almost the entire variation in the GVA of the non-market sector refers to activities by the general government. Second, government spending and our proxy measure show very similar statistical properties. Both measures are very tightly linked—regressions at the national and regional level suggest a strong and significant relationship between both measures with estimated coefficients close to 1. We will thus refer to our regional proxy for government spending as government spending throughout the paper. More details on the justification of our proxy choice

are given in Appendix A.2.

2.2 Narrative austerity episodes

Our data for narrative fiscal consolidations comes from Alesina et al. (2020) and spans from 1978 to 2014.[3] Building on Devries et al. (2011) and Alesina et al. (2015), Alesina et al. (2020) address the potential endogeneity of shifts in fiscal variables using the "narrative" approach in the spirit of Romer and Romer (2010) and carefully dividing variables into spending- and tax-based consolidations.

The measure is constructed by examining contemporaneous OECD policy documents that outline the economic situation, fiscal consolidation strategy, and major consolidation measures for each of the OECD member countries. The country notes in each report are used to identify "exogenous" consolidations as they lay out the government's rationale for pursuing fiscal adjustment. To be precise, it is possible to identify consolidation periods that were motivated by a desire for deficit reduction, meant to correct its long-run trend, or driven by other motives unrelated to the state of the business cycle, thus excluding adjustments connected to short-run, countercyclical concerns. Consolidations are measured in terms of their impact on total revenue and expenditure (relative to a baseline without policy intervention) and scaled by the output level prior to the intervention announcement.

The main advantage of identifying fiscal consolidations via the narrative measure, compared to changes in the cyclically-adjusted primary balance (CAPB) as suggested by Alesina and Ardagna (2010), is that they are exogenous to current economic developments while changes in the CAPB are correlated with the business cycle. Guajardo et al. (2014) show that there is a significant positive correlation between GDP forecast revisions and changes in the CAPB, whereas the null hypothesis of no correlation between forecast revisions and the narrative measure cannot be rejected.

Alesina et al. (2020) classify as spending-based consolidations all measures related to govern-

[3]Data can be found here.

ment spending and investment, including expenditure on goods and services, salaries, managing costs of state-provided services (such as education and healthcare), and government gross fixed capital formation expenditures. Regarding tax-based consolidations, they account for all direct and indirect tax changes.

Throughout the paper, the narratively identified austerity episodes at time t in country I ($\tilde{g}_{I,t}$) measure only spending-based consolidations, excluding episodes driven by significant changes in the tax system. The regional government spending proxy used in the analysis does not include tax revenues and mainly encompasses the public wage bill and, to a lesser extent, the consumption of fixed capital and intermediate consumption. Therefore, excluding consolidation episodes driven by significant changes in the tax system allows for a stronger and clearer relationship between the narrative national austerity episodes and the regional government spending measures.[4]

Following the definition in Devries et al. (2011), we construct $\tilde{g}_{I,t}$ as the sum of unanticipated shifts in government spending at time t ($g^u_{I,t}$) and changes in spending that are implemented at time t but had been announced in previous periods ($g^a_{I,t-1,t}$):

$$\tilde{g}_{I,t} = g^u_{I,t} + g^a_{I,t-1,t}. \tag{1}$$

For our sample, we observe 90 consolidation episodes and 5 reversals of consolidation, which is roughly one-third of all country-year observations. The consolidation episodes are expressed relative to GDP. The mean (median) consolidation amounts to 0.86% (0.73%) of GDP. The largest intervention by 3.75% of GDP occurred in Portugal in 2012 during the Sovereign Debt Crisis. Figure C.1 in the Appendix presents the individual austerity episodes for each country. We can see that there is no apparent difference in the number of episodes between European Northern (Austria, Finland, France, Germany, and Sweden) and Southern (Italy, Portugal, and Spain) countries. There were 40 episodes in the South and 50 in the Northern regions of our sample.

As described in more detail below, we combine the narrative consolidation episodes at the

[4]For the identification strategy described in section 3, focusing on spending-based fiscal adjustments implies maximizing the link between the exogenous shift variable and the outcome variable of the first-stage regression.

country level with regional sensitivities to changes in national spending to get an instrument for an exogenous fall in regional government spending that varies across time and regions. We also show that our results are hardly affected when only considering the unexpected component of the fiscal consolidation measure ($g^u_{I,t}$).[5]

2.3 Election data

One main contribution of our paper consists in assembling a new comprehensive dataset on regional election outcomes. This new dataset, encompassing the years from 1980 to 2015, includes detailed information on elections to the European and national parliaments and also non-nationwide (regional or local) elections. The data is harmonized such that for each election the dataset provides the valid votes and eligible voters as well as the number of votes for each party at the NUTS 2 level.

The information on the votes cast in each election at the regional level comes from different sources. Part of our data comes from the "Regional Elections" project (Schakel 2013). There, we collect data for European, national, and regional election results disaggregated at the NUTS 2 level for five out of the eight countries in our sample (Austria, France, Italy, Spain, and Sweden). We extend this data by collecting information from national sources to include election outcomes for the most recent years. For the remaining countries (Finland, Portugal, and Germany), the election data was collected from national sources. All sources are listed in Appendix B.

Altogether, we collected information on more than 200 elections, which results in roughly 20 elections per region and, on average, one election every two years. The final dataset comprises a total of 2,890 election observations, from which 1,157 belong to national elections, 937 to regional elections, and 796 to European elections. For the baseline analysis, we use the full extent of the dataset and study the evolution of political outcomes over time and across election types. In the event of two or more elections in one year (e.g., in 2009, when all national, regional, and European elections look place in Portugal), we aggregate all elections by assigning the same weight to each

[5]When using, like Alesina et al. (2020), long-term fiscal spending plans as the austerity measure, i.e., additionally including spending shifts announced at time t to be implemented in the future, our results only change slightly.

individual vote. Following this approach, 2,380 election observations are used in the empirical analysis.[6]

Based on the raw election data, we then group the votes along several dimensions. The most important one relies on adding together votes for the *far-left* or the *far-right*. To categorize parties as far left or far right, we rely on the existing economic and political science literature and follow, among others, Massetti and Schakel (2015); Funke et al. (2016); Algan et al. (2017). In the spectrum of far-left parties, we include all parties that take up traditional Marxist-Leninist and/or communist positions, such as following an anti-capitalist ideology. On the far-right, we include parties of the "New Right" that present a moderate tone when referring to their ethnocentric and nationalistic views but nevertheless lie in the gray area between far-right extremism and right-wing populism (Funke et al. 2016). Importantly, we should emphasize that far-right parties are not shy about using anti-austerity narratives to capture votes (Della Porta et al. 2017). Following Massetti and Schakel (2015) and Algan et al. (2017), we also focus on populist parties that usually lie on the EU-skeptic spectrum or have strong regionalism views with suggested policies tilting to one of the extremes, with the latter being fundamental to keep some consistency between (supra-)national and regional elections. Tables B.1, B.2, and B.3 in the Appendix provide further details and present the list of parties that are classified as either far left or far right.

2.4 A first look at the data

Figure 1 gives a first impression of the data and the relationship between vote shares for extreme parties and implemented fiscal consolidation programs. It shows the evolution of vote shares for far-left and far-right parties across all countries and election types in the sample together with episodes of extreme austerity indicated by the gray areas.[7] The figure highlights some important messages. First, the vote share for extreme parties is relatively volatile with an average of 15% across all years and countries. Second, both extreme parties' vote shares show strong co-

[6] In section **??** below, we test for different outcomes across election types.

[7] Extreme austerity episodes are defined as those periods in which the narrative fiscal consolidation measure is above the 70^{th} percentile.

movement with local spikes in the mid-1990s and, most recently, in the aftermaths of the Great Recession and Sovereign Debt Crisis. Third, the share of extreme votes generally increases during large-scale austerity episodes.

Figure 2 is not only informative about the detailed regional variation that our new dataset on extreme voting captures, but also suggests a strong rise in political extremism after periods of austerity. The figure presents the regional vote shares for extreme parties for all 124 regions of the sample for the years 2007 and 2015, just before the start of the Great Recession and after the height of the Sovereign Debt Crisis. The figure shows that more extreme voting in the recent past is a shared phenomenon across countries and regions. Particularly strong increases in the vote shares of extreme parties can be observed for regions in France, Spain, and Italy. However, there are also significant differences across regions within the same country. For example, while regions in the western and southern part of Germany show lower vote shares for extreme parties, voters in the eastern part favor extreme parties more strongly. In our econometric analysis, we will make use of the large variation in voting behavior over time and across regions. While Figure 1 is informative about the unconditional correlation between voting for extreme parties and fiscal consolidations, it does not provide a causal interpretation. In the rest of the paper, we conduct a thorough econometric analysis to investigate whether austerity causes more extreme voting.

3 Methodology

In estimating the dynamic effects of austerity on regional political and economic outcomes, we closely follow the econometric specification by Funke et al. (2016). To that end, we use local projections following the method pioneered by Jordà (2005) and estimate, for each horizon h = 0, ..., 4, the following equation:

$$z_{i,t+h} = \alpha_{i,h} + \delta_{t,h} + \beta_h \frac{G_{i,t} - G_{i,t-1}}{G_{i,t-1}} + \gamma_h(L) X_{i,t-1} + u_{i,t+h}, \tag{2}$$

where $z_{i,t+h}$ is the change in the variable of interest. More specifically, when we focus on political outcomes, $z_{i,t+h} = Z_{i,t+h} - Z_{i,t-1}$ is the percentage point change of the vote share for the far-left and far-right parties in region i between time $t-1$ and time $t+h$. The extreme parties' vote share is constructed as the number of all votes for far-left and far-right parties divided by the number of all counted votes for a given election. The change in extreme parties vote share is set to zero in years with no elections. The fraction of region-year observations without elections is 47%.[8] $\frac{G_{i,t}-G_{i,t-1}}{G_{i,t-1}}$ is the growth rate in real per capita government spending in region i between time $t-1$ and $t-2$. $(L)X_{i,t-1}$ is a vector of lagged control variables and $\alpha_{i,h}$ are region fixed-effects to control for region-specific (unobserved) characteristics. $\delta_{t,h}$ are time fixed-effects that account for aggregate trends in both voting for extreme parties and fiscal consolidation measures. Throughout, the vector of additional control variables includes two lags of the endogenous variable and two lags of regional real per capita government spending and real per capita output growth to account for lagged dynamics in regional economic activity and public expenditures, respectively. When focusing on economic outcomes in Section 4.2, $z_{i,t+h}$ is the growth rate of the variable of interest, $\frac{Z_{i,t+h}-Z_{i,t-1}}{Z_{i,t-1}}$, for all variables except the labor share, for which we consider $z_{i,t+h}$ to be the difference in levels, $Z_{i,t+h} - Z_{i,t-1}$. The main focus of our analysis consists of estimating the parameter $-\beta_h$, which directly yields at horizon h, the response of the variable of interest to a fall in regional government spending by one percent. Throughout, we cluster the standard errors at the regional level.

Estimating equation (2) directly by OLS could suffer from different endogeneity concerns. First, variation in government spending and voting for extreme parties might potentially react to another third variable. For example, changes in demand or supply could affect regional fiscal balances and thus government spending. Any estimated relationship between regional government spending and extreme parties vote share will then be due to other structural disturbances than fiscal consolidations which biases the estimation results. Second, there might be a reverse causality problem as a higher vote share for extreme parties might result in governments spending more

[8]The corresponding fraction of country-year observations without elections is 39%. Notably, our main qualitative findings are robust to focusing the main analysis on years that do have elections.

to support groups with a higher tendency to vote for extreme parties.

To overcome these endogeneity issues, we instrument the change in regional government spending with a Bartik-type instrument (Bartik 1991) where we rely on the narratively identified spending-based austerity shocks from Alesina et al. (2020) as described in Section 2.2. In particular, the Bartik instrument is computed as follows:

$$\frac{\overline{G_i}}{\overline{G_I}} \times \tilde{g}_{I,t}, \tag{3}$$

where $\tilde{g}_{I,t}$ is the narrative national consolidation measure as described in Section 2.2 and $\overline{G_i}$ and $\overline{G_I}$ are averages of *per capita* government spending in region i and country I, respectively. To compute these averages, we follow Nekarda and Ramey (2011) and use data from the full sample to control for structural changes across regions over the sample period. Intuitively, if $\frac{\overline{G_i}}{\overline{G_I}}$ is above 1, region i spends more *per capita* than the national average. This implies that a disproportionate amount is spent in this region compared to other regions in the country. By interacting these regional sensitivities with narrative accounts of national fiscal consolidation programs, we assume that regions that rely more heavily on public spending cut back government expenditures more strongly when the national government implements austerity measures. Thus, the idea of the instrument is to scale national fiscal consolidation plans such that spending varies more in regions with a larger share of per capita national government spending.

To be precise, we estimate the following first-stage regression:

$$\frac{G_{i,t} - G_{i,t-1}}{G_{i,t-1}} = \alpha_i + \delta_t + \zeta \frac{\overline{G_i}}{\overline{G_I}} \times \tilde{g}_{I,t} + \gamma(L) X_{i,t-1} + \epsilon_{i,t}. \tag{4}$$

Figure C.2 in the Appendix shows a heat map depicting the share $s_i = \frac{\overline{G_i}}{\overline{G_I}}$ for the NUTS 2 regions used in the sample. There is considerable cross-sectional variation in this measure, ranging from 0.72 to 1.57. We calculate the lowest shares for Norte (Portugal, 0.72), Niederbayern (Germany, 0.74), and Niederösterreich (Austria, 0.75), and the highest shares for Lazio (Italy, 1.57),

Wien (Austria, 1.52), and Área Metropolitana de Lisboa (Portugal, 1.43). There is only small variation in the shares over time. When calculating time-varying shares for each region, we find that the average standard deviation is around 0.05. This limited time variation justifies our choice of constant regional shares even though the results are robust when using a time-varying measure of the spending share.

Our identifying assumption is that central governments do not adopt austerity measures because regions that receive a disproportionate amount of government spending are experiencing certain economic and political outcomes relative to other regions. For example, the government does not cut expenses because a certain region is doing better economically or because political polarization is not rising. This is likely for two reasons. First, the data used is disaggregated at the NUTS 2 level. Intuitively, the main assumption might be violated when focusing on high aggregation levels with only few regions within a country because politically and economically important regions could directly influence central government decisions.[9] Second, we are using narrative-identified austerity shocks that are by construction not driven by economic conditions and primarily motivated by national budgetary motives.

Another potential concern with our estimation strategy would arise if regions receiving large amounts of national spending were more cyclically sensitive than other regions and therefore might face stronger voter turnover for extreme parties. We use the standard deviation of output growth to compare the cyclical sensitivity of regions that receive large and small amounts of national spending. The standard deviations are very similar in regions with above-median national spending shares and in regions with below-median national spending shares (0.034 versus 0.031), indicating that a divergence in overall cyclical sensitivity does not bias our results. Following the same approach for the election data, we find that the standard deviation of the change in vote share of extreme parties is similar for regions with spending above and below the national median (0.050 and 0.042).

[9]If the difference between the variation in the instrument at the NUTS 2 and NUTS 1 is small, our assumption might be violated because particular NUTS 1 regions like capital regions could influence national policies. However, in the Appendix A.3, we show that there is a significant increase in variation when moving from the NUTS 1 to the NUTS 2 level which supports our identifying strategy.

As pointed out by Goldsmith-Pinkham et al. (2020), our empirical strategy using the Bartik instrument is valid even if the spending shares are correlated with the *level* of the extreme parties' vote share. Instead, our strategy asks whether differential exposure to national fiscal consolidations leads to differential *changes* in the outcome. Table C.1 in the Appendix indeed shows that the Bartik instrument cannot be predicted by past values of several economic, geographic, and political variables. In particular, we regress the instrument on the one period lagged growth rates in GDP, employment, household income, hours worked, population and the one period lagged changes in the extreme parties vote share and the labor share and the lagged value of the instrument itself together with region and year fixed effects. We find that none of these lagged covariates are statistically significant which suggests that our instrument is orthogonal to a set of potential (pre-determined) confounders.

Moreover, our data do not indicate any systematic relationship between the extreme parties vote share and the regional spending share. If central governments generally transfer public money to regions that experience a large increase in extreme voting, by the construction of the instrument we assume that these regions are more affected by fiscal consolidations. However, the instrument then becomes endogenous because the high government spending share is related to the voting for extreme parties. Table C.2 in the Appendix provides evidence in contrast to this line of reasoning. When regressing the regional spending share on the average regional increase in extreme voting, there is no statistically significant relationship.

Importantly, our instrument fulfills the relevance condition. The first-stage Olea and Pflueger (2013) F-statistic is 40 and and thus well above the threshold of 23 for a 5% critical value, implying that weak instruments are not a severe concern for our analysis. In addition, Figure 3 shows the estimated response of regional government spending to the consolidation shock. The dark and light shadings are, respectively, 90% and 95% confidence bands based on robust standard errors clustered at the regional level. The response is normalized so that spending falls by 1% in year 0. We find a significant and persistent fall in regional government spending following the austerity shock. Two years after the shock materialized, the reduction in government spending reaches its

trough with around 1.25%. Thereafter, government spending converges back to its pre-shock level and the response becomes insignificant four years after the shock, which shows the transitory impact of our identified fiscal interventions. In what follows, we will use the estimated reduction in regional government spending and test whether there is a causal effect of lower public spending on voting for extreme parties.

Whereas our main analysis focuses on characterizing whether austerity shocks affect voting behavior, below we also assess the quantitative importance of this relationship. In doing so, we conduct a forecast error variance decomposition (FEVD) exercise. The local projection framework allows computing the contribution of the austerity shocks to the forecast error variance of our variables of interest. First, we consider the share of the variance in the vote shares that can be accounted for by austerity shocks from 1980 until 2014. The fraction of the variance in the vote shares at different horizons accounted for by austerity shocks can be recovered directly from the estimates of Equation (2). This measure therefore provides a metric of the extent to which austerity shocks are quantitatively important in driving voting dynamics.

We closely follow Born et al. (2020), who extend the approach by Coibion et al. (2017); Gorodnichenko and Lee (2020) to a panel setting. In particular, we compute the variance share of the regional consolidation shock at horizon h as the R^2 of the following regression:

$$\hat{u}_{i,t+h} = \lambda_0 \hat{\epsilon}_{i,t+h} + ... + \lambda_h \hat{\epsilon}_{i,t} + v_{i,t+h}. \tag{5}$$

where $\hat{u}_{i,t+h}$ is the forecast error of the local projection (2) at horizon h and $\hat{\epsilon}_{i,t+h}$ are the (horizon-specific) predicted values of the first-stage regressions (4).

4 Results

In this section, we present and discuss our main empirical findings. We start by showing that an exogenous fall in regional government spending leads to a significant and persistent increase in the vote share for antiestablishment extreme parties, lower voter turnout, and more fragmen-

tation. Moreover, we conduct a FEVD exercise to evaluate the quantitative importance of the identified consolidation episodes in explaining variation in voting for extreme parties. Then, we show that our main result is robust to several modifications of the baseline model and further decompose our baseline response across several dimensions: the increase in extreme-party voting is rather similar across election types (regional, national, European elections) and is not being driven by one side of the political spectrum with both the far-left and far-right vote shares rising in response to austerity. We also investigate the economic consequences of fiscal consolidations and show that the austerity-induced decrease in regional government spending has strong recessionary effects. Taken together, these findings are consistent with the idea that voters react to the negative economic impact of spending-based austerity episodes by shifting their vote toward more antiestablishment and extreme parties. Finally, we differentiate between economic recessions driven by fiscal consolidations and economic downturns that are unrelated to austerity and show that the political costs of economic downturns are considerably amplified when they coincide with fiscal consolidations.

4.1 Political Costs

Figure 4 presents our main result regarding the response of the vote share for extreme parties following a fiscal consolidation. The reduction in regional government spending leads to a significant increase in the extreme parties' vote share. A fall in public spending by 1% raises the extreme parties' vote share by more than 1.5 percentage points in the year of the fiscal policy implementation. Additionally, the vote share increase is very persistent. Two years after the shock, extreme parties have gained more than 2 percentage points. Even four years after the consolidation was implemented, the vote share is still more than 3 percentage points above its pre-shock level. Thus, austerity induces large and long-lasting political costs with voters moving away from more traditional parties to extreme ones.

The documented increase in extreme voting following fiscal consolidations might be due to two different effects. First, holding turnout constant, if more people vote for extreme parties, their

vote share increases. Second, austerity might discourage people from participating in the ballot and thus lower turnout. If this effect disproportionately applies for non-extreme voters, the vote share of extreme parties raises even without an increase in total votes for extreme parties. To test whether our results are driven by one of these effects or a combination of both, we re-estimate Equation (2) using either the change in turnout or total votes for extreme parties, respectively, as the dependent variable. Turnout is computed as the number of all counted votes relative to all eligible votes and total votes for extreme parties is constructed as the ratio between the number of votes for extreme parties and the number of all eligible votes.

Figure 5 displays the estimation results, where the left panel shows the response of voter turnout and the middle panel presents the impact of austerity on total votes for extreme parties. Voter turnout significantly falls following a reduction in regional government spending. Two years after the fiscal intervention, turnout is reduced by more than 2 percentage points. In addition, the total number of votes for extreme parties significantly increases, reaching a peak of more than 2 percentage points at the end of the forecast horizon. Therefore, in response to fiscal consolidations, fewer people vote and those who do exhibit a higher tendency to vote for extreme parties.

We also study the impact of fiscal consolidations on fragmentation, which we construct following (Laakso and Taagepera 1979). In particular, we rely on a measure of concentration taken from the industrial economics literature—the Herfindahl-Hirschmann concentration index—or, more precisely, its complement. This is known as the Effective Number of Parties, ENP, and is defined as:

$$\text{ENP}_{i,t} = \sum_{j=1}^{n} p_{j,t}^2,$$

where n is the number of parties in the election and p_j is party j's share in the total votes (between 0% and 100%). The lower the ENP, the higher the level of fragmentation. This measure takes two important dimensions of fragmentation into account: the number of parties involved in the decision-making process (political fragmentation) and the size inequalities between the

participants (size fragmentation) (Geys 2004). When there is more than one election per year, we use the average across elections. We estimate the same local projection but replace the extreme parties' vote share by the fragmentation variable given by $(1 - \text{ENP}_{i,t})$.

The right panel of Figure 5 presents the estimation results. Austerity implies a significant increase in fragmentation, which amounts to around 3 percentage points at the end of the forecast horizon. Based on previous evidence on negative economic consequences of higher political fragmentation (Azzimonti 2018; Funke et al. 2020), this finding might suggest that, besides direct economic effects, fiscal consolidations also shape economic outcomes indirectly by leading to a more polarized political environment.

In Table 1, we report the contribution of austerity shocks to the forecast error variance of the vote shares for a forecast horizon up to four years, where the estimates are based on Equation (5). It is evident that austerity shocks account for an economically significant part of extreme voting, and in particular in the medium run. At the four-year horizon, austerity explains more than 6% of the variation in extreme parties' vote share. We further differentiate between parties on the far left and far right. Interestingly, fiscal consolidations account for a larger part of voting for far-left parties than for far-right ones (7.7% versus 1.3% at the four-year horizon).

In summary, our main findings show that austerity has significant political costs. Fiscal consolidations lead to a strong and persistent increase in vote shares for extreme parties, lower voter turnout, and increased fragmentation. These findings are not only significant from an econometric point of view, but also from an economic perspective, with austerity accounting for a large share of voters favoring more extreme parties.

4.1.1 Robustness

In this section, we demonstrate that our main result of an increase in extreme parties' vote share following a fiscal consolidation is robust to several modifications of the baseline model. We start by modifying our aggregate narrative consolidation measure such that we only consider

the unexpected component of the austerity series, i.e., $g^u_{i,t}$ from Equation (1). This rules out the hypothesis that our main finding could be driven by the anticipated component of the fiscal consolidation measure used, $g^a_{I,t-1}$. Table 2 presents the results, where the first upper panel also reports the baseline estimates. The estimated effects of a fiscal consolidation on the extreme parties' vote share are similar when only considering the unexpected component of the austerity measure. For example, four years after the consolidation was implemented, both estimations show an increase in the vote share of around 3 percentage points. Thus, our main finding is not due to strong anticipated effects of the fiscal policy change.

Jordà and Taylor (2016) suggest another way to control for significant anticipation effects in the narrative consolidation measure. They regress the austerity measure on a set of lagged macro control variables and take the residual of that regression as the new narrative consolidation series. This new measure is orthogonal to past economic developments and should thus capture only unexpected changes in fiscal policy. We follow their strategy, first regressing our narrative measure on several lagged macro covariates and then using the residual as the shift component in the construction of the Bartik instrument. Motivated by the set of regressors chosen by Jordà and Taylor (2016) and Klein (2017), the vector of control variables in the first regression includes country and time fixed-effects and lagged values of real GDP growth, real private consumption growth, the government debt-to-GDP ratio and real short-term interest rates.[10] The estimates presented in Table 2 (entry "Unpredicted austerity") show a similar finding compared to our baseline specification: austerity significantly increases extreme parties' vote share, although point estimates are larger when relying on the unpredicted austerity measure. In sum, this last result again suggests that anticipated changes in fiscal policy do not significantly drive our main findings.

Next, we verify that our result is not an artifact of the Great Recession and Sovereign Debt Crisis years by dropping the years 2008 and later and focusing on the pre-Great Recession sample. Table 2 shows that our finding is not significantly affected by this sample change. Put differently, the causal link between a reduction in regional public spending and an increase in extreme voting

[10] Data are taken from ARDECO, the Jordà-Schularick-Taylor Macrohistory Database (Jordà et al. 2017), and OECD.

is by no means a result of the Great Recession and Sovereign Debt Crisis years but describes a general tendency in the data since the 1980s.

In our baseline estimation, we clustered the standard errors at the regional level. To also take into account serial correlation and heteroskedasticity among the residuals over time, we rerun the baseline model using Driscoll and Kraay (1998) standard errors. As shown in Table 2, standard errors become slightly larger when relying on the Driscoll and Kraay (1998) adjustment, but statistical significance remains.

Another interesting dimension of our main finding is whether extreme parties vote share increases because austerity is commonly seen as detrimental across all countries or because of public perception of how bad austerity is for the specific country. In other words, are our results driven by national or sub-national variation. To investigate this issue, we extend our baseline specification by including country times election fixed-effects, where the election fixed-effects take a value of one if for a given year at least one election takes place in the regions belonging to one specific country. Thus country times election fixed-effects absorb any variation that is due to a common public perception within one country. Table 2 shows that we still find a significant increase in extreme parties vote share when including country times election fixed-effects which implies that our main finding is driven by sub-national variation or a common view across European regions regarding the detrimental effects of austerity.

As an additional check, we recalculate our Bartik instrument by using the lagged value of $s_{i,t}$ instead of the average value s_i as used in the baseline specification. Thus, we allow for a time-varying regional elasticity to national public spending changes and use its lag to rule out any contemporaneous correlation between the national consolidation measure and the regional spending share. Again, as presented in Table 2, the results are very similar to the baseline estimates, indicating that our finding is robust to different ways of calculating the share measure used in the construction of the Bartik instrument.

Table 2 also presents the results when using the original Devries et al. (2011) consolidation measure, which includes both spending- and tax-based narratively identified fiscal consolidations,

instead of the adjusted Alesina et al. (2020) series. While the effect is somewhat smaller compared to our baseline specification, there is still a significant increase in extreme parties vote share following a fiscal consolidation.

In the baseline, we express the endogenous variable as the change of the vote share for extreme parties in a given region. As an alternative, the outcome variable can also be measured as the difference relative to the country average. As shown in Table 2 our main finding is robust to this alternative measurement of our dependent variable.

Finally, the last two rows of Table 2 show the results when changing the sample. First, we exclude capital regions given that capitals have on average a higher government spending share. Second, we drop all regions with the top 10% highest government spending shares. It is evident that both sample changes do not significantly affect our findings. We also show in the Appendix that our results are not driven by any particular country in the sample. When separately dropping one country at a time from the sample, results change only slightly (see Table C.3).

Taken together, the results presented in this subsection provide confidence that the significant rise in extreme parties' vote share following a fiscal consolidation is a robust feature of the data not driven by the way we construct the national austerity measure, the share variable of the Bartik instrument, and holds for different changes in the sample.

In the baseline estimation, we included voting results from all election types (European, national, regional). Next, we investigate whether there is significant heterogeneity across elections. In doing so, we separately restrict the sample to national, regional, or European elections. Figure 6 presents the results of this exercise; the left panel shows the response for national elections, the middle panel for regional elections, and the right panel for European elections. The figure shows that the increase in extreme parties' vote share following a fiscal consolidation is present for all election types.

As a further check, we study whether the increase in extreme vote shares is driven by either far-left or far-right parties. In particular, we re-estimate our baseline model but now separately focus only on the far-left or far-right parties' vote share. The obtained results are shown in Figure

7. The left panel repeats the estimates of the baseline model (the sum of far-left and far-right vote shares), the middle panel presents the vote share response for far-left parties, and the right panel for far-right parties. Austerity leads to a significant and persistent vote share increase for both extremes. The peak responses amount to around 1.5 percentage points. However, estimation uncertainty is larger for the far-right parties' vote share, whereas the far-left parties' vote share response is estimated more precisely.[11]

4.2 Economic Costs

Our main results indicate strong political costs of fiscal austerity. We have documented that a reduction in public spending leads to a significant increase in the vote share for extreme parties. In the following, we try to answer what drives this voter movement away from more traditional parties toward extreme ones. A related stream of literature has shown that voter support for extreme parties is closely linked to economic developments. For example, Funke et al. (2016) find that following a financial recession, the vote share of far-right parties rises significantly and persistently. In addition, Guriev (2018) show that higher unemployment rates during the Great Recession have considerably contributed to the recent rise of antiestablishment sentiment. To check whether the austerity-induced increased support for extreme parties is also related to a worsening of regional economies, we proceed by estimating the economic costs of fiscal consolidations. This issue is of interest on its own because studies at the aggregate (national) level provide mixed evidence. Some papers estimate that fiscal consolidations cause an economic recession (Guajardo et al. 2014), whereas others find only mild or even expansionary effects from austerity (Alesina et al. 2002).

Figure 8 presents the responses of several economic variables to the regional austerity shock based on Equation (2). All of them are expressed in percent changes (growth rates), with the exception of the labor share variable, which is presented in percentage points.

Panel 8a of Figure 8 shows the regional output response to the fiscal consolidation. We find

[11] The smaller (larger) estimation uncertainty regarding the left (right) parties' vote share response might be related to the larger (smaller) variation accounted for by austerity as presented before in Table 1.

that lower public expenditures lead to a significant fall in regional output. On impact, output is reduced by around 0.27%, then declines further up to 0.51%, before slowly converging back to its equilibrium level at the end of the forecast horizon. When relating the output response to the extreme parties' vote share response shown in Figure 4, our results imply that an exogenous reduction in government spending that lowers regional GDP by 1% triggers an increase in extreme parties' vote share by around 4.5 percentage points.[12]

To put these results in perspective, we can compare our GDP and vote-share estimates to the ones reported in Funke et al. (2016) and Jordà et al. (2013). Funke et al. (2016) estimate that extreme vote shares increase by around 30% in the five years after a financial recession, and Jordà et al. (2013) show that a financial recession lowers GDP by 4%. Because our results for the vote shares are in percentage points, a direct comparison to our baseline estimates is not directly possible. So, when re-estimating the model with the vote-share variable expressed in percent changes as in Funke et al. (2016), we find that austerity leads to an increase in the extreme parties' vote share of almost 26.8% four years after the shock. Thus, our results indicate that a fiscal consolidation-induced recession leads to a stronger movement toward extreme parties than a financial recession. In particular, while both economic downturns lead to an increase of extreme parties' vote share of around 30%, the reduction in GDP following austerity is much lower than the one triggered by a financial recession (0.5% versus 4%). Therefore, the political costs of economic downturns are considerably amplified when fiscal policy causes the increase in economic slack.[13] Below, we will discuss in more detail the different impact of normal (non-austerity-driven) and austerity-induced recessions on extreme voting.

As Panel 8b of Figure 8 indicates, fiscal consolidations do not only have negative real consequences, but also imply severe labor market consequences. The employment rate falls by almost 1% two years after the austerity measure was implemented. In the Appendix, we also report the corresponding output and employment government spending multipliers (see Section D), where

[12]Two years after the fiscal consolidation, output is lowered by 0.51% percent, whereas the vote share for extreme parties is up by 2.28 percentage points ($\frac{2.28}{0.51} \approx 4.5$).

[13]It is necessary to keep in mind that the different aggregation levels in our study and Funke et al. (2016) and Jordà et al. (2013) (regional versus national) make a direct comparison somewhat more difficult.

the estimation procedure closely follows Gabriel et al. (2023); Bernardini et al. (2020). The output multiplier is estimated around one, whereas the employment multiplier takes a value close to two. These values are in the range of other estimates on regional government spending multipliers (Nakamura and Steinsson 2014; Gabriel et al. 2023; Bernardini et al. 2020).

Panels 8c and 8d present the responses of private investment and the number of motor vehicles that we use as a proxy for durable consumption following Mian et al. (2013) and Demyanyk et al. (2019). Both private demand components significantly fall following the reduction in public expenditures. The decrease in private investment is stronger than the one in output. Households' consumption expenditure should be closely linked to their disposable income stream in the sense that a lower income might well lead to lower (durable) consumption spending. Panel 8e indeed supports this hypothesis. Here, we report the real wage response expressed as average real compensation per hour worked. Wages fall significantly and persistently in response to the fiscal consolidation. On impact, wages decline by more than 0.5% and continue to fall until the end of the forecast horizon. Finally, Panel 8f presents the response of the labor share, which is significantly reduced by the austerity measure. Thus, the reduction in public spending induces a redistribution of income away from working households.[14]

Taken together, these last results indicate severe economic costs of fiscal consolidations and therefore support previous evidence on the contractionary impact of austerity at the national level (Guajardo et al. 2014; Jordà and Taylor 2016). Moreover, they highlight the close relationship between detrimental economic developments and voters' support for extreme parties.

4.3 State-Dependencies

So far, we have assumed that the political costs of fiscal consolidations are common across European regions as our baseline model is estimated as a pooled regression. However, it might well be argued that specific economic environments amplify or dampen the impact of austerity

[14]In light of the much more persistent effects on wages and the labor share compared to the ones on output and employment, austerity seems have more long-lived distributional consequences while the impact on real variables vanishes in the medium run.

on extreme voting. In the following, we investigate how the state of the business cycle, regional characteristics like urbanization and economic development, and the political leaning of the party implementing the fiscal consolidation affect our estimates.

To test for potential state dependencies, we extend our baseline specification (2) and estimate for each horizon $h = 0, ..., 4$, the following regression:

$$\begin{aligned} z_{i,t+h} =& I_{i,t}\left[\beta_h^A \frac{G_{i,t} - G_{i,t-1}}{G_{i,t-1}} + \gamma_h^A(L)X_{i,t-1}\right] + (1 - I_{i,t})\left[\beta_h^B \frac{G_{i,t} - G_{i,t-1}}{G_{i,t-1}} + \gamma_h^B(L)X_{i,t-1}\right] \\ &+ \alpha_{i,h} + \delta_{t,h} + u_{i,t+h}. \end{aligned} \tag{6}$$

$I_{i,t}$ is an indicator variable for the defined state in period t. We now instrument spending changes with the Bartik instrument interacted with the state indicator. β_h^A and β_h^B directly yield, for each horizon h and states A and B, the response of the extreme parties' vote share.

We start by looking at how the state of the business cycle affects the political costs of austerity. Recessions (expansions) are defined as periods in which the regional growth rate of per capita GDP is negative (positive). Panel A of Table 3 shows the results. We find that the increase in extreme parties' vote share following a fiscal consolidation is generally larger during recessions. Four years after the consolidation was implemented, extreme parties gain 6.56 (4.29) percentage points when austerity is done in a period of high (low) economic slack. This result is closely related to a literature documenting that economic recessions considerably amplify the negative economic consequences of austerity (Jordà and Taylor 2016) and again shows the close relationship between the state of the economy and voting behavior.

Next, we allow for different effects between rural and urban regions. Rural and urban areas are defined according to regional density computed as the ratio between the population and total area of the region. Regions are classified as urban if density is higher than the country's median

and classified as rural otherwise.[15] We find that the effects are generally larger in rural regions than urban regions, although the differences are relatively small and not statically significant.

We also compare the effects in poor and rich regions, where regions are classified as poor (rich) when their per capita GDP is below (above) the country's median. For most horizons, the increase in extreme parties' vote share is somewhat larger in poor regions than rich regions. However, we find only small differences that are estimated to be indistinguishable different from zero.

Finally, we test whether the political leaning of the party implementing the fiscal consolidation significantly affects the results. Because the austerity measures are mainly decided by the national government, we define the leader of the national government party in office as either centre-left or centre-right as described in Figure B.2 in the Appendix following the Chapel Hill expert surveys (Jolly et al. 2022). Panel D of Table 3 shows that the increase in extreme voting is much larger when the consolidation is implemented by a centre-left government. In contrast, the effect is barely significant for most horizons when centre-right parties cut public spending. The differences are statically significant for all horizons considered. Thus, political preferences of the party in office when austerity takes place crucially determines voters' movement towards more extreme parties.

In Table C.4 in the Appendix, we further decompose the increase in votes for all extreme parties into the right and the left extremes. It turns out that both extreme right and extreme left parties significantly gain when austerity is implemented by a centre-left government, whereas the effect is mainly insignificant when the spending cut is undertaken by a centre-right government. In addition, we show that the effect is generally larger when an extreme party is part of the government implementing austerity. However, the latter finding should be interpreted with some caution because extreme parties formed part of a very limited number of governments in our sample as listed in Appendix B.

[15] Data on the regional area at NUTS 2 was retrieved from Eurostat.

4.4 Austerity-recessions and non-austerity recessions

In Section 4.2, we have shown that there is a close link between the political and economic consequences of fiscal consolidations. Austerity leads to an increase in extreme parties' voting and lowers economic activity. A related literature has also shown that vote shares of extreme parties rise following severe economic downturns (Funke et al. 2016; Guriev 2018). This might raise the question of whether our main findings are simply a reflection of economic recessions leading to higher vote shares for extreme parties. In other words, do austerity-driven recessions lead to different political outcomes than other economic downturns? In the following, we will show that the political costs of economic downturns are significantly amplified when recessions are indeed driven by fiscal consolidations.

We extend our baseline Equation (2) and estimate for each horizon $h = 0, ..., 4$ the following regression:

$$\begin{aligned} z_{i,t+h} =& I^{ra}_{i,t}\left[\zeta^{ra}_h + \beta^{ra}_h \frac{G_{i,t} - G_{i,t-1}}{G_{i,t-1}} + \gamma^{ra}_h(L)X_{i,t-1}\right] \\ &+ I^{r}_{i,t}\left[\zeta^{r}_h + \beta^{r}_h \frac{G_{i,t} - G_{i,t-1}}{G_{i,t-1}} + \gamma^{r}_h(L)X_{i,t-1}\right] \\ &+ (1 - I^{ra}_{i,t} - I^{r}_{i,t})\left[\zeta^{e}_h + \beta^{e}_h \frac{G_{i,t} - G_{i,t-1}}{G_{i,t-1}} + \gamma^{e}(L)X_{i,t-1}\right] + \alpha_{i,h} + \delta_{t,h} + u_{i,t+h}. \end{aligned} \tag{7}$$

$I^{ra}_{i,t}$ is a dummy variable that takes a value of one in year t, when region i contemporaneously experiences negative per capita GDP growth and implements fiscal consolidation measures (i.e., when the Bartik instrument is larger than zero). On the other hand, $I^{r}_{i,t}$ is a dummy variable that takes a value of one when the regional per capita GDP growth rate is negative and we identify no fiscal consolidation (when our Bartik instrument is equal to zero). Thus, $I^{ra}_{i,t}$ captures recessions that coincide with austerity ("austerity-recessions") and $I^{r}_{i,t}$ measures economic downturns that are not directly related to fiscal consolidations but can be described as a combination of different negative shocks that lead to lower economic activity ("non-austerity recessions"). We also

include a dummy for all remaining episodes when there is positive economic growth (economic expansions), $1 - I^{ra}_{i,t} - I^{r}_{i,t}$, to use the entire variation of the sample. The coefficients ζ^{ra}_h and ζ^{r}_h capture the average impact of austerity recessions and non-austerity recessions, respectively, on the vote shares of extreme parties. In addition, β^{ra}_h and β^{r}_h indicate the marginal effect of lowering regional government spending by 1% in austerity recessions and non-austerity recessions, respectively.[16] If ζ^{ra}_h is larger (smaller) than ζ^{r}_h, this would imply that economic downturns driven by fiscal consolidations lead to a larger (smaller) increase in extreme voting than other downturns. The same logic also applies to the marginal effect coefficients β^{ra}_h and β^{a}_h.

The first row of Figure 9 presents the estimation results, where the upper left panel shows the difference between ζ^{ra}_h and ζ^{r}_h and the upper right panel shows the difference between β^{ra}_h and β^{r}_h. The difference in the average recession effect (ζ^{ra}_h-ζ^{r}_h) is positive and statistically significant. Thus, austerity recessions lead to a larger increase in the vote shares for extreme parties than non-austerity recessions. Furthermore, the difference in the marginal coefficients is also estimated to be positive and statistically significant for shorter horizons. This implies that, in recessions coinciding with fiscal consolidations, a reduction in regional government spending implies a larger increase in extreme voting compared to lowering public spending in non-austerity recessions. These results suggest that austerity recessions are special in the sense that they considerably amplify the political costs of economic downturns. Thus, our main results do not simply capture a general tendency of more voting for extreme parties during economic downturns but instead point toward a specific transmission mechanism underlying fiscal consolidations.

How could such a transmission mechanism operate? One potential channel is related to trust in the political system and the government. If voters' trust in the government falls more during austerity recessions than non-austerity recessions, the heightened skepticism about the political environment might lead to a stronger movement away from traditional parties to more extreme ones. To test this hypothesis, we use data assembled by Algan et al. (2017) and investigate the impact of austerity recessions and non-austerity recessions on voters' trust in the country's par-

[16] As before, we normalize the responses such that regional government spending falls by 1% in the impact period.

liament. The trust index varies between zero and one and is based on micro data from the European Social Survey (ESS). People are asked to state the level of trust in the country's parliament from zero to ten, where zero means no trust at all and ten means complete trust. The survey is conducted biennially, from 2000 until 2014, and provides data at the NUTS 2 level for most of the countries in our sample, with the exception of France, Finland and Germany. The results are presented in the second row of Figure 9. For most horizons, both estimated differences are negative. Whereas the average effects is only borderline significant at the two year horizon, the marginal effect is statically significant for most horizons considered. Overall, these results seem to imply that trust in the countries' parliament falls much more during austerity recessions than non-austerity recessions. Voters seem to become more skeptical about the political environment when the higher economic slack they experience is related to active policy interventions like fiscal consolidations. Given that voters might blame the government for part of the economic downturn, they tend to punish established parties and instead support more extreme ones.

5 Conclusion

While the economic consequences of fiscal consolidations are studied extensively, the political costs of austerity are less well understood. In this paper, we provide new evidence on how reductions in government spending affect election outcomes. Using a novel regional dataset on election outcomes for several European countries, we find that fiscal consolidations lead to a significant increase in vote shares of extreme parties, raise fragmentation, and lower voter turnout. A reduction in regional public spending by 1% causes a rise in extreme parties' vote share of around 3 percentage points. We highlight the close relationship between economic developments and voters' support for extreme parties by showing that austerity induces severe economic costs by lowering GDP, employment, and the labor share. Importantly, we show that austerity recessions significantly amplify the political costs of economic downturns compared to non-austerity recessions.

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TABLES

Table 1: Forecast error variance decomposition

Horizon	Far	Far left	Far right
1	0.3 %	3.0 %	1.2 %
2	2.4 %	4.9 %	0.2 %
3	4.3 %	7.5 %	0.5 %
4	6.1 %	7.7 %	1.3 %

Notes: Forecast error variance decomposition of far, far left, and far right vote shares based on local projections (5).

Table 2: Response of extreme parties' vote share to austerity: Robustness

	Impact	1 Year	2 Years	3 Years	4 Years
Baseline	1.39***	2.28***	2.24***	2.26***	3.17***
	(0.30)	(0.52)	(0.54)	(0.51)	(0.75)
# Obs	3944	3944	3818	3692	3566
(1) Unexpected component g^u_{it}	1.75***	3.06***	2.44***	2.77***	3.63***
	(0.50)	(0.91)	(0.72)	(0.71)	(0.93)
# Obs	3944	3944	3818	3692	3566
(2) Unpredicted austerity	1.61***	2.74***	2.31***	2.40***	4.48***
	(0.50)	(0.82)	(0.67)	(0.61)	(1.17)
# Obs	3776	3776	3650	3524	3398
(3) Dropping Great Recession	0.77**	1.61***	1.70**	2.68***	2.54***
	(0.30)	(0.51)	(0.70)	(0.83)	(0.76)
# Obs	3062	2936	2810	2684	2558
(4) Baseline with DK std. errors	1.39	2.28*	2.24**	2.26*	3.17**
	(0.84)	(1.35)	(1.11)	(1.27)	(1.43)
# Obs	3944	3944	3818	3692	3566
(5) Including country-election FE	0.07	1.88***	3.13***	3.11***	4.75***
	(0.05)	(0.55)	(0.66)	(0.68)	(1.49)
# Obs	3944	3944	3818	3692	3566
(6) Lagged s_{it}	1.22***	2.02***	2.01***	1.99***	2.67***
	(0.25)	(0.44)	(0.47)	(0.44)	(0.61)
# Obs	3674	3674	3548	3422	3296
(7) IMF austerity shock s_{it}	0.20	1.92***	1.39***	1.86***	1.91***
	(0.15)	(0.45)	(0.41)	(0.45)	(0.50)
# Obs	3944	3944	3818	3692	3566
(8) Vote share to country average	1.42***	2.32***	2.21***	2.24***	3.02***
	(0.30)	(0.48)	(0.49)	(0.46)	(0.66)
# Obs	3944	3944	3818	3692	3566
(9) Excluding capitals regions	1.46***	2.29***	2.19***	2.26***	3.16***
	(0.27)	(0.45)	(0.46)	(0.43)	(0.67)
# Obs	3731	3731	3612	3493	3374
(10) Excluding regions in top 10% of s_i	1.49***	2.43***	2.17***	2.23***	2.80***
	(0.26)	(0.45)	(0.47)	(0.43)	(0.50)
# Obs	3571	3571	3457	3343	3229

Notes: For regression (1), the instrument is computed using only the unexpected consolidation shock $g^u_{i,t}$ from Equation 1. Estimation (2) takes into account possible anticipation effects by using as the instrument the residuals from regressing the austerity shock on a set of macroeconomic variables, including two lags of output and consumption growth, debt-to-GDP ratio, and real short- and long-term interest rates. Regression (3) drops observations since 2008, regression (4) presents Driscoll and Kraay standard errors, and regression (5) adds country-election fixed-effects. In regression (6), lagged $s_{i,t}$ is used in the instrument construction instead of s_i. Regression (7) uses IMF narrative-identified austerity shocks instead of the baseline shocks. In regressions (8) and (9), the sample excludes regions with the capital cities and the regions with the largest shares s_i (top 10%). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

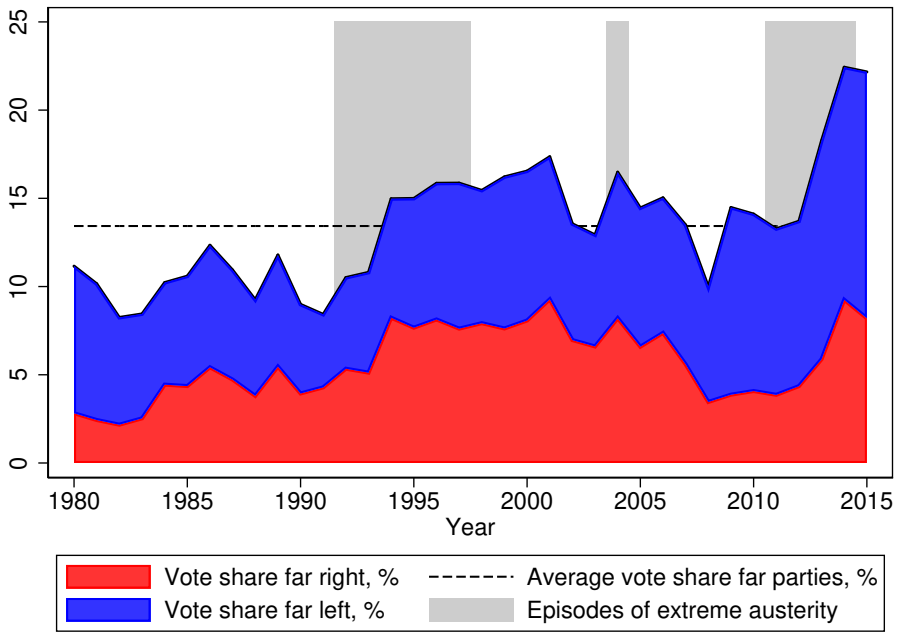
Table 3: Response of total far vote share: state-dependencies

	Total far vote share				
	Impact	1 Year	2 Years	3 Years	4 Years
Baseline	1.39***	2.28***	2.24***	2.26***	3.17***
	(0.30)	(0.52)	(0.54)	(0.51)	(0.75)
# Obs	3880	3880	3768	3692	3568
Panel A: recessions vs expansions					
Recessions	3.48*	4.27*	4.15*	3.30**	6.56
	(1.98)	(2.50)	(2.17)	(1.40)	(4.97)
Expansions	2.03*	3.26**	2.90**	2.90***	4.29**
	(1.08)	(1.42)	(1.28)	(0.93)	(2.16)
HAC Test	0.17	0.43	0.28	0.65	0.47
AR Test	0.01	0.27	0.12	0.64	0.28
Panel B: urban vs rural					
Rural	1.54***	2.40***	2.34***	2.41***	3.40***
	(0.37)	(0.64)	(0.65)	(0.62)	(1.00)
Urban	1.22***	2.17***	1.97***	1.96***	2.74***
	(0.38)	(0.68)	(0.68)	(0.63)	(0.93)
HAC Test	0.50	0.80	0.66	0.58	0.60
AR Test	0.51	0.80	0.67	0.58	0.60
Panel C: poor vs rich					
Rich	1.27***	2.14***	2.19***	2.12***	3.28***
	(0.44)	(0.77)	(0.80)	(0.76)	(1.16)
Poor	1.46***	2.37***	2.25***	2.36***	2.99***
	(0.33)	(0.60)	(0.61)	(0.59)	(0.79)
HAC Test	0.70	0.81	0.94	0.80	0.83
AR Test	0.70	0.81	0.94	0.80	0.82
Panel D: left vs right government					
Left	2.71***	3.90***	3.79***	4.69***	6.00***
	(0.69)	(1.05)	(1.11)	(1.59)	(1.85)
Right	-0.09	0.36	0.67**	0.62**	-0.45
	(0.20)	(0.30)	(0.33)	(0.31)	(0.49)
HAC Test	0.00	0.00	0.01	0.02	0.00
AR Test	0.00	0.00	0.00	0.00	0.00

Notes: In panel A, recession (expansion) is the state when the growth rate of per capita output is negative (positive). In panel B, observations are classified as urban if the (lagged) population density is above the country's median for that year. Otherwise, the observations are in the rural state. In a similar fashion, for a given year, regions are labeled as poor (rich) when their per capita output is below (above) the country's median. Finally Panel D separate the periods in which the incumbent government implementing the austerity measures was left leaning or right leaning. Table C.4 presents a further decomposition of Panel D into the response of far left and far right. The AR test presents the p-value of the difference between states using the Anderson and Rubin (1949) test, while the HAC test indicates the HAC-robust p-values of the difference between states. Clustered standard errors are presented between brackets. Significance levels: $^{*}\ p < 0.10$, $^{**}\ p < 0.05$, $^{***}\ p < 0.01$.

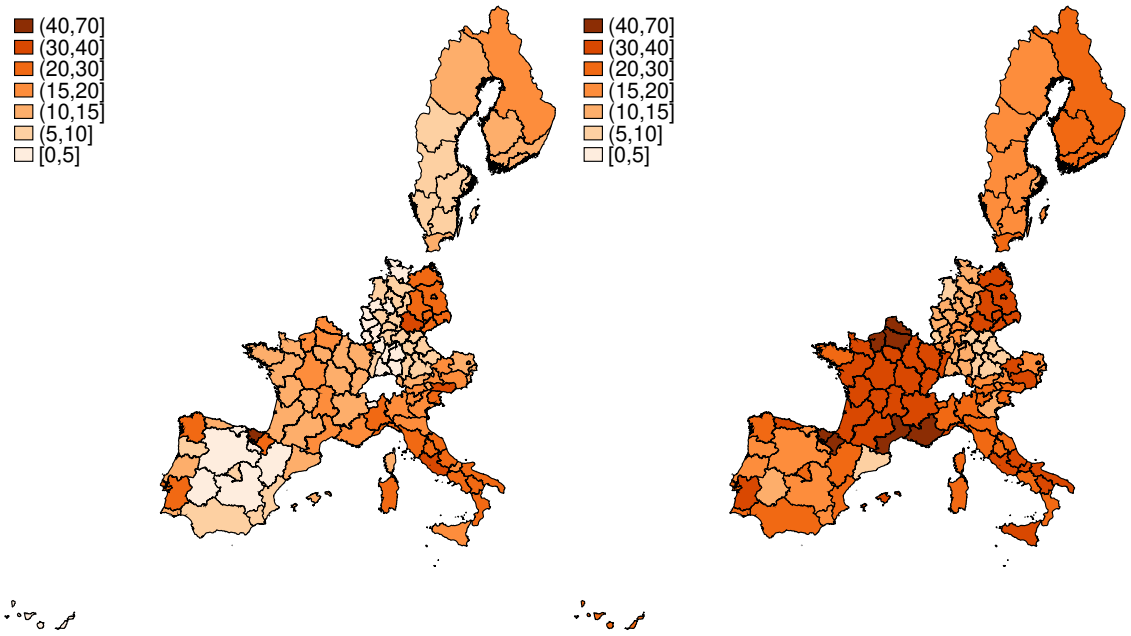
FIGURES

Figure 1: Vote share for extreme parties and austerity at the country level



Notes: Vote shares are computed relative to total valid votes. Average vote share of extreme parties includes both far-left and far-right parties. Extreme austerity episodes are identified as above the 70^{th} percentile after summing the shocks across countries.

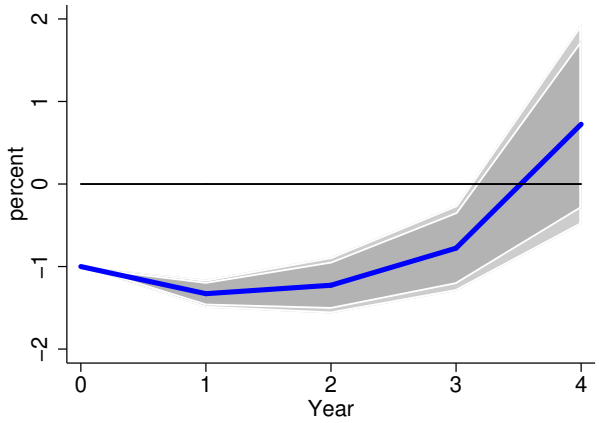
Figure 2: Regional vote shares on extreme parties in 2007 and 2015



(a) 2007 (b) 2015

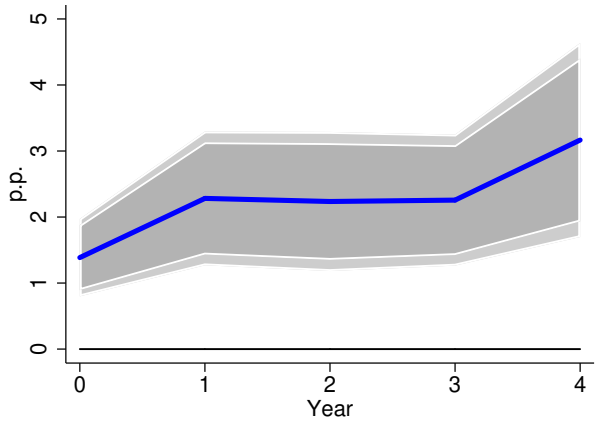
Notes: Figures 2a and 2b depict, in percent, the sum of the far-left and far-right vote shares for European regions at the NUTS 2 level in 2007 and 2015, respectively. If elections do not take place in these specific years, the map shows the outcome from the previous ballot.

Figure 3: Government spending response to austerity



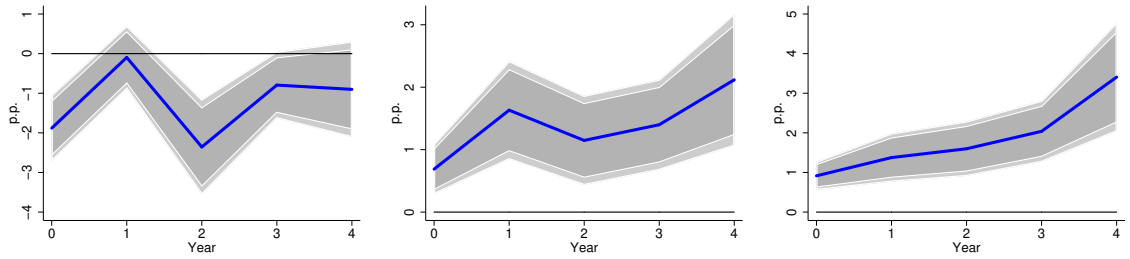
Notes: The figure plots the percent change of per capita government spending in response to an austerity induced change in government spending by one percent. Bands are 90% (dark) and 95% (light) confidence intervals.

Figure 4: Response of extreme parties' vote share to austerity



Notes: The figure plots the impulse response in percentage points of the vote share for the extreme parties to an austerity-induced change in government spending by one percent. Bands are 90% (dark) and 95% (light) confidence intervals.

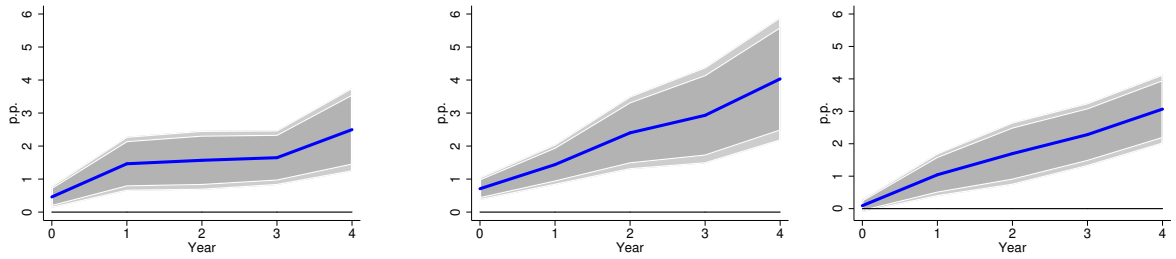
Figure 5: Responses of voter turnout, total votes for extreme parties, and fragmentation



(a) Voter turnout (b) Total votes for extremes (c) Fragmentation

Notes: The figure plots the impulse response in percentage point changes of the voter turnout, the total number of votes for extreme parties, and the political concentration to an austerity-induced change in government spending by one percent. Voter turnout is the ratio between valid votes and total eligible voters. "Total votes for extreme parties" is the sum of votes for far-left and far-right parties over total eligible voters. Political fragmentation is measured by one minus the Herfindahl-Hirschmann concentration index, measured using the effective number of parties. Bands are 90% (dark) and 95% (light) confidence intervals.

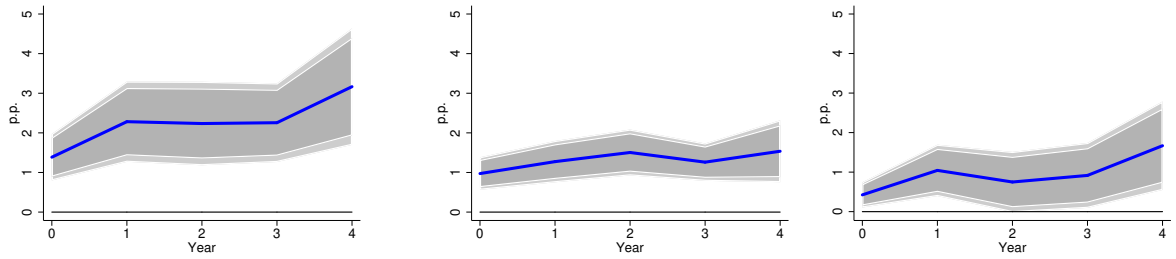
Figure 6: Response of extreme parties' vote share to austerity by election type



(a) National (b) Regional (c) European

Notes: The figures plot by election type the impulse response in percentage points of the vote share for the extreme parties to an austerity-induced change in government spending by one percent. Bands are 90% (dark) and 95% (light) confidence intervals.

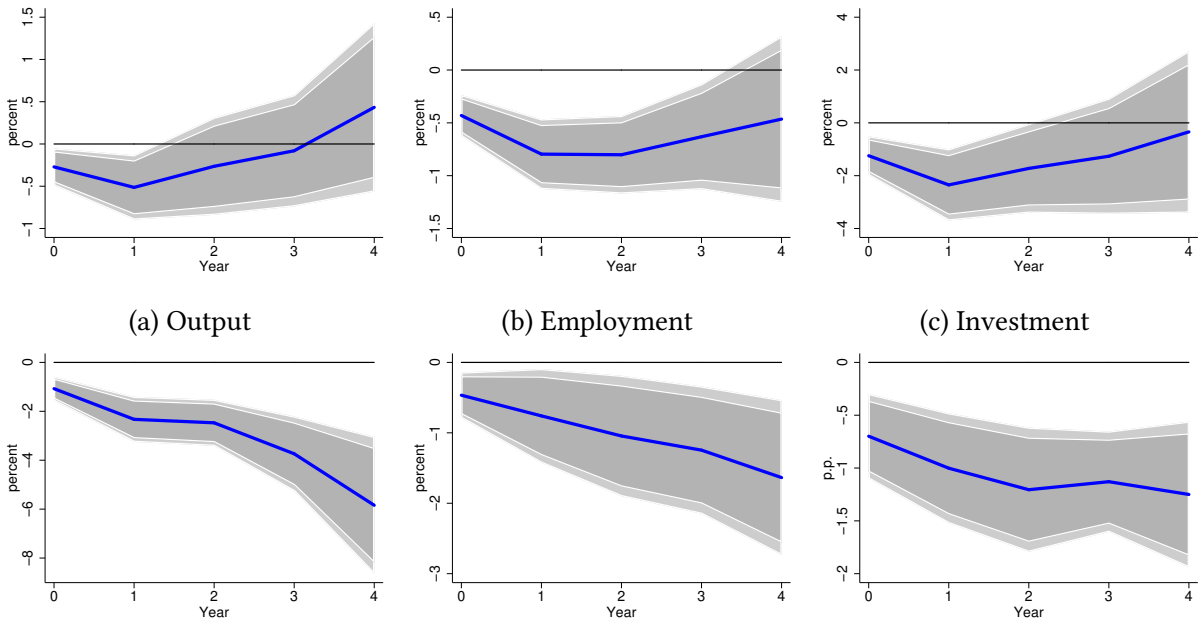
Figure 7: Response of total extreme, far-left, and far-right parties' vote share to austerity



(a) Baseline (b) Far Left (c) Far Right

Notes: The figures plot the impulse response in percentage points of the vote share for the total extreme, far-left, and far-right parties to an austerity-induced change in government spending by one percent. Bands are 90% (dark) and 95% (light) confidence intervals.

Figure 8: Economic responses to austerity

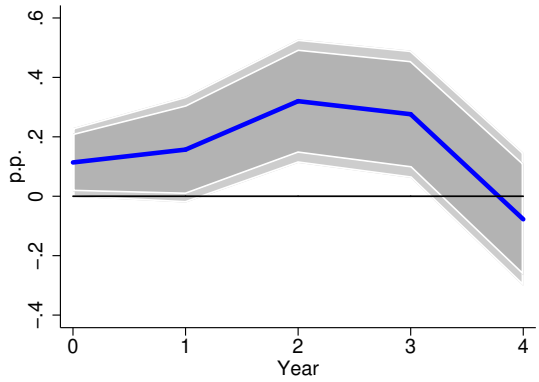


(a) Output (b) Employment (c) Investment

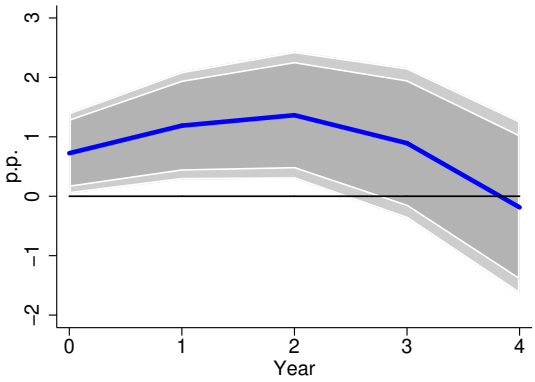
(d) Motor Vehicles (e) Hourly Wage (f) Labor share

Notes: These figures plot the response of a one percent increase in government spending. All responses are expressed in percent changes (growth rates), with the exception of the labor share variable, which is presented as a percentage point change (its difference). Shaded areas are 90% (dark) and 95% (light) confidence intervals.

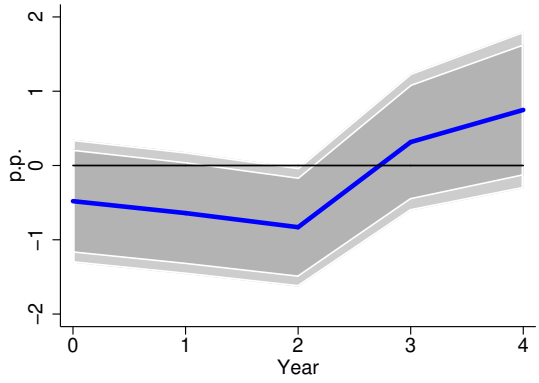
Figure 9: Difference in responses between austerity-recessions and non-austerity recessions



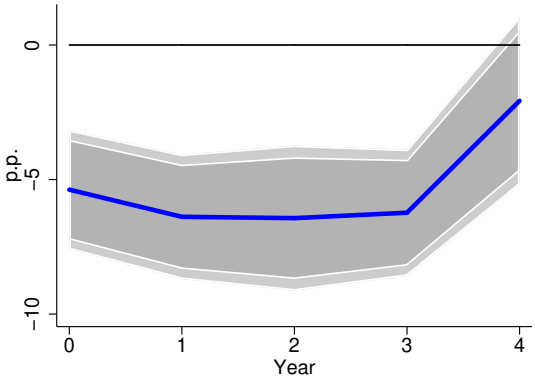
(a) Far vote share: average effect (ζ_h^{ra}-ζ_h^{r})



(b) Far vote share: marginal effect (β_h^{ra}-β_h^{r})



(c) Trust: average effect (ζ_h^{ra}-ζ_h^{r})



(d) Trust: marginal effect (β_h^{ra}-β_h^{r})

Notes: Panels 9a and 9b on the first row show the difference of the average and marginal effects between austerity recessions and normal recessions on the vote share of extreme parties estimated through Equation 7. Panels 9c and 9d on the second row depict the equivalent for the outcome variable trust on national parliaments in levels. Bands are 90% (dark) and 95% (light) confidence intervals.

ONLINE APPENDIX

Appendix A Data Appendix

Table A.1: NUTS structure in final sample

NUTS 0	NUTS 1	#	NUTS 2	#
Austria	Groups of states	3	States (Länder)	9
Finland	Mainland	1	Large areas (Suuralueet / Storområden)	4
France	ZEAT	13	Regions	22
Germany	States (Länder)	16	Government regions (Regierungbezirke)	38
Italy	Groups of regions	5	Regions (Trentino-Alto Adige split in 2)	21
Portugal	Mainland	1	Coordination regions	7
Spain	Groups of communities	7	Autonomous communities	17
Sweden	Lands (Landsdelar)	3	National Areas (Riksområden)	8
Total		44		126

Notes: Out of the existing 134 NUTS 2 regions, we exclude 5 extra regio French islands (Guadeloupe, Martinique, French Guiana, La Réunion, Mayotte); Ceuta and Melilla (Spain); and Aland (Finland) due to the lack of consistent voting data.

A.1 ARDECO - Regional European Data

ARDECO is the Annual Regional Database of the European Commission's Directorate General for Regional and Urban Policy and is maintained and updated by the Joint Research Centre. It is a highly disaggregated dataset across both sectoral and sub-regional dimensions. The database contains a set of long time-series indicators for EU regions at various statistical scales (NUTS 0, 1, 2, and 3 level) using the NUTS 2016 regional classification. The dataset includes data on demography, labor markets, capital formation and domestic product by six sectors. The six sectors are (1) agriculture, forestry and fishing, (2) industry excluding construction, (3) construction, (4) wholesale, retail, transport, accommodation, and food services, information and communication, (5) financial and business services, and (6) non-market services.

ARDECO data is an annual unbalanced panel covering the period of 1980–2018 for the European Union (EU) and some European Free Trade Association (EFTA) and candidate countries.

Table A.2: Variables Description

Variable Name	Computation	Definition [Source]
Far-left/far-right votes	Sum of all votes cast to far-left and far-right parties	Massetti and Schakel (2015); Funke et al. (2016); Algan et al. (2017) and their sources
GDP*pc*	GDP / population	Regional gross domestic product per capita [ARDECO]
Gov. Spending *pc*	non-market GVA / population	Regional gross value added of the non-market sector per capita [ARDECO]
Employment		Total employment [ARDECO]
Investment *pc*	private gross fixed capital formation / population	Total private (all sectors excluding non-market) Investment per capita (fixed gross capital formation) [ARDECO]
Hourly Wage	compensation of employees / total hours worked	Regional average compensation per hour (all sectors) [ARDECO]
Labor Share	private compensation / private GVA	Private (all sectors excluding non-market) compensation as a share of private GVA [ARDECO]
Motor Vehicles	# motor vehicles / population	Stock of all motor vehicles (except trailers and motorcycles) per capita [Eurostat]
Trust	Index between 0 and 1 based on micro data from the European Social Surveys (ESS)	Trust in country's parliament (Algan et al. 2017)

Its main data source is Eurostat (the Statistical Office of the European Commission), supplemented, where necessary, by other appropriate national and international sources. ARDECO is constructed in such a way that the country aggregates its various time series equal to the corresponding time series in the AMECO dataset referring to the National Accounts. Starting in 2002, Eurozone countries have published national series in EUR. National currency data for all years prior to the switch of the country to EUR have been converted using the irrevocably fixed EUR conversion rate. Cross-country comparisons and aggregations should continue to be based only on historical series established in ECU up to 1998 and their statistical continuation in EUR from 1999 onward. Exchange rates and purchasing power parities have been converted in the same manner. We thus use the series with real variables expressed in 2015 constant price in ECU/EUR.

A.2 Regional government spending measure

We now explain in detail why GVA (plus intermediate consumption of the non-market sector) is a valid proxy for government spending following the argument in Gabriel et al. (2023).

First, as previously mentioned, ARDECO's regional data is consistent with the national accounts data by construction. By definition, there exists a close link between government spending

and the GVA of the non-market sector, however, they differ in two dimensions: actors and composition. Regarding the first, even though the non-market sector includes other institutional units, the general government is the main actor responsible for changes in non-market GVA.

In particular, the non-market sector consists of six sub-sectors: "Public administration and defense", "Education", "Human health and social work", "Arts, entertainment and recreation", "Other service activities," and "Activities of household and extra-territorial organizations and bodies." The first sub-sector, "Public administration and defense," refers to activities by the general government, but not all government bodies are automatically classified under this sub-sector. For example, a secondary school administered by the central or local government is classified as "Education," and a public hospital is allocated to "Human health and social work." Thus, the two sub-sectors "Education" and "Human health and social work" are also closely linked to the general government in the national accounts, while the last three sub-sectors are linked only loosely.

Concerning the second dimension, we now describe the compositional differences between non-market GVA and government spending. In the national accounts, government spending is defined as follows:

Final consumption expenditure of the general government
=Gross value added of the general government
+Intermediate inputs of the general government
+Social transfers in kind purchased market production
-Market output and output for own final use
-Payments for non-market output

GVA of the general government is the major component of government spending and fully accounted in the GVA of the non-market sector. Country level data show that GVA of the general government accounts for approximately 71.1% of the final consumption expenditure of the general government.[1] Thus, our proxy measures the single-most dominant source of government expenditures. However, the main difference between government spending and the GVA of the general government are the intermediate inputs and the social transfers in kind. When again looking at country level data, we find that GVA and intermediate consumption account for about 99% of government spending.

To include intermediate consumption in our government spending measure, we use input-output tables from the PBL EUREGIO database. This is the first time-series (annual, 2000–2010) of

[1] According to data collected from Eurostat for the sample between 1995 and 2016.

global IO tables with regional detail for the entire large trading bloc of the European Union. This database allows for a regional analysis at the NUTS 2 level consistent with our baseline method. The tables merge data from World Input-Output Database (the 2013 release) with regional economic accounts and inter-regional trade estimates developed by PBL Netherlands Environmental Assessment Agency and complemented with survey-based regional input-output data for a limited number of countries. All data used are survey data, and only non-behavioral assumptions have been made to estimate the EUREGIO dataset. These two general rules of data construction allow empirical analyses focused on impacts of changes in behavior without endogenously having this behavior embedded already by construction. More detailed information can be found in Thissen et al. (2018).

The PBL EUREGIO database provides estimates for intermediate consumption of the non-market sector at the NUTS 2 level from 2000–2010. Thus, we adjust regional GVA of the non-market sector by a region-specific time-invariant scaling factor to include intermediate consumption in our government spending measure to obtain our proxy for regional government spending.

Second, to quantitatively assess the quality of our proxy, we study its time series properties comparing them to the actual measure of government spending at the national level.[2] In particular, we use intermediate consumption adjusted GVA of the non-market sector from the ARDECO and EUREGIO datasets at the NUTS 0 (country) level and the series on final consumption expenditures of the general government from the annual macro-economic database of the European Commission's Directorate General for Economic and Financial Affairs (AMECO). The pooled correlation coefficients between the GVA and the government spending series (both in levels and logs) are about 0.99 and highly significant. Such strong positive correlations also hold at the individual country level as can be seen in Table A.3. With the exceptions of Italy, the correlation coefficients are around 0.99. Moreover, Table A.4 shows the estimation results from regressing government spending on our proxy in log level with and without country and year fixed effects. All regressions indicate a significant and strong relationship between the two variables with coefficients close to 1.

So far, the analysis was conducted at the national (NUTS 0) level. We go one step further and compare our regional (NUTS 2) proxy for government spending to the government final consumption expenditure series from the PBL EUREGIO database. The EUREGIO database provides estimates of regional government spending but only for a subset of our sample (2000 to 2010). Notwithstanding, when doing this comparison, we find that both series are highly significantly correlated. The correlation coefficient between the two series in logs is close to 1. Table

[2]Remember that, at the national level, GVA of the non-market sector, intermediate consumption, and government spending are available, whereas at the regional level only GVA of the non-market sector and intermediate consumption are available from national accounts data.

A.5 presents the same regressions as before but now at the regional level. There is a strong and significant relationship between the EUREGIO estimated government spending series and our government spending proxy given that the coefficients are estimated to be close to 1.

In sum, we conclude that regional GVA of the non-market sector is a valid proxy for regional government spending. It is closely linked to government spending in the national accounts, and both series share remarkably similar time series properties.

Table A.3: Correlation Between Government Spending and our proxy by Country

	Correlation w/ AMECO Series			
	Balanced panel: 1995-2015		Unbalanced panel	
Country	Levels	Logs	Levels	Logs
Austria	0.990	0.989	0.990	0.989
Finland	0.995	0.995	0.987	0.991
France	0.995	0.995	0.997	0.996
Germany	0.980	0.978	0.985	0.983
Italy	0.933	0.928	0.933	0.928
Portugal	0.975	0.978	0.975	0.978
Spain	0.994	0.996	0.994	0.996
Sweden	0.997	0.996	0.997	0.996
All	0.996	0.996	0.997	0.997

Notes: This shows, by country, the correlation in levels and logs between our proxy for government spending (from ARDECO) with actual government spending (from AMECO). In the first column we use data 1995 to 2015 because it is the time period where AMECO has data for all countries, in the second column we display the estimates when including data extending before 1995.

A.3 NUTS 1 variation within NUTS 2 regions

For our main analysis, we rely on NUTS 2 data as it provides more variation in the main variables relative to less disaggregated datasets, allowing us to perform more robust exercises and explore state dependencies. To further support this choice, the following analysis focuses on examining the variation within NUTS 1 regions for three key variables: the instrument, the outcome variable (far vote share), and the main regressor (government spending).

We start by excluding 19 (out of 126) NUTS 2 regions that coincide with NUTS 1 regions. Then, for each NUTS 2 region, we compute for each variable the difference between the actual value of the respective variable ($X_{i,t}^{NUTS2}$) and the NUTS 1 counterfactual — the value of the respective variable at the NUTS 1 level ($X_{i,t}^{NUTS1}$). By construction, the value for a NUTS 1 region will be a weighted average of all the NUTS 2 sub-regions within a NUTS 1 region. Finally, we take the absolute value of the difference thus computing $|X_{i,t}^{NUTS2} - X_{i,t}^{NUTS1}|$.

Figure A.1 plots the distributions of this measure for the three key variables. We can interpret

Table A.4: Proxy for Government Spending at the National Level

	$\log proxy$		
	(1)	(2)	(3)
Panel A: AMECO - Balanced panel: 1995-2015			
$\log GovSpend$	1.00	1.01	0.85
	(0.000)	(0.000)	(0.008)
	[0.94, 1.04]	[0.64, 1.29]	[0.09, 1.54]
# Obs	168	168	168
Panel B: AMECO - Unbalanced panel			
$\log GovSpend$	1.01	1.06	0.89
	(0.000)	(0.000)	(0.008)
	[0.94, 1.06]	[0.70, 1.29]	[0.15, 1.58]
# Obs	204	204	204
Country FE	No	Yes	Yes
Time FE	No	No	Yes

Notes: Columns (1) to (3) show the results from regressing the log of the government spending series from AMECO on the log of our proxy for government spending at the national level (NUTS 0). In the first panel we use data 1995 to 2015 because it is the time period where AMECO has data for all countries, in the second column we display the estimates when including data extending before 1995. We report wild bootstrap cluster p-values in parentheses and wild bootstrap cluster 95 percent confidence intervals in square brackets, generated using boottest command in Stata 15 (Roodman et al. 2019) for standard errors clustered at the country level (8 clusters).

Table A.5: Proxy for Government Spending at the Regional Level

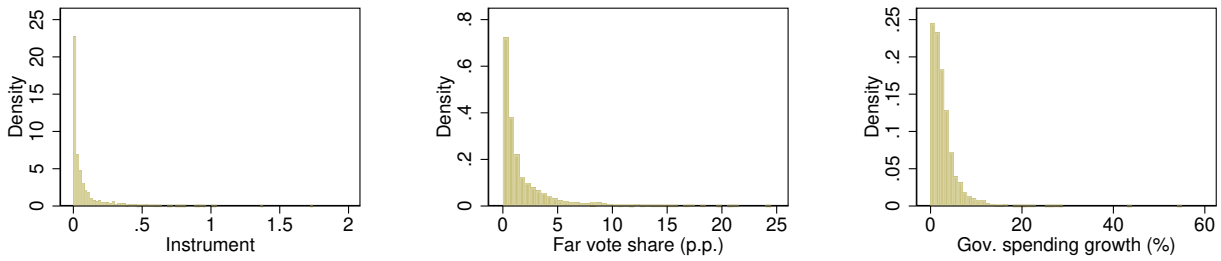
	$\log proxy$		
	(1)	(2)	(3)
$\log GovSpend$	1.00***	1.07***	0.87**
	(0.08)	(0.18)	(0.38)
Regional FE	No	Yes	Yes
Time FE	No	No	Yes
# Obs	1,265	1,265	1,265

Notes: Columns (1) to (3) show the results from regressing the log of the regional government spending series from EUREGIO on the log of our proxy for government spending from ARDECO at the regional level (NUTS 2). Data from 2000 to 2010. Robust standard errors clustered at the region level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

the graph as follows: the further away the absolute difference is from zero, the more variation we gain from using NUTS 2 vis-à-vis NUTS 1 data.

Because we take the absolute difference, we can also run a regression of the variable of interest on a constant and formally test the null hypothesis of the difference being equal to zero. Here, the hypothesis is that the variation of NUTS 2 information within a NUTS 1 region is zero. If

Figure A.1: Distributions of the within Nuts1 variation of Nuts 2 regions



Notes: The figures plot the within Nuts 1 variation of the key variables in this paper: the instrument, the far vote share, and the regional government spending growth.

the values are the same, then using NUTS 2 information does not add value to do the analysis. However, if within the same NUTS 1 region, there are regions with much bigger values, and others with much smaller ones, there is a strong within NUTS 1 variation and it makes sense to use NUTS 2 data. The results presented in Table A.6 show that the estimated constants are statistically significant which implies that there is a substantial gain in terms of variation when using NUTS 2 level data.

Table A.6: Testing distribution

	Instrument	***Far Vote Share***	***Gov. Spending***
Constant	0.08***	1.88***	2.84***
T-stat	[20.8]	[29.9]	[58.4]
# Obs	1,451	1,980	3,712

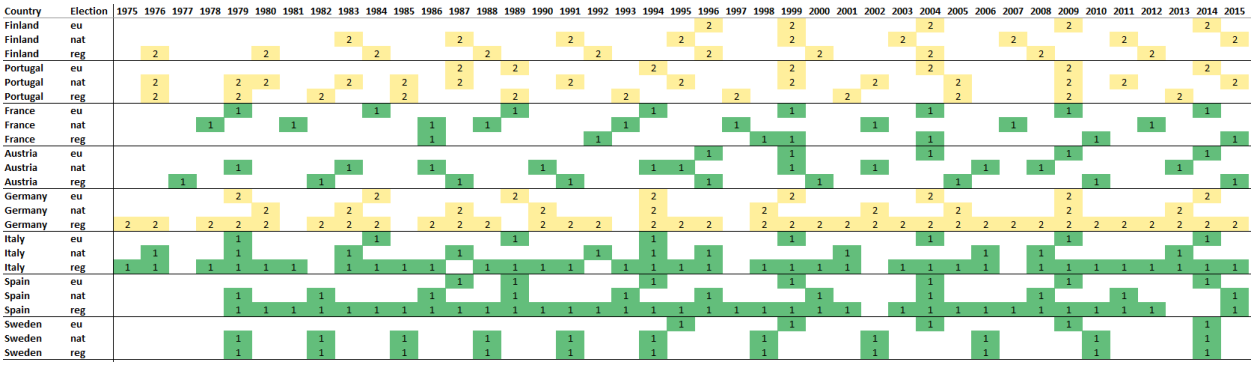
Notes: This Table presents tests the null hypothesis of the difference being equal to zero, that is that the variation of Nuts 2 information within Nuts 1 region is zero for the instrument $\frac{\overline{G_i}}{\overline{G_I}} \times \tilde{g}_{I,t}$ which is measured in % of national GDP, for the far vote share change which is measured in percentage points, and for the per capita regional government spending growth measured in percent. The number of observations differ because columns 1 and 2 only use periods where there is a fiscal consolidation episode or an election takes place, respectively.

Appendix B Coding of Elections and their variables

Figure B.1 provides a chronology of elections from 1975–2015 by country. Altogether, we identify more than 200 elections, and the final sample of coded elections includes more than 2,000 election-region observations. We include all general elections to the European parliament (eu), to the national parliament (nat), and also regional elections (reg). The latter might happen in dif-

ferent years for different regions in Spain, Italy, and Germany. For national parliament elections, in the case of a bicameral legislative, we only consider results from the lower legislative chamber. This means that we focus on the following national elections: Austria: National Council (lower house); Germany: Bundestag (unicameral); Spain: Congress of Deputies (lower house); Finland: Eduskunta (unicameral); France: National Assembly (lower house); Italy: Chamber of Deputies (lower house); Portugal: Assembly of the Republic (unicameral); Sweden: Riksdag (unicameral). Data sources for Austria, France, Italy, Spain, and Sweden are Schakel (2013, 2021) and his project on Regional Elections. For the other countries we relied on national sources: Finland (Statistics Finland), Germany (Federal Returning Officers), and Portugal (Pordata).

Figure B.1: Elections' data table



Notes: The table provides a chronology of elections from 1975–2015 by country. We include all general elections to the European parliament (eu) and to the national parliament (nat), as well as regional elections (reg). For national parliament elections, in the case of a bicameral legislative, we only consider results from the lower legislative chamber. This means that we focus on the following national elections: Austria: National Council (lower house); Germany: Bundestag (unicameral); Spain: Congress of Deputies (lower house); Finland: Eduskunta (unicameral); France: National Assembly (lower house); Italy: Chamber of Deputies (lower house); Portugal: Assembly of the Republic (unicameral); Sweden: Riksdag (unicameral). Data sources for Austria, France, Italy, Spain, and Sweden are Schakel (2013, 2021) and his project on Regional Elections [1]. For the other countries (Finland, Germany, and Portugal), we relied on national sources [2].

Coding of far-right and far-left parties Table B.1 shows our full list of far-left and far-right parties in the period from 1980 to 2015. We mainly follow the classification in Funke et al. (2016); Algan et al. (2017) and draw on their own sources such as Ignazi (1992), Ignazi (2003), March (2012), Minkenberg (2011), Mudde (2002, 2005, 2016), Döring and Manow (2016), Bernhard and Kriesi (2019) as well as country reports by Stiftung (2010) and a large number of country-specific sources. We further supplement their classification by evaluating political parties that only contest in regional elections by Massetti and Schakel (2015). Moreover, we relied on specific case studies to determine whether specific regionalist parties were perceived as far-winged or not, as the case of Galician Nationalist Bloc (Cachafeiro 2009).

Table B.1: List of far right (R) and far left (L) parties since 1980 by country

Country	Party	Party name (Code)
Austria	R	Alliance for the Future of Austria (BZO); Freedom Party of Austria (FPO, FPS, FPK); National Democratic Party (NDP); A Heart for Natives (Herz)
	L	Communists and Left Socialists (KB); Communist Party of Austria (KPO); Socialist Left Party (SLP); Radical Socialist Worker's Party (RSA); Marxist–Leninist Party (MLÖ); Left (LINKE)
Finland	R	Finns Party (PS); Finish Rural Party (PS); Finnish People's Blue-whites (SKS)
	L	Communist Worker's Party (KTP); Communist Party of Finland (SKP); Finnish People's Democratic League (VAS); Left Alliance (VAS)
France	R	Movement for France (MPF); National Front (FN); National Republican Movement (MNR); France Arise (DLF); Republic Arise (DLR); Alsace d'Abord (ADA); Right Radicals (RD); League of the South (LDS); Republican People's Union (UPR); Nationalist League (LIN); Anti-replacement List (AP); Party of New Forces (PFN); French Party (PDF); Extreme Right (EXD); Right Union (UDN)
	L	French Communist Party (PCF); Left Front (PG); Revolutionary Communist League (LCR); Worker's Struggle (LO); Worker's Party (MPPT); Independent Worker's Party (POI); New Anticapitalist Party (NPA); Communists (COM); Extreme Left (EXG); Union Democratic of Bretagne (UDB); Abertzaleen Batasuna (AB); Corsica Libera (CL)
Germany	R	Alternative for Germany (AfD); Freedom - Civil Rights Movement Solidarity (BFBDO); Law and Order Offensive (Schill); National Democratic Party of Germany (NPD); STATT Party; Pro Germany Citizens' Movement (ProD); The Republicans (REP); Patriots for Germany (Patrioten); German People's Union (DVU); The Right (DR); German Social Union (DSU); Bayernpartei (BP)
	L	The Left (LINKE); Party of Democratic Socialism (PDS); Communist Party of Germany (KPD); Marxist-Leninist Party of Germany (MLPD); League of West German Communists (BWK); German Communist Party; Socialist Equality Party (SGP); Spartacist Workers' Party (SpAD)
Portugal	R	National Renovator Party (PNR); People's Monarchist Party (PPM); New Democracy Party (PND); Christian Democratic Party (PDC,PPV,CDC)
	L	Democratic Unitarian Coalition (CDU); Left Bloc (BE); Left Revolutionary Front (FER); People's Democratic Union (UDP); People's Socialist Front (FSP); Portuguese Communist Party (PCP); Portuguese Workers' Communist Party (PCTP); Revolutionary Socialist Party (PSR); United People Alliance (APU); Re-Organized Movement of the Party of the Proletariat (MRPP); Workers Party of Socialist Unity (PT, POUS, MUT); Socialist Alternative Movement (MAS); Portuguese Labour Party (PTP); Movement of the Party of the Proletariat (MRPP); Internationalist Communist League (LCI); Movement of Socialist Left (MES); Marxist–Leninist Communist Organization (OCMLP); Revolutionary Labor Party (PRT); Left-wing Union for the Socialist Democracy (UEDS)
Sweden	R	New Democracy (NYD); National Democrats (ND); Sweden Democrats (SD,SVD); National Socialist Front (NSF); Progress Party (FRA,FRP); Party of the Swedes (SVP) Scania Party (SKAP,SP); Nordic Resistance Movement (NMR); European Worker's Party (EAP)
	L	Communist Party of Sweden (SKP); Communist League Marxists-Leninists (KFML); Communist League Marxist–Leninists (KPMLR); Workers' Party – The Communists (APK) Communists (KOM); National Communist Party (NKP); Socialist Justice Party (RS) The Left Party (V); Socialist Party (SOP, SOC)

Notes: This classification is combines the classification from Massetti and Schakel (2015); Funke et al. (2016); Algan et al. (2017) and their sources.

Table B.2: List of far right (R) and far left (L) parties since 1980 for Italy and Spain

Country	Party	Party name (Code)
Italy	R	Brothers of Italy (FDICN); Casa Pound (CAPI); Italian Social Movement (MSIDN); National Alliance (ANA); New Force (FNU); No Euro (NEUR); Piemont Autonomia Regionale (PIEAR); Social Alternative(ASM); The Freedomites (DF); The Right(LDES); Tricolour Flame (FT); Fronte Nazionale; Alternativa Sociale; Movimento Idea Sociale; Io Amo l'Italia; Io Sud; Wahlverband des Heimatbundes; Südtiroler Heimatbund; Freiheitliche Partei Südtirols; Union für Südtirol; Süd-Tiroler Freiheit; Valli Unite; L'Alto Adige nel Cuore; SOS Italia; Autonomie per l'Europa; Destre Unite; Lega d'Azione Meridionale; Noi con Salvini; Lega Sardegna; Nello Musumeci Presidente; Sovranita
	L	Civil Revolution (RC); Communist Refoundation Party (PRC); Critical Left (SINC); Communist Worker's Party (PCDL); Party of Italian Communists (PDCI); Party of Proletarian Unity for Communism (PDUP); Five Star Movement (M5S); Anticapitalist Left (SA); Un'Altra Regione; La Sinistra della Libertà; L'Altra Europa con Tsipras; Nuova Sinistra; Democrazia Proletaria; Lega Socialista Rivoluzionaria; Lega Comunista Rivoluzionaria; Sardegna Natzione; L'Altra Europa con Tsipras; La Sinistra-L'Arcobaleno; Independentia Repubrica de Sardigna; Sinistra Ecologia Libertà; Partito di Alternativa Comunista
Spain	R	Basque Nationalists (EAJ-PNV); Falange Española (FE); Vox; Fuerza Nueva; Democracia Ourensana; Democracia Nacional; Partido Familia y Vida; Identidad Española; Partido Nacionalista Cantabro; Partido Democrata Español; Plataforma per Catalunya; Movimiento Social Republicano; Grupo Independiente Liberal; Alternative Española; España 2000; Plataforma España 2000; Coalicio Valenciana; Unió Valencia; Partido Nacional de los Trabajadores; Frente Nacional-MSR; Juntas Españolas; Movimiento Catolico Español; Estado Nacional Europeo; Partido Union Nacional; Solidaridad Española

Notes: This classification combines the classification from Massetti and Schakel (2015); Funke et al. (2016); Algan et al. (2017) and their sources. Minor parties that either consistently have a small vote share or participate in very few elections are in Spanish/Italian.

Table B.3: List of far right (R) and far left (L) parties since 1980 for Spain

Country	Party	Party name (Code)
Spain	L	Communist Party of Spain (PCE); Communist Party of Spain (Marxist–Leninist) (PCEML); Unified Socialist Party of Catalonia (PSUC-PCE); United Left (IU); Podemos (PODEMOS); Galician Nationalistic Bloc (BNG); Workers' Party of Marxist Unification (POUM); Esquerda Galega; Partido Socialista Galego; Izquierda de los Pueblos; En Marea; Frente Popular Galego; Liga Comunista Revolucionaria; P. Comunis de Galicia Mar-Rev; Partido Socialista de los Trabajadores; Movimiento Comunista; Assembleia Do Povo Unido; Coalición por un nuevo Partido Socialista; Nós-Unidade Popular; Partido Socialista; Partido Comunista Obrero Español; Unificacion Comunista De España; Accion Republicana; Mesa Para La Unidad De Los Comunistas; Partido Comunista de los pueblos de España; Euskal Komunistak; Partido de los Trabajadores de Espana-Unidad Comunista; Nación Andaluza; Izquierda Andaluza; Recortes Cero; Adelante Andalucia; Partido Comunista Aragonés; Unidad Popular Republicana; Coalición Lucha Popular; Coalición Unión Pueblo Canario; Frente Popular De Canarias; Awañac; Más Madrid; Congreso Nacional de Canarias; Izquierda Nacionalista Canaria; Iniciativa Canaria; Coalición Canaria por la Independencia; Agrupación Electoral Izquierda Cantabria Unida; Partido Obrero Socialista Internacionalista; Izquierda Castellana; Alternativa Socialista; Coalició d'Esquerra d'Alliberament Nacional-Unitat Popular; Nacionalistes d'Esquerra; Partit Comunista Obrer de Catalunya; Coalición Unidad Comunista; Unitat Popular Socialisme; Partit Socialista Unificat de Catalunya; Candidatura d'Unitat Popular Alternativa d'Esquerres; Partido de los Obreros Revolucionarios de Espana; Partit dels Comunistes de Catalunya; Iniciativa Per Catalunya Verds; Lucha Internacionalista; Catalunya Sí que es Pot; Partido Socialista del Pueblo de Ceuta; Liga Comunista; Plataforma de Izquierdas; Agrupación Electores AUZOLAN; Euskadiko Ezkerra; Herri Batasuna; Partido Carlista; Amaiur; Union Navarra De Izquierda; Batzarre; Euskal Herritarrok; Aralar; Nafarroa Bai; Euskal Herria Bildu; Geroa Bai; Esquerra Nacionalista Valenciana; Bloque Popular Extremadura; Partit Socialista de Menorca; Partit Socialista de Mallorca; Entesa de l'Esquerra de Menorca; PSM-Nacionalistes de les Illes; Més per Menorca; Ensame Nacionalista Astur; Eusko Alkartasuna; Partido Comunista de las Tierras Vascas; Anticapitalistas; Partido Obrero Revolucionario; Organizacion Revolucionaria De Los Trabajadores; Partido de los Trabajadores de Euskadi; Movimiento Comunista; Partit Revolucionari dels Treballadors; Partido del Trabajo de España; Unidá Nacionalista Asturiana; Candidatura De Unidad Comunista; Los Pueblos Deciden; Mesa Para La Unidad De Los Comunistas; Izquierda Anticapitalista Revolucionaria

Notes: This classification combines the classification from Massetti and Schakel (2015); Funke et al. (2016); Algan et al. (2017) and their sources. Minor parties that either consistently have a small vote share or participate in very few elections are in Spanish/Italian.

Coding parties in the government To classify the incumbent parties leading the government for each country at each point in time, we followed the Chapel Hill expert surveys (Jolly et al. 2022). As the incumbent government may be composed of a coalition of different parties, we decided to take the prime-minister affiliation as the key indicator. Figure B.2 summarizes the classification: when the prime-minister of the incumbent government is affiliated to a left- or right-leaning party is displayed with the color red or blue, respectively.

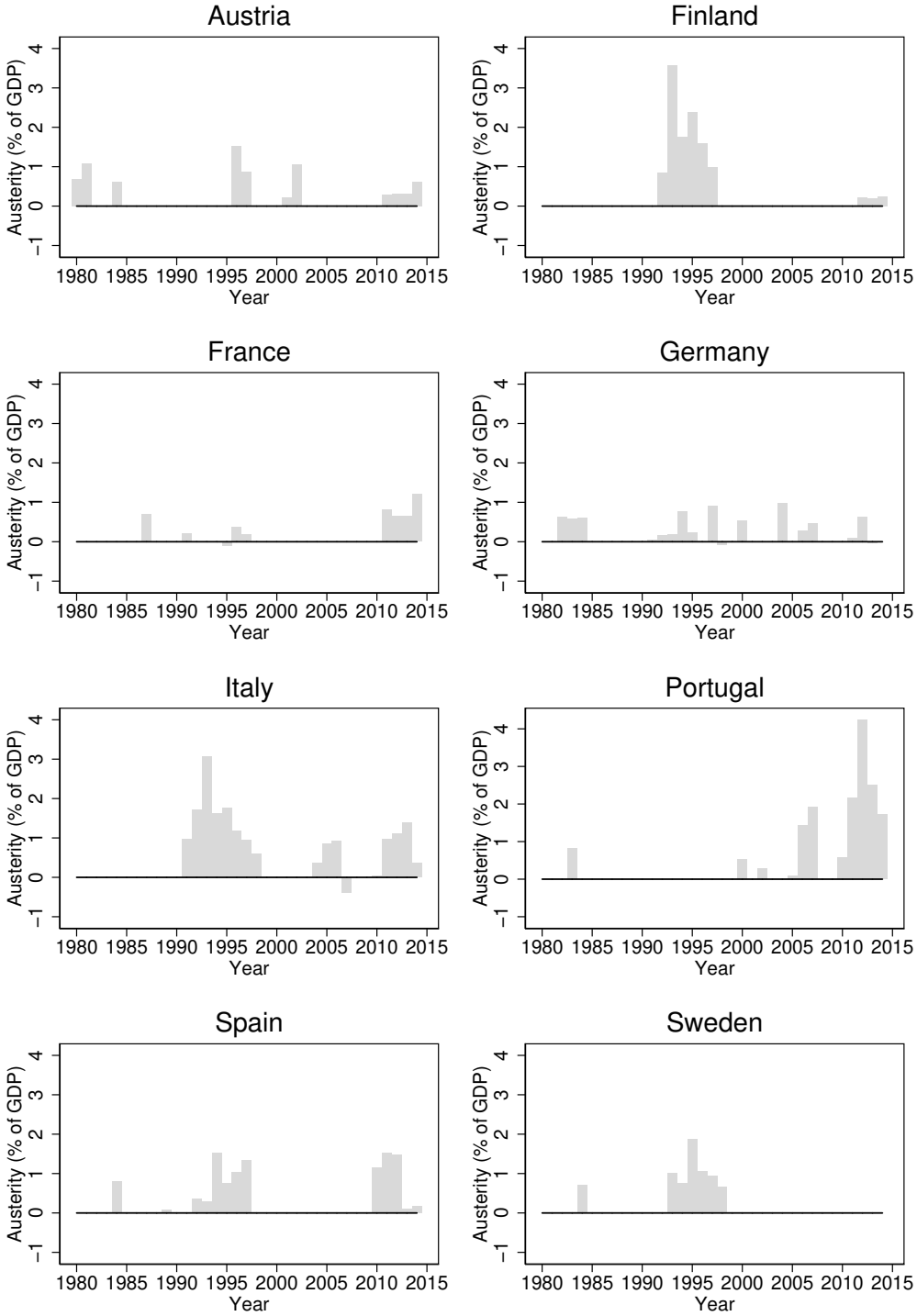
Figure B.2: Classification of incumbent into left or right-leaning

Notes: This figure displays which year-region observations are classified as an incumbent government being left (red) or right (blue) leaning when implements austerity measures.

For the analysis in Panel C of Table C.4, we also complemented that classification with the above Tables to collected information on the far parties that were part of a government. They are as follows: Austria: BZO (2002-2005) FPO (1983-1985; 1999-2005); Finland: PS (1983-1990 and 2015-2018); VAS (1980-1982; 1995-2002; 2011-2013); France: MPF (2002-2011); PCF (1981-1985; 1988-1992; 1997-2001); Italy: AN (1994-1995; 2001-2005); ANA (1994-1995; 2001-2005); FN (2001-2005); PDCI (2006-2007); PRC (2006-2007); SEL (2013-2015).

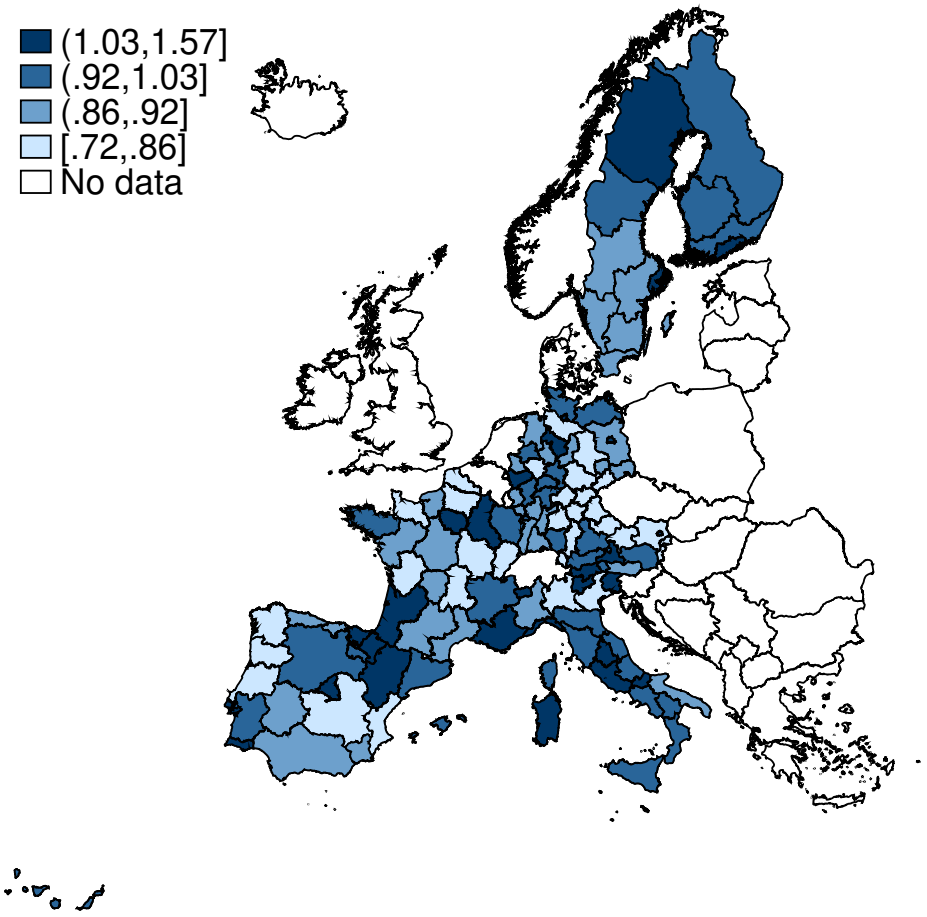
Appendix C Additional Results

Figure C.1: Austerity by Country



Notes: Austerity episodes are identified as spending based consolidation episodes according to Alesina et al. (2020).

Figure C.2: Sample regions and the share s_i



Notes: The figure depicts the map of European NUTS 2 regions with the share s_i used in Bartik instrument construction.

Table C.1 presents the relationship between the instrument and lagged economic and political variables. All variables are expressed in growth rates computed as the change between $t-2$ and $t-1$ with the exception of the lagged vote share and the instrument which are expressed in percentage points change and absolute value in $t-1$, respectively.

Table C.1: Relationship between the instrument and lagged economic and political variables

	Instrument	T-stat
Constant	-0.15***	[-5.0]
GDP per capita	0.00	[0.3]
Far vote share	0.01	[1.4]
Population	0.01	[0.4]
Employment	0.02	[0.8]
Compensation per worker	-0.01	[-0.5]
Political Fragmentation	0.00	[0.4]
Hours per worker	0.02	[1.4]
Labor Share	0.01	[0.8]
Spending per capita	0.00	[0.4]
Instrument	0.52***	[5.4]
# Obs	3,915	
R^2	0.55	

Notes: This Table presents the relationship between the instrument and lagged economic and political variables. All variables are expressed in growth rates computed as the change between $t-2$ and $t-1$ with the exception of the lagged vote share and the instrument which are expressed in percentage points change and absolute value in $t-1$, respectively. T-Stats in square brackets next to the coefficient estimate. Significance levels: * $p<0.10$, ** $p<0.05$, *** $p<0.01$

Table C.2 presents the results of regressing the regional spending share (share part of the instrument) on the average regional increase in extreme voting.

Table C.2: Relationship between the instrument and extreme parties vote share

	Average Regional Spending share $\frac{\overline{G_i}}{\overline{G_I}}$
Constant	0.98***
T-stat	[42.4]
Average far vote share increase	-0.01
T-stat	[-0.5]
# Obs	126

Notes: This table presents the results of regressing the regional spending share (share part of the instrument) on the average regional increase in extreme voting. T-Stats in square brackets next to the coefficient estimate.

Table C.3: Response of far vote share: robustness dropping one country at the time

	Total far vote share				
	Impact	**1 Year**	**2 Years**	**3 Years**	**4 Years**
Baseline	1.39***	2.28***	2.24***	2.26***	3.17***
	(0.30)	(0.52)	(0.54)	(0.51)	(0.75)
# Obs	3,944	3,944	3,818	3,692	3,566
Austria	1.48***	2.45***	2.44***	2.51***	3.53***
	(0.30)	(0.52)	(0.55)	(0.52)	(0.77)
# Obs	3,656	3,656	3,539	3,422	3,305
Finland	1.42***	2.39***	2.34***	2.43***	3.44***
	(0.28)	(0.49)	(0.51)	(0.49)	(0.70)
# Obs	3,816	3,816	3,694	3,572	3,450
France	1.42***	2.24***	2.69***	2.44***	3.78***
	(0.33)	(0.55)	(0.61)	(0.57)	(1.01)
# Obs	3,240	3,240	3,136	3,032	2,928
Germany	1.42***	1.86***	2.02***	1.81***	2.90**
	(0.47)	(0.71)	(0.74)	(0.65)	(1.27)
# Obs	2,816	2,816	2,728	2,640	2,552
Italy	0.38**	0.60**	0.09	0.82**	1.74**
	(0.18)	(0.29)	(0.32)	(0.35)	(0.79)
# Obs	3,272	3,272	3,167	3,062	2,957
Portugal	1.58***	2.68***	2.50***	2.61***	2.97***
	(0.29)	(0.54)	(0.55)	(0.54)	(0.57)
# Obs	3,720	3,720	3,601	3,482	3,363
Spain	1.98***	3.46***	3.31***	3.06***	4.19***
	(0.49)	(0.86)	(0.84)	(0.78)	(1.26)
# Obs	3,400	3,400	3,291	3,182	3,073
Sweden	1.30***	2.16***	1.99***	2.04***	2.76***
	(0.29)	(0.50)	(0.50)	(0.48)	(0.65)
# Obs	3,688	3,688	3,570	3,452	3,334

Notes: This table shows the response of extreme vote share to an austerity-induced fiscal spending shock using the baseline specification but excluding individual countries iteratively from the base sample. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table C.4: Response of total far vote share: state-dependencies

	Total far vote share				
	Impact	1 Year	2 Years	3 Years	4 Years
Baseline	1.39***	2.28***	2.24***	2.26***	3.17***
	(0.30)	(0.52)	(0.54)	(0.51)	(0.75)
# Obs	3880	3880	3768	3692	3568
Panel A: Far left share: centre-left vs centre-right government					
Centre-left	2.19***	2.37***	2.73***	2.35***	2.95***
	(0.58)	(0.66)	(0.78)	(0.87)	(1.07)
Centre-right	-0.17	0.21	0.50**	0.64***	-0.09
	(0.17)	(0.19)	(0.20)	(0.17)	(0.26)
HAC Test	0.00	0.00	0.01	0.07	0.01
AR Test	0.00	0.00	0.00	0.00	0.00
Panel B: Far right share: centre-left vs centre-right government					
Centre-left	0.64**	1.62***	1.07*	2.07**	2.99***
	(0.32)	(0.53)	(0.58)	(0.89)	(1.07)
Centre-right	0.08	0.16	0.20	0.02	-0.33
	(0.12)	(0.17)	(0.25)	(0.19)	(0.25)
HAC Test	0.15	0.01	0.11	0.02	0.01
AR Test	0.13	0.00	0.10	0.01	0.00
Panel C: Far party in government?					
Yes	5.07***	8.24***	7.86***	7.09**	5.12*
	(1.47)	(2.28)	(2.19)	(2.96)	(2.61)
No	1.39***	2.34***	2.45***	2.56***	3.88***
	(0.31)	(0.55)	(0.61)	(0.62)	(0.94)
HAC Test	0.01	0.00	0.00	0.08	0.57
AR Test	0.00	0.00	0.00	0.00	0.50

Notes: The first Panels separate the periods in which the incumbent government implementing the austerity measures was left leaning or right leaning, Panel A presents the response of far left while Panel B the response of Far right. Panel C presents the results separating periods in which at least one far party is included in the government. The AR test presents the p-value of the difference between states using the Anderson and Rubin (1949) test, while the HAC test indicates the HAC-robust p-values of the difference between states. Clustered standard errors are presented between brackets. Significance levels: $^{*}\ p < 0.10$, $^{**}\ p < 0.05$, $^{***}\ p < 0.01$

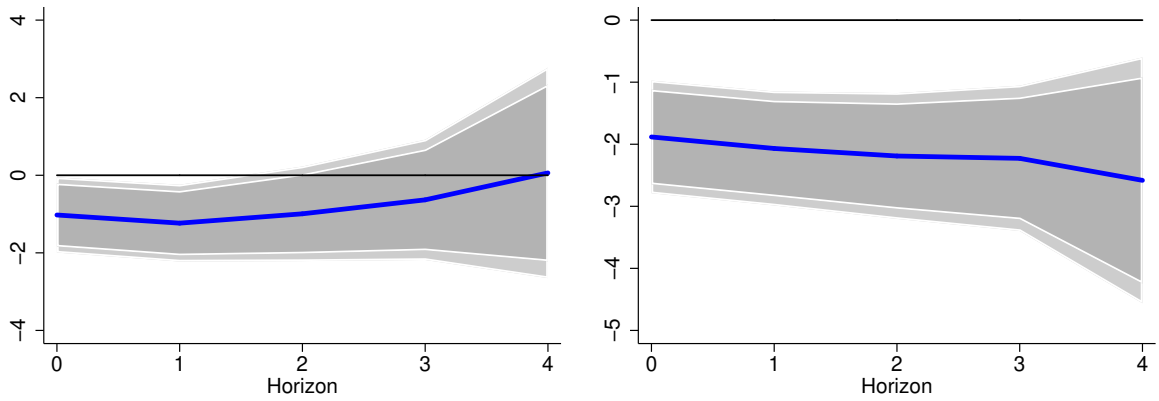
Appendix D Output and employment multipliers

In estimating output and employment government spending multipliers, we follow Gabriel et al. (2023) but use the identification strategy from the baseline analysis described in Section 3. We use local projections (Jordà 2005) and estimate for each horizon $h = 0, ..., 4$, the following equation:

$$\sum_{m=0}^{h} z_{i,t+m} = \beta_h \sum_{m=0}^{h} \frac{G_{i,t+m} - G_{i,t-1}}{Y_{i,t-1}} + \gamma_h(L)X_{i,t-k} + \alpha_{i,h} + \delta_{t,h} + \varepsilon_{i,t+m}, \tag{A.1}$$

where $z_{i,t+m}$ is either the change in real per capita GDP, $\frac{Y_{i,t+m}-Y_{i,t-1}}{Y_{i,t-1}}$, or the change in the employment rate, $\frac{E_{i,t+m}-E_{i,t-1}}{E_{i,t-1}}$, in region i between time $t-1$ and time $t+m$. $(L)X_{i,t-k}$ is a vector of control variables with $k = 2$, including lags of the dependent variable and of GDP and government spending growth, $\alpha_{i,h}$ are region fixed-effects, and $\delta_{t,h}$ are time fixed-effects. Figure D.1 depicts the cumulative GDP and employment multipliers, where the solid lines show the point estimate β_h over a horizon of four years and the dark and light shadings are 90% and 95% confidence bands, respectively. Standard errors are clustered at the regional level.

Figure D.1: Output and employment multipliers



(a) Output multiplier

(b) Employment multiplier

Notes: Panels D.1a and D.1b show the cumulative relative fiscal and employment multipliers estimated according to Equation (A.1). Shaded areas are 90% (dark) and 95% (light) confidence intervals.