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Uneven cuts: Fiscal consolidation and the composition of government spending

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All remaining errors are those of the authors.

Abstract

We present new evidence on the dynamic effects of fiscal consolidation shocks across different components of government spending. Based on data for 16 OECD countries over the 1995-2020 period, we use an instrumental variable approach that isolates exogenous fiscal tightening motivated by deficit reduction in a local projection framework. We find that fiscal consolidation shocks lead to sizable and persistent declines in public investment in the short to medium term, whereas reductions in government consumption are substantially smaller. Real expenditures on health, education, social protection, and environmental protection fall in response to fiscal tightening, albeit to varying degrees. We further show that the dampening effects of fiscal adjustment across spending categories depend on the macro-fiscal and political environment.

Keywords: Fiscal consolidation, austerity, public investment, government consumption, social spending, health spending

JEL classification: E62, H50

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1 Introduction

With fiscal deficits and public debt ratios elevated in many advanced economies, national governments face growing pressure to adopt fiscal consolidation measures (e.g. Darvas et al., 2025; Dynan & Elmendorf, 2025). When governments consolidate, they can adjust different types of expenditure, which can be classified broadly into public investment and government consumption. Adjustments to these two categories carry different economic implications. Public investment can generate benefits over many years and raise productivity and potential output (e.g. Bom & Ligthart, 2014). Cutting public investment may therefore weaken long-term growth or make improvements in fiscal sustainability more difficult by eroding the future tax base (e.g. Abiad et al., 2016; Larch et al., 2025). Reductions in government consumption, by contrast, lower public-sector demand but do not reduce the public capital stock (e.g. Ardanaz et al., 2024). Whether consolidation falls on public investment or on government consumption is therefore central to assessing its economic consequences. Beyond this broad classification, public spending is allocated across functional areas, such as social protection, education, health, defence, and environmental protection. Consolidation in these areas can have important consequences for income distribution, human capital formation, public security, and the green transition (e.g. Agnello & Sousa, 2014; Darvas & Wolff, 2023) in addition to entailing trade-offs for governments.

This paper contributes by estimating the dynamic effects of fiscal consolidation shocks on public investment, government consumption, and functional public expenditure categories across 16 OECD economies. We draw on the latest update of the IMF’s action-based consolidation dataset (Adler et al., 2024) and use the narrative consolidation data as an instrument for changes in cyclically adjusted fiscal balances within a local projection framework. We investigate the economic and political context that affects the response. On the economic side, we explore the role of the business cycle, public debt, and the fiscal deficit. On the political side, we focus on political fragmentation (i.e. the effective number of parties in a government), which recent work by Gabriel et al. (2025) suggests can undermine fiscal policy effectiveness.

Our main findings suggest that fiscal consolidations systematically affect public expenditure and its components. Consolidation shocks trigger large and persistent reductions in real (i.e. inflation-adjusted) public investment, substantially smaller declines in real government consumption, and significant cuts across most spending categories by government function (e.g. health, education, social protection). Examining spending by function, we find that consolidations reduce real expenditure across nearly all main categories, although the depth and timing of the adjustment vary considerably. Five years after the shock, cumulative real declines range from 13.9% for housing and community amenities and 9.2% for recreation, culture, and religion, through 6.1% for education and 3.9% for health, down to 1.6% for social protection. Economic affairs do not respond significantly, while the general public services category rises, reflecting interest payments and debt transactions rather than discretionary policy changes. The breadth of these declines is consistent with an ‘across-the-board’ approach to consolidation, which lowers decision-making costs when cuts must be implemented quickly and limits political conflict over targeted reductions (Raudla et al., 2013). The variation across categories, however, is consistent with political-economy constraints: the deepest and most persistent cuts fall on smaller, lower-salience areas with less powerful veto

players, while large, politically salient items (e.g. social protection) are largely shielded (e.g. Kickert et al., 2015).

We show that the responses depend on the state of the economy and the political context. Effects are markedly amplified during recessions, particularly for public investment and major spending functions (e.g. social protection, health, and education). Government consumption, by contrast, declines somewhat less in downturns. We further show that while there is a limited role of the public debt level, the fiscal deficit does matter for the response. Political fragmentation shapes the speed rather than the size of the investment adjustment. In addition, it also matters across expenditure functions, as spending on health, education and recreation, culture, and religion declines more strongly under low political fragmentation, whereas general public services, environmental protection, and economic affairs decline more strongly when fragmentation is high. It is primarily the response of public investment that is regime-dependent, while government consumption is largely unaffected by the deficit position or the political context.

Our results are robust to a variety of robustness checks. We complement our preferred instrumental variables (IV) strategy by quasi-experimental methods based on propensity scores (Imbens & Wooldridge, 2009; Jordà & Taylor, 2016). We further sequentially exclude countries from our dataset, use various combinations of controls, and test an alternative instrumental variable.

Related literature. The study contributes to several strands of the literature. More broadly, it adds to the literature on the impact of fiscal consolidation on a variety of macroeconomic and political outcome variables. While extensive research has examined the impact of fiscal consolidation measures on the macroeconomy (e.g. Yang et al., 2015; Carrière-Swallow et al., 2021), income distribution (e.g. Agnello & Sousa, 2014; Heimberger, 2020), and political stability (e.g. Kalbhenn & Stracca, 2020; Baccini & Sattler, 2025; Gabriel et al., 2025; Heimberger & Matzner, 2026a) as well as the factors influencing the initiation and success of fiscal adjustments (e.g. Heylen et al., 2013; Wiese et al., 2018; Alesina et al., 2019; Clements et al., 2025; Gootjes, 2025), much less is known about how the composition of public expenditures responds to fiscal tightening shocks.

Our study relates to existing evidence that shows that consolidations disproportionately reduce public investment relative to government consumption, leading to a shift in the composition of public expenditure (e.g. de Haan et al., 1996; Breunig & Busemeyer, 2012; Wenzelburger, 2014; Bamba et al., 2020; Stancik & Vålilä, 2012; Jacques, 2021). We add to this literature by using state-of-the-art econometric methods (Jordà, 2005) to provide credibly causal estimates of the dynamic effects of fiscal tightening shocks on public investment, government consumption, and the investment-to-consumption ratio.

The paper further contributes to the political-economy literature that studies the effects of fiscal consolidation on different government functions. This literature identifies an ‘across-the-board’ consolidation approach, where most spending categories display sizeable and persistent declines. This approach can lower decision-making costs – particularly when consolidations must be implemented quickly – and limit political conflict over targeted cuts (e.g. Raudla et al., 2013). Others find that declines reflect political-economy constraints – in other words, that declines happen where there are no political players shielding a certain spending area from consolidation pressures (e.g.

Kickert et al., 2015).

A closely related study is Castro (2017), which uses a fixed-effects estimator and narrative data up to 2012 to examine the effects of fiscal tightening on public spending classified by government function. Castro (2017) finds the most significant consolidation effects on defence, environmental protection, public order and safety, health, education, housing and community amenities, and social protection, with no statistically significant effects for economic affairs and a positive effect for general public services. While our results broadly align with these findings, we advance the literature by estimating the magnitude of causal effects up to five years after a consolidation shock and by providing new evidence on regime dependence.

The rest of the paper is structured as follows. Section 2 discusses the data used. Section 3 introduces the econometric approach. Section 4 presents the econometric results. Section 5 concludes.

2 Data

Our data sample consists of 16 countries over the 1995-2020 period: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, the Netherlands, Portugal, Spain, Sweden, the United Kingdom, and the United States.¹ We use government spending data on public investment and government consumption from the AMECO database of the European Commission for all EU countries in our sample. We extend the sample by including data on five OECD economies, for which data on government spending are available from the OECD Economic Outlook database. Cyclically adjusted fiscal indicators are taken from the IMF World Economic Outlook. Fiscal consolidation is measured as a percentage of GDP. The IMF's structural fiscal balance captures improvements or deteriorations in the fiscal position after adjusting for the economic cycle and excluding temporary and one-off measures. The cyclical adjustment is based on estimates of the output gap and budget elasticities. As an instrumental variable, we take the narrative fiscal consolidation dataset compiled by Adler et al. (2024), which compiles tax increases and government spending cuts explicitly motivated by deficit or debt reduction rather than contemporaneous or anticipated economic conditions. The country coverage follows the narrative fiscal dataset. The time span is constrained by data availability on different components of government spending for our whole set of countries.

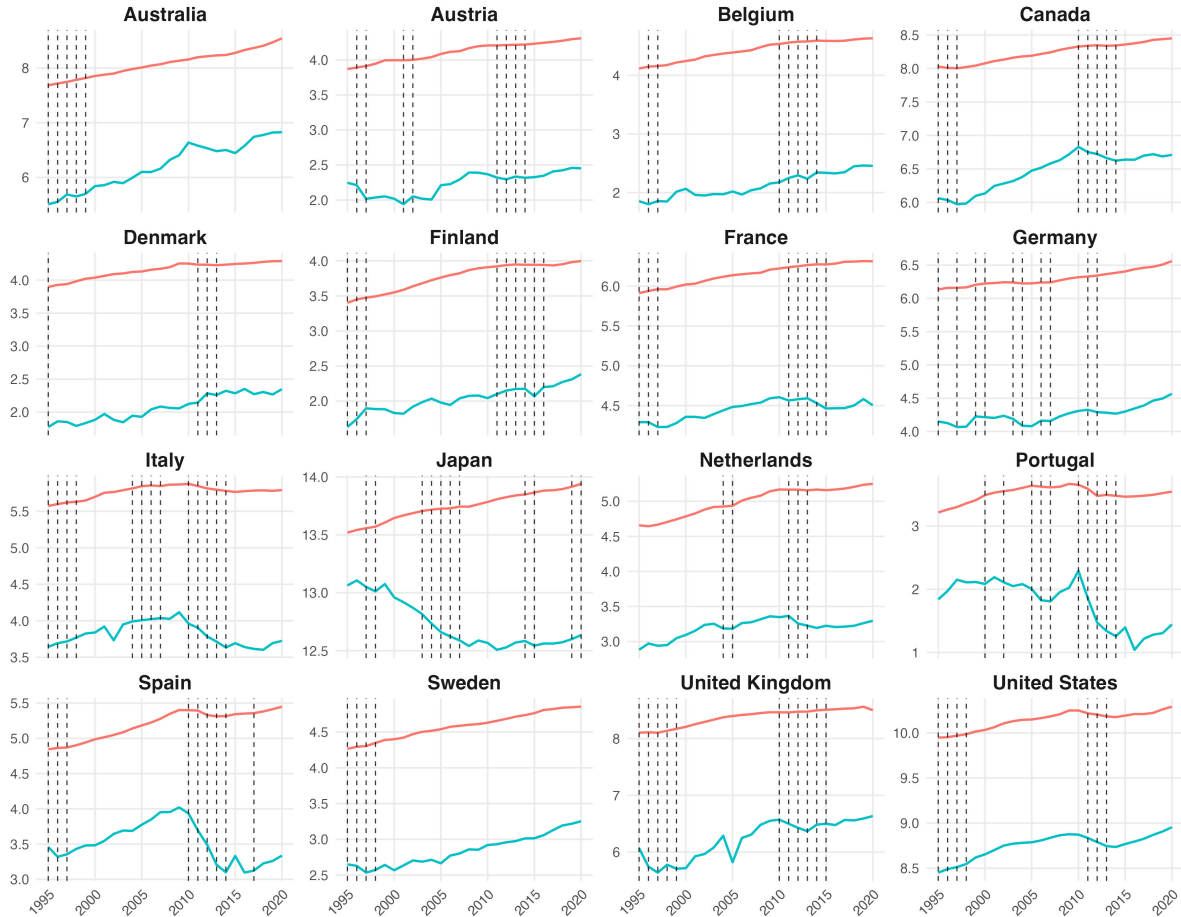
Figure 1 displays (log) real government consumption and (log) real public investment over the period of interest for all countries in our sample. Additionally, it depicts years with narrative fiscal consolidation. Government consumption shows an upward trend in all countries. Public investment, on the other hand, is much more volatile in most countries. All countries in our sample show several years of fiscal consolidation. On average across countries and years, the share of investment in total expenditures² amounts to approximately 7%, with considerable country heterogeneity. Belgium shows the smallest investment share in total expenditures (4.6% on average), while Japan shows

¹We excluded Ireland because multinational corporate activity there leads to distortions in GDP and related macro-fiscal indicators, which makes it difficult to compare Ireland reliably with the other countries.

²OECD Government at a Glance, public finance main indicators (DSD.GOV@DF.GOV.PF.YU), retrieved from the OECD Data Explorer. Available from 2007 onwards only.

the highest (10.3% on average).

Figure 1: Real public investment, real government consumption, and fiscal consolidation episodes



Notes: Authors' illustration. Real public investment (red solid lines) and real government consumption (blue solid lines) are shown in log values. Dashed lines indicate years with narrative fiscal consolidation shocks (Adler et al., 2024).

We use Eurostat/OECD data on the classification of spending by function of government (COFOG), which distinguishes 10 main categories of government spending: general public services; defence; public order and safety; economic affairs; environmental protection; housing and community amenities; health; recreation, culture, and religion; education; and social protection. In 2020, social protection had by far the largest average share in total government spending (39.0%), followed by health (15.9%), economic affairs (13.4%), general public services (11.0%), and education (10.2%) in our sample.

Other macroeconomic variables are obtained from databases of the IMF. The left-right government index is mainly based on CPDS (comparative political dataset; Armingeon et al., 2022) and provides a measure of the left-right classification of a country's government for the respective year, where zero is far-left and nine is far-right. Our measure of political fragmentation builds on Gabriel et al. (2025). We follow their approach and use the ParlGov database (Döring et al., 2022) to measure political fragmentation as the effective number of parties. The index equals the actual number of

parties when seat shares are distributed equally, and it is close to one if a single party holds the overwhelming majority. Descriptive statistics for the variables included in our econometric analysis are available in Table A.1.

3 Econometric approach

Different from other parts of the corresponding literature that focus on estimates regarding (short-term) effects of fiscal adjustments on government spending (e.g. Castro, 2017; Breunig & Busemeyer, 2012; Stancik & Vålilä, 2012; Bamba et al., 2020), we use a local projection framework (Jordà, 2005) to trace out the dynamic response of (different components of) government spending to contractionary fiscal policy shocks. We estimate the following baseline equation separately for each response horizon h (with $h = 0, \dots, 5$):

$$y_{i,t+h} - y_{i,t-1} = \beta_h F_{i,t} + \gamma_h X_{i,t-1} + \delta_i^h + \theta_t^h + \varepsilon_{i,t+h} \quad (1)$$

In our framework, $y_{i,t+h}$ represents the outcome variable of interest – namely, the logarithm of real public investment, real government consumption, the investment-to-consumption ratio, or function-specific government expenditure – observed h periods after the fiscal consolidation shock. The term $y_{i,t+h} - y_{i,t-1}$ therefore captures the cumulative change in y at horizon h . $F_{i,t}$ corresponds to the change in the structural fiscal balance for country i in year t , serving as our measure of a change in the fiscal stance. The coefficient β^h therefore captures the effect of an increase in $F_{i,t}$ of 1 percentage point (pp) of GDP (i.e. a fiscal consolidation) on the outcome h periods after the shock. $X_{i,t-1}$ denotes control variables, included with a lag to capture their dynamic behaviour. The controls comprise GDP growth, reflecting past economic momentum; the real long-term government bond yield, capturing financial conditions and monetary policy; the government’s left-right orientation, representing political preferences; and the lagged dependent variable. Country-fixed effects (δ_i^h) and year-fixed effects (θ_t^h) control for time-invariant national characteristics and global shocks, respectively. The error term ($\varepsilon_{i,t+h}$) represents the random disturbance. To obtain reliable inference in the presence of serial correlation and cross-sectional dependence, we employ Driscoll & Kraay (1998) standard errors.

To identify fiscal consolidation episodes, we rely on the narrative (or ‘action-based’) approach, which is widely used in the literature studying the macroeconomic consequences of fiscal tightening. This method addresses shortcomings of the conventional approach, which infers consolidation from movements in cyclically adjusted fiscal balances and can accordingly suffer from identification and measurement problems (e.g. Hernández de Cos & Moral-Benito, 2013; Guajardo et al., 2014; Gechert et al., 2019). Specifically, we use the IMF’s updated narrative dataset on fiscal consolidation measures, which records consolidations explicitly motivated by deficit-reduction objectives (Adler et al., 2024). By construction, this approach aims to exclude policy actions taken as a direct response to current or anticipated macroeconomic conditions.

In line with previous contributions (Guajardo et al., 2014; Jordà & Taylor, 2016; Heimberger & Matzner, 2026b), we estimate equation (1) using an instrumental variables two-stage least squares (IV-2SLS) approach. In the first stage, changes in the structural fiscal balance are regressed on the

narrative-based consolidation measure. In the second stage, the respective government spending variable is regressed on the predicted (instrumented) change in the structural balance within the local projection framework. Accordingly, the estimated responses should be interpreted as the dynamic effects of fiscal consolidation shocks motivated by deficit reduction that induce changes in the structural fiscal position.

We exploit exogenous variation in fiscal consolidation episodes motivated by deficit reduction to trace their dynamic effects on government spending. Identification relies on two standard assumptions. First, the relevance condition requires that the narrative consolidation indicator predicts movements in the structural fiscal balance. The first-stage results strongly support this condition: the Kleibergen-Paap rk Wald F statistic is 15 or higher across all main variables and horizons, exceeding the conventional threshold of 10 and thereby indicating that the instrument has substantial predictive power for changes in the structural balance. Second, identification requires the narrative consolidation measure (i) to be uncorrelated with contemporaneous or anticipated shocks that independently affect government spending as well as (ii) to influence spending only through the induced change in the structural fiscal position. The construction of the narrative dataset (Adler et al., 2024) supports this assumption, as it identifies fiscal measures explicitly motivated by deficit reduction and excludes policy actions taken in response to cyclical economic developments. The narrative approach is widely viewed in the literature (e.g. Romer & Romer, 2010; Guajardo et al., 2014; Ramey, 2019) as providing plausibly exogenous variation.

To test for regime dependencies, we follow Ramey & Zubairy (2018) and extend our baseline specification (Equation 1) as follows:

$$y_{i,t+h} - y_{i,t-1} = I_{i,t} [\beta_{S1}^h F_{i,t} + \gamma_{S1}^h X_{i,t-1}] + (1 - I_{i,t}) [\beta_{S2}^h F_{i,t} + \gamma_{S2}^h X_{i,t-1}] + \delta_i^h + \theta_t^h + \epsilon_{i,t+h} \quad (2)$$

Here, $I_{i,t}$ is an indicator variable for the economic or political regime at the time of the shock (t). β_{S1}^h and β_{S2}^h capture the effects of a fiscal consolidation shock on our outcome variables at horizon h in different regimes. We instrument $I_{i,t}F_{i,t}$ and $(1 - I_{i,t})F_{i,t}$ with $I_{i,t}Z_{i,t}^{IV}$ and $(1 - I_{i,t})Z_{i,t}^{IV}$, respectively.

Equation 2 enables us to directly compare the response of our variables of interest across regimes. Additionally, we estimate the difference between the responses and determine whether the differences across states are statistically significant:

$$y_{i,t+h} - y_{i,t-1} = \phi_{S1}^h F_{i,t} + \gamma_{S1}^h X_{i,t-1} + (1 - I_{i,t}) [\phi_{S2}^h F_{i,t} + \gamma_{S2}^h X_{i,t-1}] + \delta_i^h + \theta_t^h + \epsilon_{i,t+h} \quad (3)$$

Here, ϕ_{S2}^h shows the difference in response across two states. More specifically, $\beta_{S1}^h = \phi_{S1}^h$ and $\phi_{S2}^h = \beta_{S2}^h - \beta_{S1}^h$. Here, we instrument $F_{i,t}$ and $(1 - I_{i,t})F_{i,t}$ with $Z_{i,t}^{IV}$ and $(1 - I_{i,t})Z_{i,t}^{IV}$, respectively.

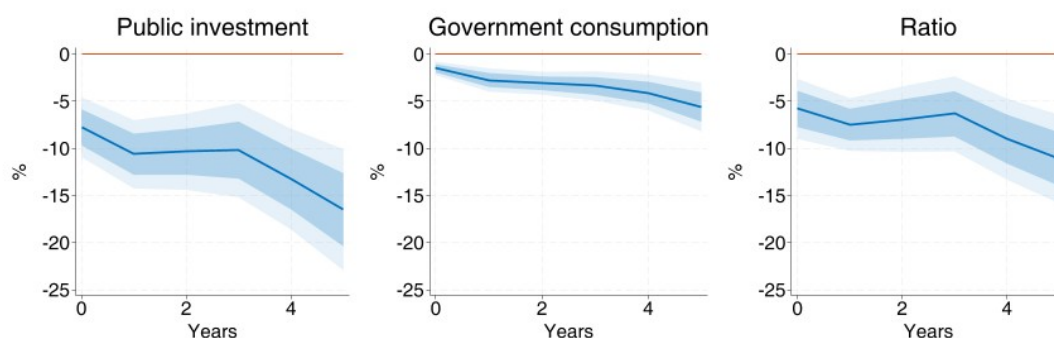
4 Econometric results

Section 4.1 shows the baseline results. Section 4.2 shows that the baseline results are robust to changes in the specification. Section 4.3 presents the results from the regime-dependence analysis.

4.1 Baseline results

Figure 2 presents the cumulative dynamic effects of fiscal consolidation shocks on real public investment, real government consumption, and the investment-to-consumption ratio, estimated by Equation 1. Public investment drops by about 7.8% on impact and by a cumulative 16.5% five years after the shock. Government consumption also declines, though far less: by 1.5% on impact and by a cumulative 5.6% five years later. Consequently, the investment-to-consumption ratio falls markedly, decreasing by 5.8% on impact and by around 11.1% five years after the consolidation shock. All responses are statistically significant at every horizon. Hence, consolidations disproportionately reduce public investment relative to government consumption, implying a shift in the composition of public spending. This can be explained by the nature of each spending type: investment spending is often discretionary and rather easy to adjust as long-term projects may be postponed or cancelled and the immediate costs of adjustment are often not visible to the public. Government consumption, on the other hand, consists largely of public-sector wages, social benefits, and contracted purchases of goods and services, which can typically only be reduced at a higher political and administrative cost.

Figure 2: The effects of a fiscal consolidation shock of 1 pp of GDP on real public investment, real government consumption, and the investment-to-consumption ratio



Notes: Authors' estimations. Shaded light (dark) areas represent 90% (68%) confidence bands.

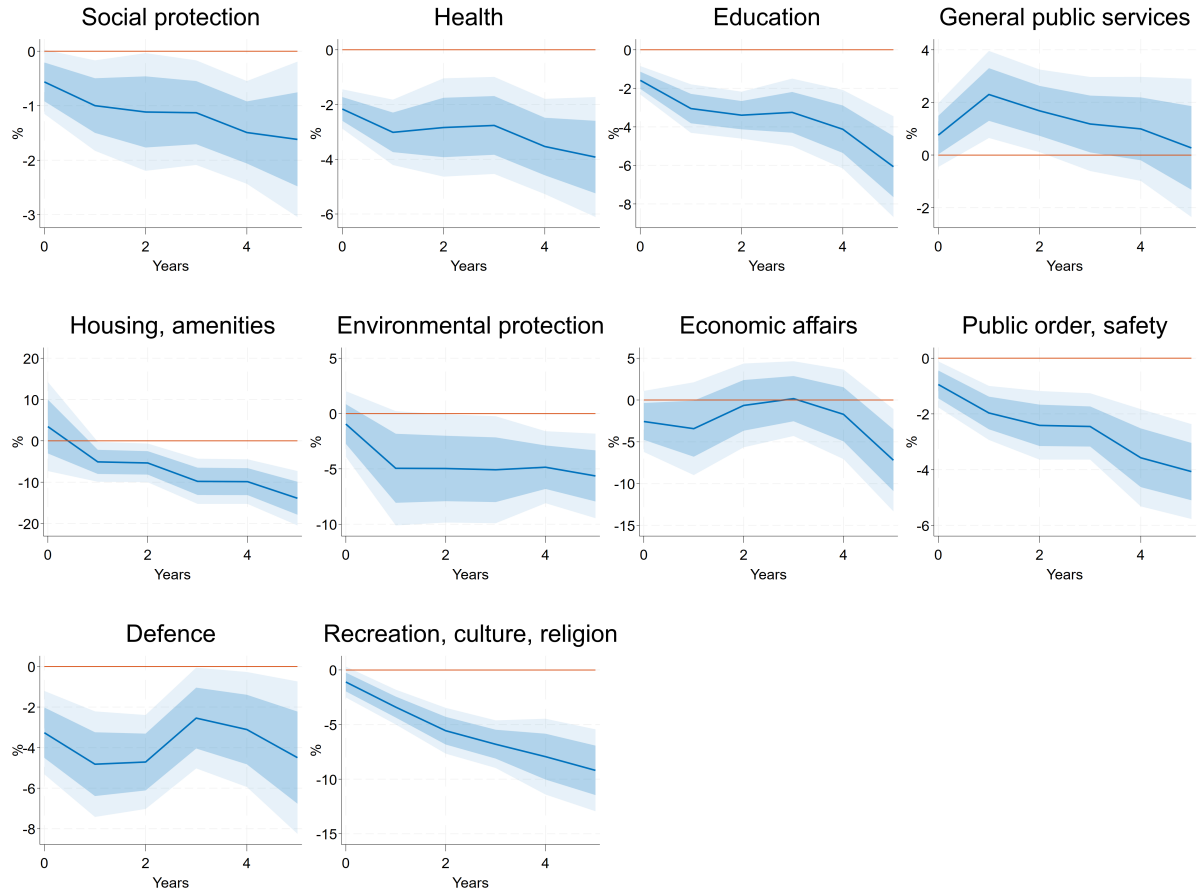
Figure 3 displays the responses of different government spending functions to consolidation shocks. Most categories exhibit a persistent decline in real expenditure, though the effect size varies substantially. Five years after the shock, the point estimates of the reductions amount to cumulative real spending declines of: 13.9% for housing and community amenities; 9.2% for recreation, culture, and religion; 6.1% for education; 5.6% for environmental protection; 4.1% for public order and safety; 3.9% for health; and 1.6% for social protection. Fiscal consolidation shocks lead to persistent reductions across these subcategories. Defence spending, on the other hand, decreases only in the first two years after the shock, and economic affairs do not react significantly. General public services – driven by interest payments and public debt transactions – is the only major

category that increases, with a peak response of 2.3%.³ The effects are not significantly different from zero after five years. The dynamic response differs across functions: defence spending falls sharply on impact but recovers over the medium run, while the decline in education spending builds gradually.

Overall, the responses of different government spending categories are consistent with the political-economy literature on ‘across-the-board’ consolidation, which reduces decision-making costs and lowers political conflict over cuts (e.g. Raudla et al., 2013). This matters specifically when consolidations have to be implemented quickly. The variation in responses is nonetheless meaningful. The strongest and most persistent reductions are in comparatively small and lower-salience categories (e.g. housing and community amenities or recreation, culture, and religion). This is consistent with governments concentrating adjustment in categories with fewer organised stakeholders. Social protection, on the other hand, is the largest spending category in our sample but declines by only 1.6%. This suggests that governments disproportionately target items perceived as being less important by powerful political veto players. Conversely, categories showing no or only small declines may reflect political-economy constraints that shield them from consolidation pressures (e.g. Kickert et al., 2015).

³One possible explanation is that fiscal consolidation can raise sovereign borrowing costs when its contractionary effects worsen perceived debt sustainability, particularly during periods of fiscal stress (Born et al., 2020). Higher borrowing costs subsequently translate into higher interest payments as public debt is refinanced.

Figure 3: Responses of COFOG subcategories



Notes: The figure shows impulse responses of COFOG spending to a fiscal consolidation shock of 1 pp of GDP. Shaded light (dark) areas represent 90% (68%) confidence bands.

4.2 Robustness

To verify the stability of our main findings, we perform several robustness checks: (i) we adopt a different econometric estimator; (ii) we sequentially exclude individual countries from the dataset; (iii) we experiment with alternative combinations of control variables within the local projection framework; and (iv) we test an alternative instrumental variable. In each case, we modify only one aspect of the benchmark specification, holding all remaining components constant.

First, we assess the robustness of our results using the Augmented Inverse Probability Weighting (AIPW) estimator (Imbens & Wooldridge, 2009; Jordà & Taylor, 2016). This alternative identification approach combines propensity score weighting with doubly robust treatment effect estimation and relies on selection on observables rather than an external instrument. The procedure involves two steps. In the first step, we estimate the probability that a fiscal consolidation occurs in a given year using the same macroeconomic and fiscal controls as in our baseline specification. These estimated probabilities (propensity scores) capture the likelihood of treatment conditional on observable characteristics. In the second step, we incorporate these scores into the local projection framework by weighting observations with the inverse of their predicted probability of treatment.

In practice, consolidation episodes receive weights equal to the inverse of their estimated propensity score, thereby assigning greater influence to observations that are less predictable based on observable fundamentals. This reweighting scheme helps mitigate potential selection bias arising from observable characteristics (Jordà & Taylor, 2016). The augmented component further improves finite-sample performance by providing an additional correction when estimated treatment probabilities are close to zero or one (Jordà, 2023). A key limitation of the AIPW framework in our context is that it requires defining treatment as a binary indicator (i.e. whether a consolidation occurs in a given year rather than as a continuous measure of its magnitude). As a result, this approach abstracts from variation in the size of fiscal adjustments, unlike our IV specification. Accordingly, the AIPW estimates capture the average treatment effect of experiencing a fiscal consolidation episode rather than the response to a change in the structural fiscal balance. This limits direct comparability between the two sets of results. Section B.1 in the Appendix provides further details on the AIPW estimator and the first-stage estimations. Figure B.1 shows that the AIPW estimates align with the IV results in qualitative terms. In particular, the estimated responses of public investment are larger than those of government consumption, especially in the short run, and the investment-to-consumption ratio declines persistently following a consolidation episode. For public investment, the AIPW-estimated effects after five years are somewhat smaller than those obtained using the IV specification. Differences in scale can reflect the interpretation of the two estimators. While the IV results trace out the dynamic response to a consolidation shock of 1 pp of GDP, the AIPW estimates capture the average effect of a narratively identified consolidation episode. In our sample, the mean size of such an episode is 0.35 pp of GDP; hence, smaller effect sizes under AIPW are to be expected. Overall, the AIPW findings support the conclusion that fiscal consolidation disproportionately reduces public investment relative to government consumption.

Second, our findings could potentially be disproportionately influenced by the specific countries in the sample. To evaluate this concern, we estimate the headline results for the EU only and conduct a series of leave-one-out exercises, re-estimating the baseline specification while sequentially omitting one country. The results do not provide any indication that the overall effects are driven by a single country. In particular, Figures B.2 and B.3 in the Appendix illustrate that the main conclusions are unchanged when restricting our sample to the EU and sequentially omitting one country, thereby confirming that our estimates are not dependent on single economies.

Third, our findings could potentially be sensitive to the particular set of controls included in the local projection setup. To evaluate this possibility, we re-estimate the baseline model using alternative control configurations. Specifically, we adjust the baseline specification in separate exercises by introducing the lagged public debt ratio in Figure B.4 and the lagged output gap in Figure B.5 as well as by excluding the left-right government index in Figure B.6. Across these alternative specifications, the estimated effects remain quantitatively very similar, indicating that our results are not driven by the precise choice of controls.

Finally, we use an alternative instrumental variable to identify the effect. Following Heimberger & Matzner (2026a), we use the interaction of the narrative measure with a binary indicator defined by the actual fiscal balance falling below the -3% fiscal deficit threshold. This allows us to restrict the identification to episodes with high external institutional pressure. Figure B.7 illustrates that the results are robust to using this alternative instrument.

We perform several additional robustness exercises for our main results on the responses of COFOG subcategories. Figure B.8 reports the results for the EU subsample: while the dynamics differ slightly, the responses remain robust. Figure B.9 reports the results of re-estimating the responses with alternative control sets. As before, we separately (i) include the lagged public debt ratio, (ii) add the lagged output gap, and (iii) exclude the left-right government index. The results are robust to the choice of controls.

4.3 Regime-dependent effects

In the following subsection, we aim to shed light on the economic and political circumstances that shape the (relative) investment-to-consumption response and functional spending. To do so, we estimate Equation 2, which shows us the regime-specific impulse response function. Additionally, we estimate Equation 3, which allows us to determine whether the regime-dependent responses differ significantly from one another. First, we explore the role of the business cycle, public debt, and the fiscal deficit in shaping the expenditure responses to consolidation shocks (Section 4.3.1). Second, we investigate the political context of the consolidation by differentiating between states of low and high political fragmentation (Section 4.3.2).

4.3.1 Economic regime dependence

We analyse whether the dynamic effects of fiscal consolidations on government spending differ during recession and non-recession periods. To do so, we follow Auerbach & Gorodnichenko (2012) and assume that the economy is in a recessionary state roughly 20% of the time. Accordingly, we use the 20th percentile of the IMF's output gap distribution as the threshold to divide the sample into lower and upper regimes.

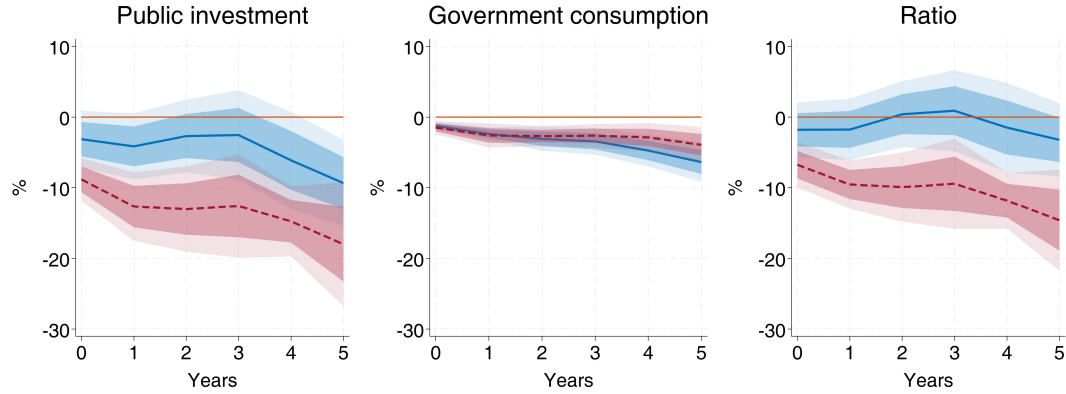
Figure 4 shows that the response of public investment to a fiscal consolidation shock of 1 pp of GDP is markedly stronger during recessions at short horizons. Real public investment declines by approximately 8.8% on impact, with the cumulative contraction deepening to 18.0% after five years. Public investment is typically more exposed to fiscal tightening in recessions, as it is politically and administratively easier to postpone or scale back than many components of government consumption (e.g. Oxley & Martin, 1991; de Haan et al., 1996; Jacques, 2021) – particularly those tied to legal entitlements or rigid current spending commitments. During expansions, by contrast, reductions in public investment are more moderate, although still sizeable. Our finding that investment effects are generally larger and more persistent in downturns is consistent with Bamba et al. (2020) and Pérez & Rojas (2021), and it may help explain the documented procyclicality of public investment in such periods (e.g. Lane, 2003).

Government consumption, on the other hand, declines more strongly in non-recession periods, with persistent differences across states: the gap between recession and non-recession periods widens over time. The reasoning is similar to before: reducing government consumption implies cuts in wages, employment, or services, which are politically costly to adjust. Moreover, unemployment spending increases endogenously during recessions due to the higher level of unemployment. With unemployment already elevated, public-employment reductions may also be particularly difficult to justify.

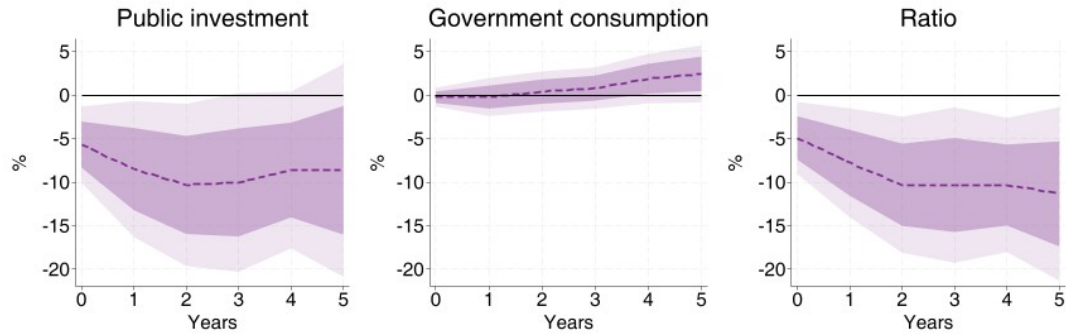
Overall, we show that the investment-to-consumption ratio falls in response to fiscal tightening in downswings but does not decline in upswings, which is in line with Bamba et al. (2020). Our results are robust to using the 40th percentile of the output gap distribution (Figure B.10).

Figure 4: Fiscal consolidation across low- and high-output-gap regimes

(a) Responses by output-gap regime



(b) Difference across regimes



Notes: Panel (a) shows the responses to a fiscal consolidation shock of 1 pp of GDP when the output gap is below (red) and above (blue) the 20th percentile of the output-gap distribution, estimated according to Equation 2. Panel (b) displays the difference across regimes (above minus below), estimated according to Equation 3. Shaded light (dark) areas represent 90% (68%) confidence bands.

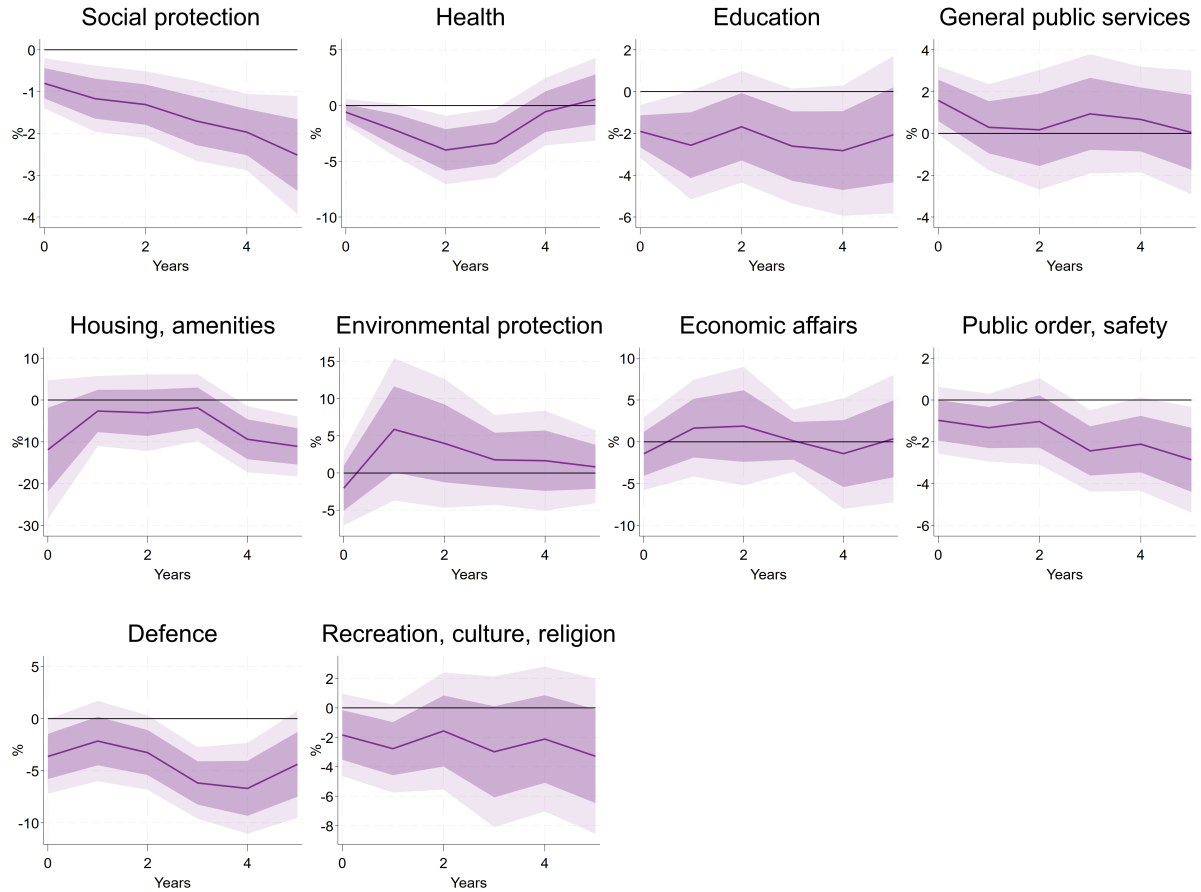
Next, we turn to the regime-dependent results across functional spending categories. Here, we only show the differential response for readability.⁴ Figure 5 shows that the importance of the business cycle varies across spending categories. For social protection, health, education, and defence, the dampening effect of a consolidation shock is stronger during recessions. We do not observe business-cycle dependence across other spending categories.

This may reflect that fiscal adjustment in downturns takes place under greater budgetary pressure: revenues are weak; financing needs are pressing. Governments may therefore have less scope to concentrate cuts on a small number of flexible expenditure items. In health and education, adjustment can take the form of hiring restraints, lower intermediate consumption, or reduced transfers to subnational governments; parts of defence spending, especially procurement, can be postponed. The result for social protection may point to discretionary cuts in benefits, eligibility,

⁴For reference, Figure C.1 in the Appendix shows the regime-dependent effects according to estimating Eq. 2.

or indexation during consolidation episodes.

Figure 5: Fiscal consolidation and functional spending: difference across output-gap regimes

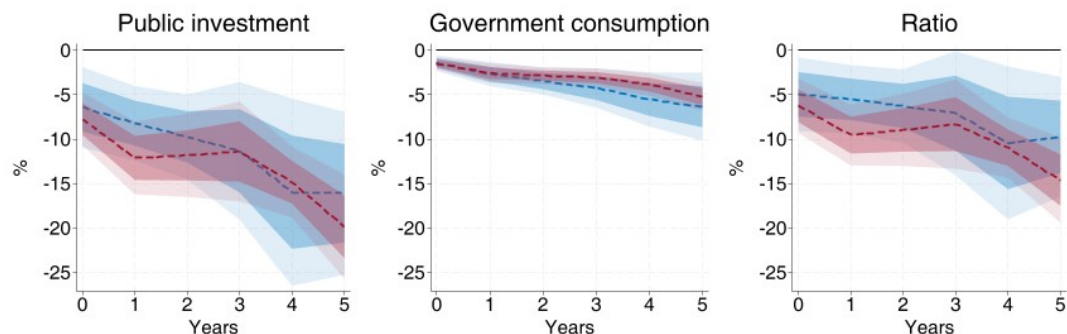


Notes: The figure shows the difference across output-gap regimes (low minus high) in the responses of functional government spending categories to a fiscal consolidation shock of 1 pp of GDP, estimated according to Equation 3. States are defined by the 20th percentile of the output-gap distribution. Shaded light (dark) areas represent 90% (68%) confidence bands.

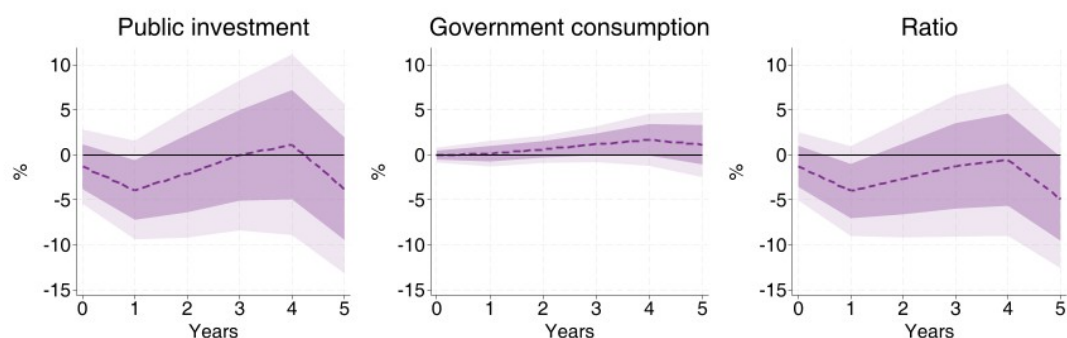
Furthermore, we explore the role of the public debt ratio for the responses. We use the median of the debt-to-GDP ratio as a threshold to determine regimes of high and low public debt. Results are displayed in Figure 6. We do not find large differences in the responses across states. While investment declines somewhat more in the first year after the shock in a state of high debt-to-GDP, the response is not significantly different thereafter. Government consumption does not show regime dependencies. Figure 7 shows the differential impact of functional spending in a regime of high public debt compared to a regime of low public debt. We do not find large differences in response across states for functional spending categories. While spending for housing and community amenities and defence declines less when public debt is high, spending on recreation, culture, and religion declines somewhat more strongly when public debt is high. These differences are not very persistent, however, and we find that there are no significant differences in response to fiscal consolidation shocks after five years.

Figure 6: Fiscal consolidation across high- and low-debt regimes

(a) Responses by debt regime

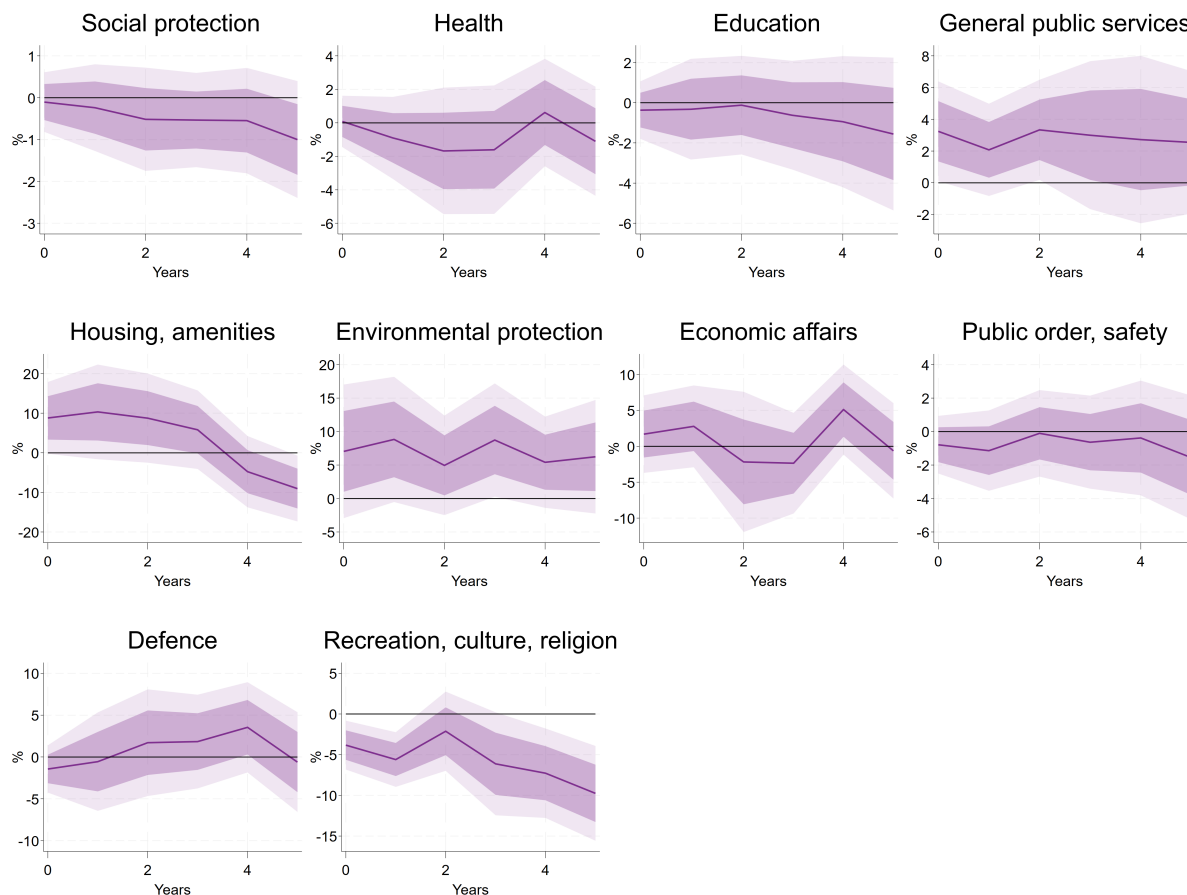


(b) Difference across regimes



Notes: Panel (a) shows the responses of the debt-to-GDP ratio to a fiscal consolidation shock of 1 pp of GDP when the debt-to-GDP ratio is below (blue) and above (red) its median, estimated according to Equation 2. Panel (b) displays the difference across regimes (high minus low debt), estimated according to Equation 3. Shaded light (dark) areas represent 90% (68%) confidence bands.

Figure 7: Fiscal consolidation and functional spending: difference across high- and low-debt regimes

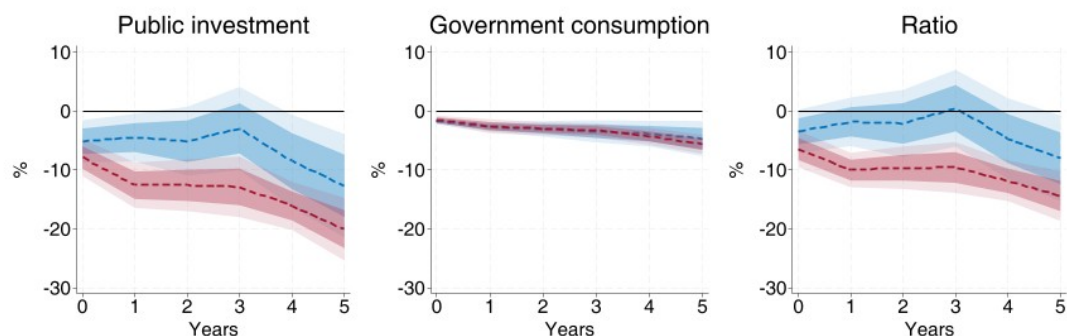


Notes: The figure shows the difference across debt-to-GDP regimes (high minus low) in the responses of functional government spending categories to a fiscal consolidation shock of 1 pp of GDP, estimated according to Equation 3. Shaded light (dark) areas represent 90% (68%) confidence bands.

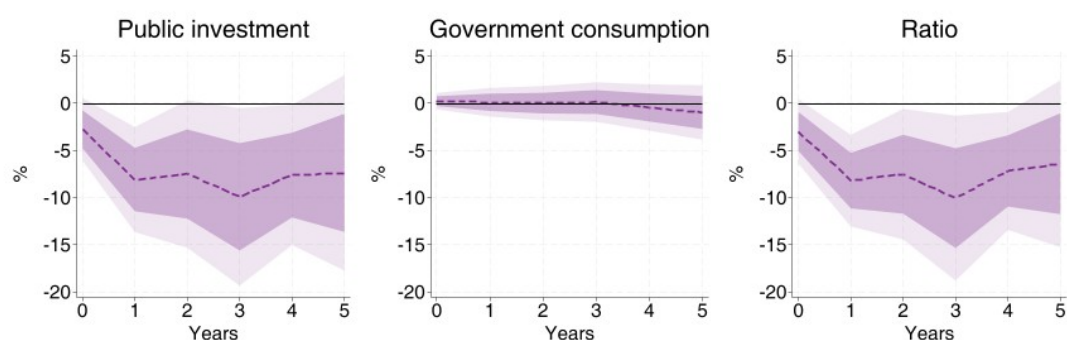
In Figure 8, we explore differences in the responses according to the Maastricht rule, which requires the fiscal deficit to be below 3% of GDP. The Maastricht rule is only applicable in the EU (and 11 out of 16 countries in our sample are EU members), but we use it as a general threshold for our estimations. While the response of government consumption does not differ across states, public investment declines more sharply when the deficit is high. The deficit appears to be a binding constraint for the response of public spending to consolidation shocks. One explanation is that the fiscal deficit determines current borrowing requirements. In the EU, governments with a deficit above the threshold typically enter an excessive deficit procedure (EDP) and need to show an improvement (correction) of the excessive deficit during the consolidation period. When looking at the functional spending categories, three categories stand out: when the deficit is greater than 3% of GDP, spending on recreation, culture, and religion shows a persistent and stronger decline. On the other hand, general public services as well as housing and community amenities decline more strongly when the deficit is below 3% of GDP.

Figure 8: Fiscal consolidation inside and outside the Maastricht deficit limit

(a) Responses by deficit regime

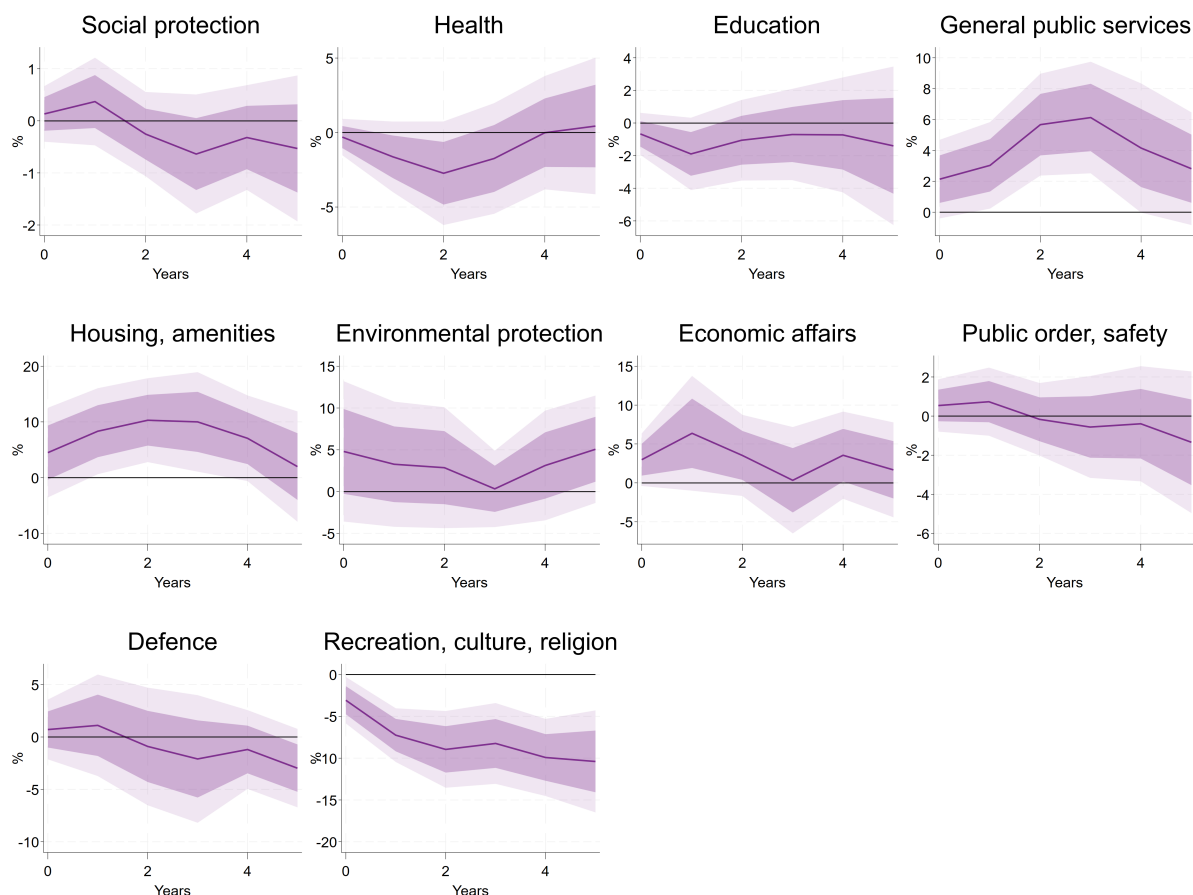


(b) Difference across regimes



Notes: Panel (a) shows the responses to a fiscal consolidation shock of 1 pp of GDP when the government deficit is below (blue) and above (red) the Maastricht threshold of 3 % of GDP, estimated according to Equation 2. Panel (b) displays the difference across regimes (breach minus no breach), estimated according to Equation 3. Shaded light (dark) areas represent 90% (68%) confidence bands.

Figure 9: Fiscal consolidation and functional spending: difference across deficit regimes



Notes: The figure shows the difference across deficit regimes (outside vs inside Maastricht deficit limit) in the responses of functional government spending categories to a fiscal consolidation shock of 1 pp of GDP, estimated according to Equation 3. Shaded light (dark) areas represent 90% (68%) confidence bands.

4.3.2 Political regime dependence

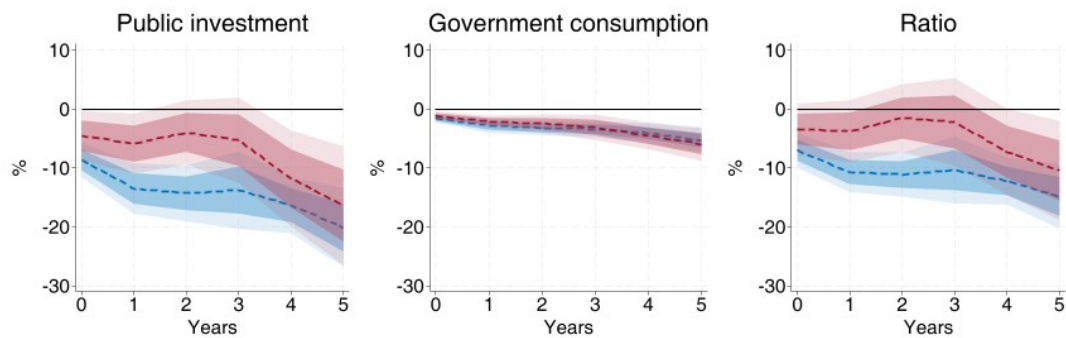
Gabriel et al. (2025) show that political fragmentation shapes the transmission of fiscal consolidation, meaning that the fiscal GDP multiplier is lower in times of high political fragmentation. They explain their findings with a conditional confidence channel: only in periods of low fragmentation do fiscal interventions move household and business confidence. We follow their approach and calculate an index of political fragmentation by collecting data on the allocation of parliamentary seats from the ParlGov database (Döring et al., 2022), as explained in Section 2. We use the median of the index to determine regime dependence. Results are displayed in Figure 10. Government consumption does not show any regime dependencies. Public investment, however, declines faster when fragmentation is low. After five years, the responses are not significantly different from one another. This can be explained by the government's decision-making power: where support is concentrated in few parties, governments face fewer veto players and can react faster by reducing discretionary spending, whereas fragmented parliaments may find it harder to negotiate the distribution of the adjustment burden among coalition partners. The convergence of the responses at longer horizons suggests that fragmentation affects the timing rather than the eventual magnitude

of the investment response.

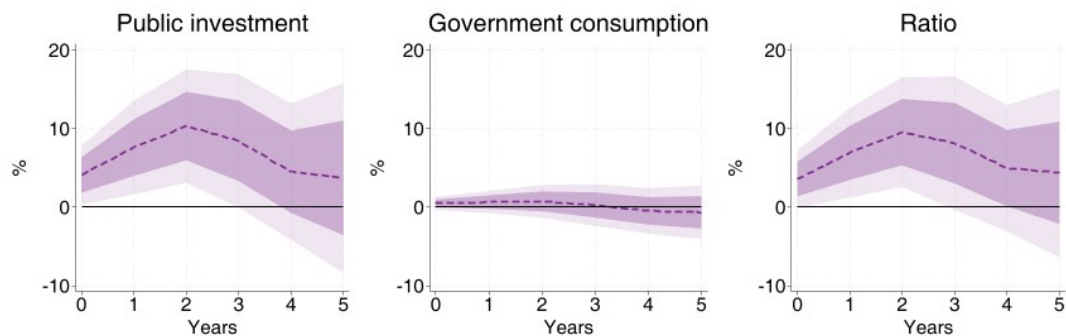
Figure 11 displays the differential impact of functional spending categories across regimes of political fragmentation. When political fragmentation is high, spending declines more for general public services, environmental protection, and economic affairs. When political fragmentation is low, on the other hand, spending declines more across the following areas: health, education, and recreation, culture, and religion.

Figure 10: Fiscal consolidation under low and high political fragmentation

(a) Responses by fragmentation regime

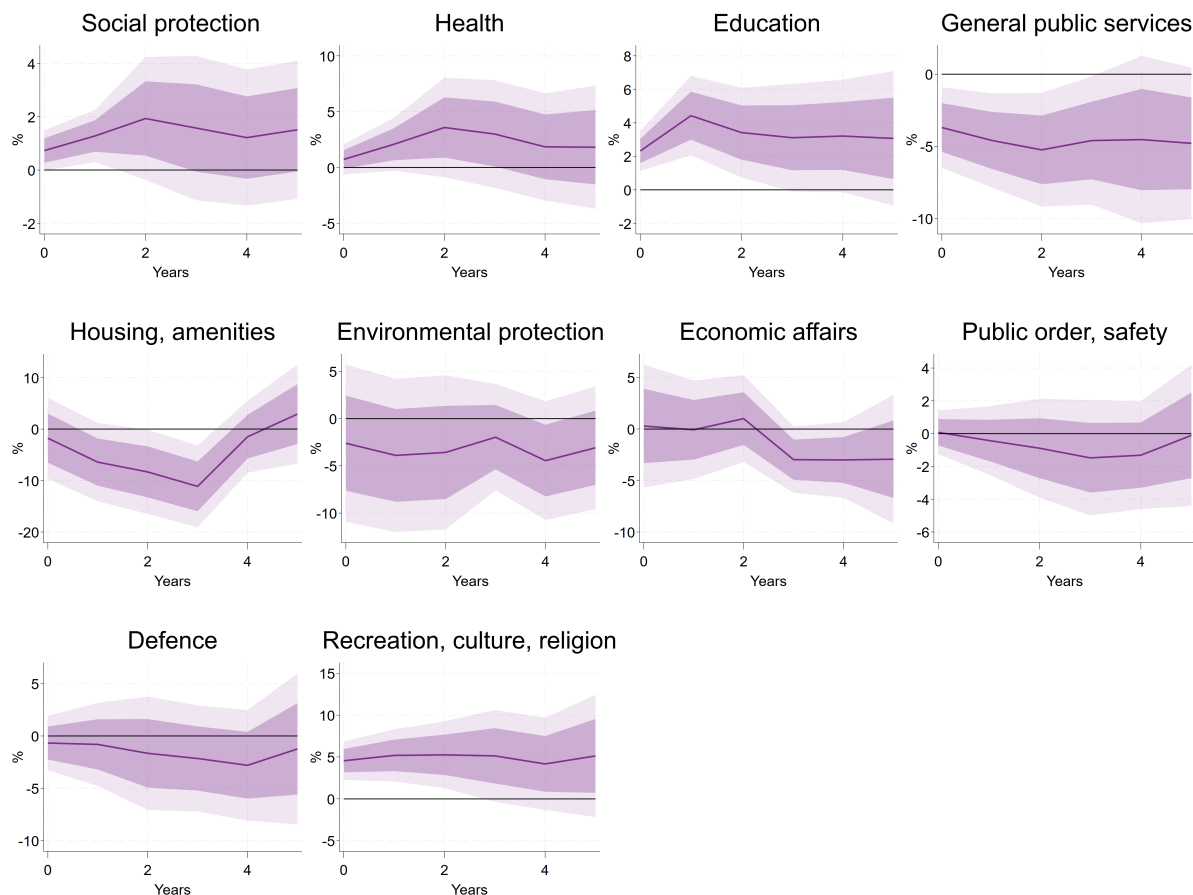


(b) Difference across regimes



Notes: Panel (a) shows the responses to a fiscal consolidation shock of 1 pp of GDP under low (blue) and high (red) political fragmentation, estimated according to Equation 2. States are defined by the median. Panel (b) displays the difference across regimes (high minus low fragmentation), estimated according to Equation 3. Shaded light (dark) areas represent 90% (68%) confidence bands.

Figure 11: Fiscal consolidation and functional spending: difference across fragmentation regimes



Notes: The figure shows the difference across fragmentation regimes (high minus low fragmentation) in the responses of functional government spending categories to a fiscal consolidation shock of 1 pp of GDP, estimated according to Equation 3. Shaded light (dark) areas represent 90% (68%) confidence bands.

Taken together, the regime-dependent results point to public investment as the major adjustment margin in terms of compositional changes in expenditure. Investment responds more strongly to consolidation shocks in recessions and when the deficit exceeds the 3%-of-GDP threshold, and it adjusts faster under low political fragmentation. However, government consumption responds largely independently from the macro-fiscal context. If anything, it declines somewhat less during downturns. The regimes that matter are those constraining governments in the short run: the position in the business cycle and the current borrowing requirement. The public debt ratio, by contrast, does not show meaningful regime-dependent differences at any horizon. The differential responses across functional categories reinforce this reading, though they do not follow a single ordering across states.

5 Conclusion

This paper provides new evidence on how fiscal consolidation affects different components of public expenditure in OECD countries. We investigate the dynamic effects of fiscal consolidation

shocks using instrumental variable (IV) estimation in a local projection framework. We document that consolidation leads to large and persistent declines in inflation-adjusted public investment, substantially smaller reductions in government consumption, and declines across most spending categories by government function. These effects depend on the state of the economy and the political context. Effects are amplified during recessions, especially for public investment and several major spending functions. Government consumption, on the other hand, falls somewhat less during recessions. Furthermore, the fiscal deficit matters for determining the responses of public investment and spending by function, while there is a muted role for public debt levels. Political fragmentation matters primarily for the speed and dynamics of the adjustment.

Overall, our results suggest that fiscal consolidations in the past have disproportionately targeted public investment and a range of public services. This has reshaped expenditure profiles. Public investment is often a politically easier target for large cuts than many components of government consumption. Given that public investment typically has stronger short-run output effects (e.g. Abiad et al., 2016; Gechert & Rannenberg, 2018; Ardanaz et al., 2024; Heimberger & Dabrowski, 2026) and potentially large long-run effects on productive capacity (e.g. Gechert et al., 2019; Klein Martins, 2025), consolidation strategies that reduce public investment may harm growth and, ultimately, undermine debt sustainability (e.g. Aschauer, 1989; IMF, 2024).

Our findings carry implications for current fiscal policy debates. In Europe, the new EU fiscal framework aims to safeguard public investment. It allows member states to ask for an extension of multi-year fiscal adjustment episodes if they commit to investment and reform packages that keep the public investment ratio at least constant (i.e. avoid cuts in public investment). However, data from the first round of fiscal plans under the new framework suggests that countries facing stronger consolidation pressures continue to face greater downward pressure on public investment (Boivin & Darvas, 2025). This echoes patterns observed in past consolidation episodes, although the planned reductions in public investment are much smaller than those following the global financial crisis and the euro crisis (e.g. Pérez & Rojas, 2021). Given the budgetary trade-offs involved, however, actual investment outcomes may ultimately be weaker than currently planned, particularly if fiscal pressures intensify during implementation.

Future research can build on our results in at least three ways. First, in-depth case studies of specific consolidation episodes with evidence on spending cuts beyond the rough categorisation in existing narrative datasets (e.g. Adler et al., 2024) could provide insights into why certain items are targeted and how effective and successful these adjustments ultimately are. This should include multi-year consolidation efforts across advanced economies since the COVID-19 pandemic once more detailed data become available to enable meaningful historical comparisons. Second, there is a need to study emerging market economies, where institutional characteristics, financing constraints, and exposure to external shocks may trigger different spending responses to consolidation shocks (e.g. Carrière-Swallow et al., 2021). Finally, further work is needed to develop macroeconomic models that allow for estimating the effects of cutting different components of government spending on a wide range of macroeconomic and distributional outcomes (e.g. IMF, 2024), which would enable a more comprehensive assessment of the economic trade-offs embedded in fiscal consolidation strategies.

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Appendix A Data

Table A.1: Descriptive statistics, 16 OECD countries, 1995-2020

	Mean	S.D.	Min	Max
Change in structural fiscal balance (in %-points of GDP)	0.14	1.23	-5.78	6.56
Narrative fiscal consolidation (% of GDP)	0.35	0.75	-0.75	5.23
Log real public investment	4.27	2.76	1.04	13.11
Log real government consumption	6.1	2.58	3.26	13.92
Log investment-consumption ratio	-1.83	0.34	-2.58	-0.43
Log social protection	1240.9	163.46	991.40	1832.54
Log health	1143.79	166.09	904.94	1759.02
Log education	1118.61	157.41	915.80	1678.19
Log general public services	1142.55	153.22	935.44	1698.87
Log housing and community amenities	901.17	180.33	630.24	1530.77
Log environmental protection	914.31	182.15	604.19	1575.6
Log economic affairs	1105.37	157.2	878.63	1694.89
Log public order and safety	996.53	161.28	755.89	1576.58
Log defence	979.61	168.27	746.57	1546.54
Log recreation, culture, and religion	963.84	147.62	743.38	1469.22
Public debt ratio	76.39	40.76	9.67	236.38
Real government bond yield	1.95	1.93	-2.88	8.39
Real GDP growth	1.89	1.96	-8.10	6.3
Real-effective exchange rate	99.29	10.24	67.57	135.4
Left-right government	4.9	2.81	0.00	9
Fiscal balance	-2.22	3.02	-11.50	6.73
Political fragmentation	4	1.68	2.10	9.7

Notes: Authors' calculation. See Section 2 for data sources.

Appendix B Robustness: baseline findings

B.1 AIPW estimator

The AIPW estimator (Imbens & Wooldridge, 2009; Jordà & Taylor, 2016) proceeds in two stages. In the first stage, we estimate propensity scores that capture the probability of a fiscal consolidation as a function of macroeconomic and fiscal predictors included in our baseline control set. Fiscal consolidation is introduced as binary indicator in the AIPW approach. The propensity score model reads as follows:

$$P(F_{it} = 1 | \mathbf{X}_{it}) = \Phi(\alpha + \mathbf{X}'_{it-1}\boldsymbol{\beta} + \gamma F_{i,t-1} + \mu_i + \tau_t), \quad (\text{B.1})$$

where X_{it} are the controls included in Equation 1: real GDP growth, real long-term government bond yield, and the government's left-right orientation. All controls enter with a lag. μ_i are country-fixed effects, and τ_t are time-fixed effects. Results of the propensity score model are shown in Table B.1.

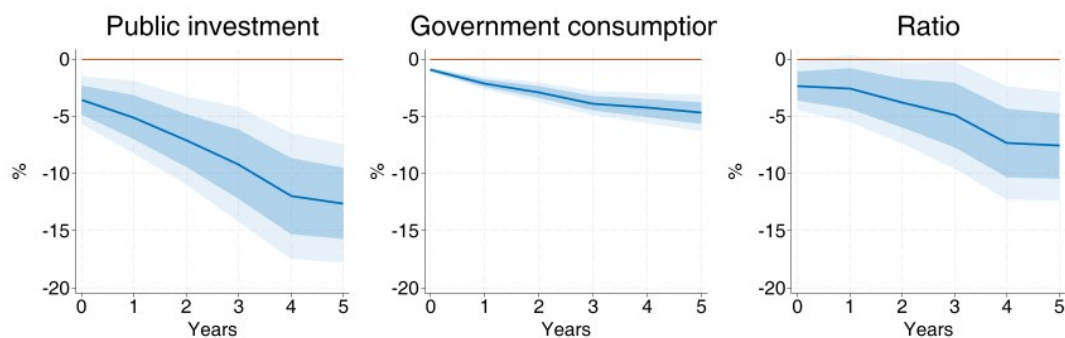
In the second stage, these propensity scores are incorporated into the local projection framework by weighting observations inversely to their predicted treatment probabilities. Specifically, years in which a fiscal consolidation occurs are assigned weights equal to the inverse of the propensity score ($w = 1/p$). Results are shown in Figure B.1.

Table B.1: AIPW: Propensity score results

	Fiscal consolidation event
Real GDP growth ($t - 1$)	-0.241*** (0.084)
Real long-term government bond yield ($t - 1$)	-0.012 (0.093)
Left-right government index ($t - 1$)	0.047 (0.038)
Time FE	Yes
Country FE	Yes
Num. obs.	315

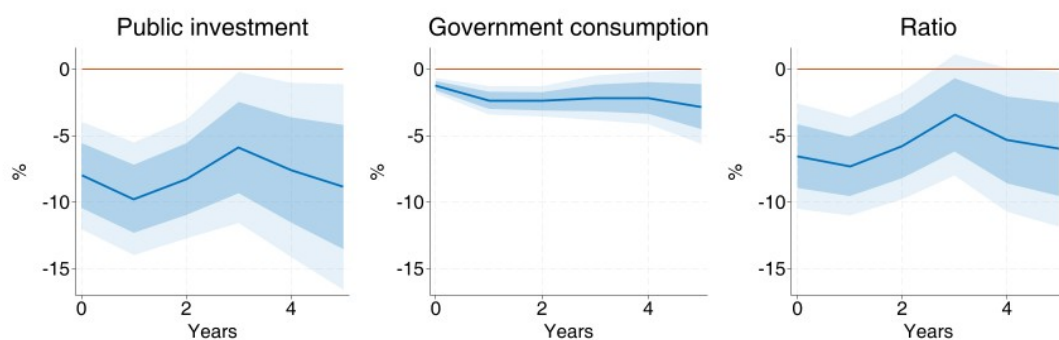
Notes: Authors' calculations. Standard errors are in parentheses. ***/**/* indicate $p < 0.01/0.05/0.10$.

Figure B.1: Robustness: AIPW



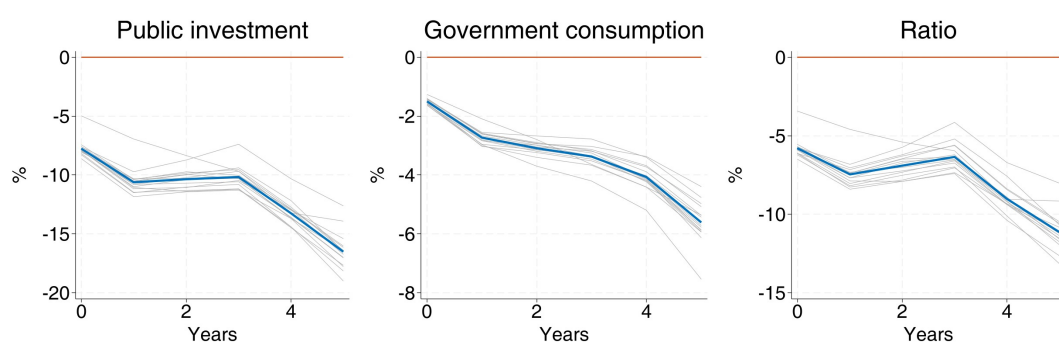
Notes: Impulse responses to a fiscal consolidation shock of 1 pp of GDP estimated using the AIPW estimator. Shaded light (dark) areas represent 90% (68%) confidence bands.

Figure B.2: Robustness: EU subsample



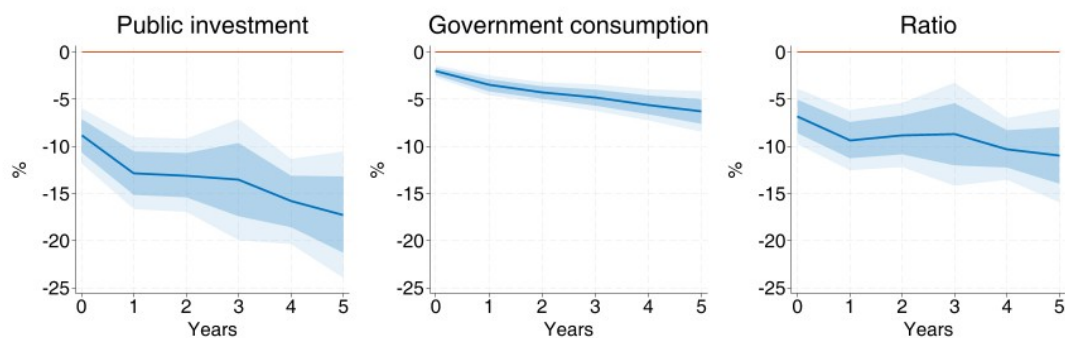
Notes: Impulse responses to a fiscal consolidation shock of 1 pp of GDP for the subsample of EU countries. Shaded light (dark) areas represent 90% (68%) confidence bands.

Figure B.3: Robustness: Leave one out



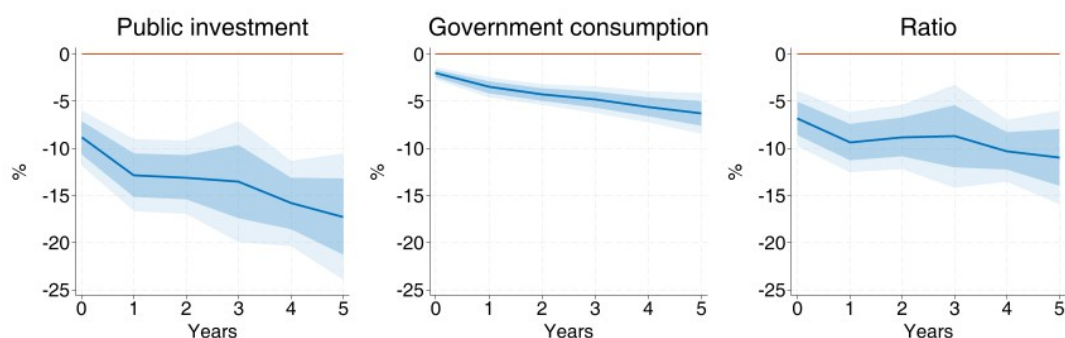
Notes: Impulse responses to a fiscal consolidation shock of 1 pp of GDP. The blue line displays the point estimates of our sample. The grey lines display the point estimates of re-estimating leaving one country out each. Shaded light (dark) areas represent 90% (68%) confidence bands.

Figure B.4: Robustness: public debt as additional control



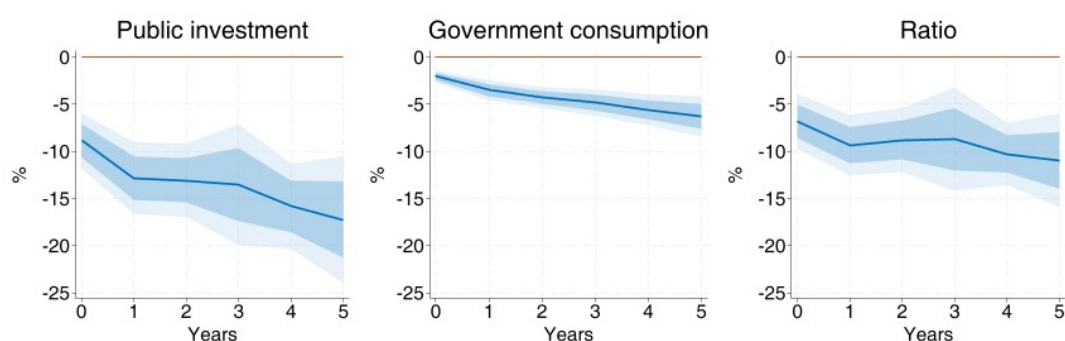
Notes: Impulse responses to a fiscal consolidation shock of 1 pp of GDP including the lagged public debt ratio as additional control. Shaded light (dark) areas represent 90% (68%) confidence bands.

Figure B.5: Robustness: output gap as additional control



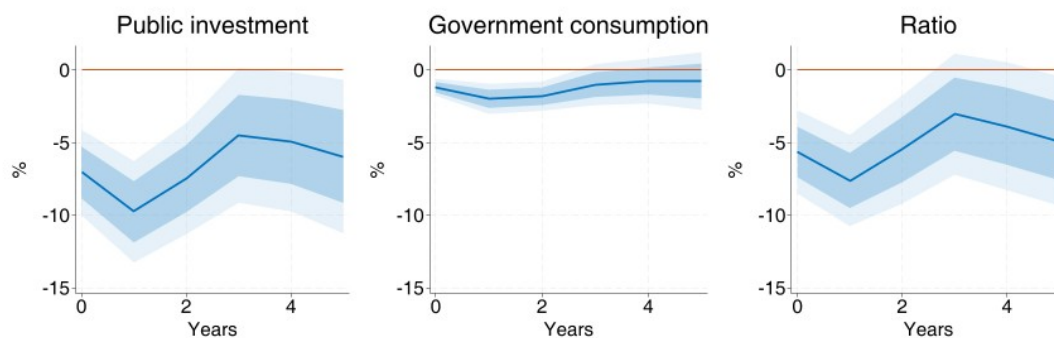
Notes: Impulse responses to a fiscal consolidation shock of 1 pp of GDP including the lagged output gap as additional control. Shaded light (dark) areas represent 90% (68%) confidence bands.

Figure B.6: Robustness: exclude left-right government index from controls



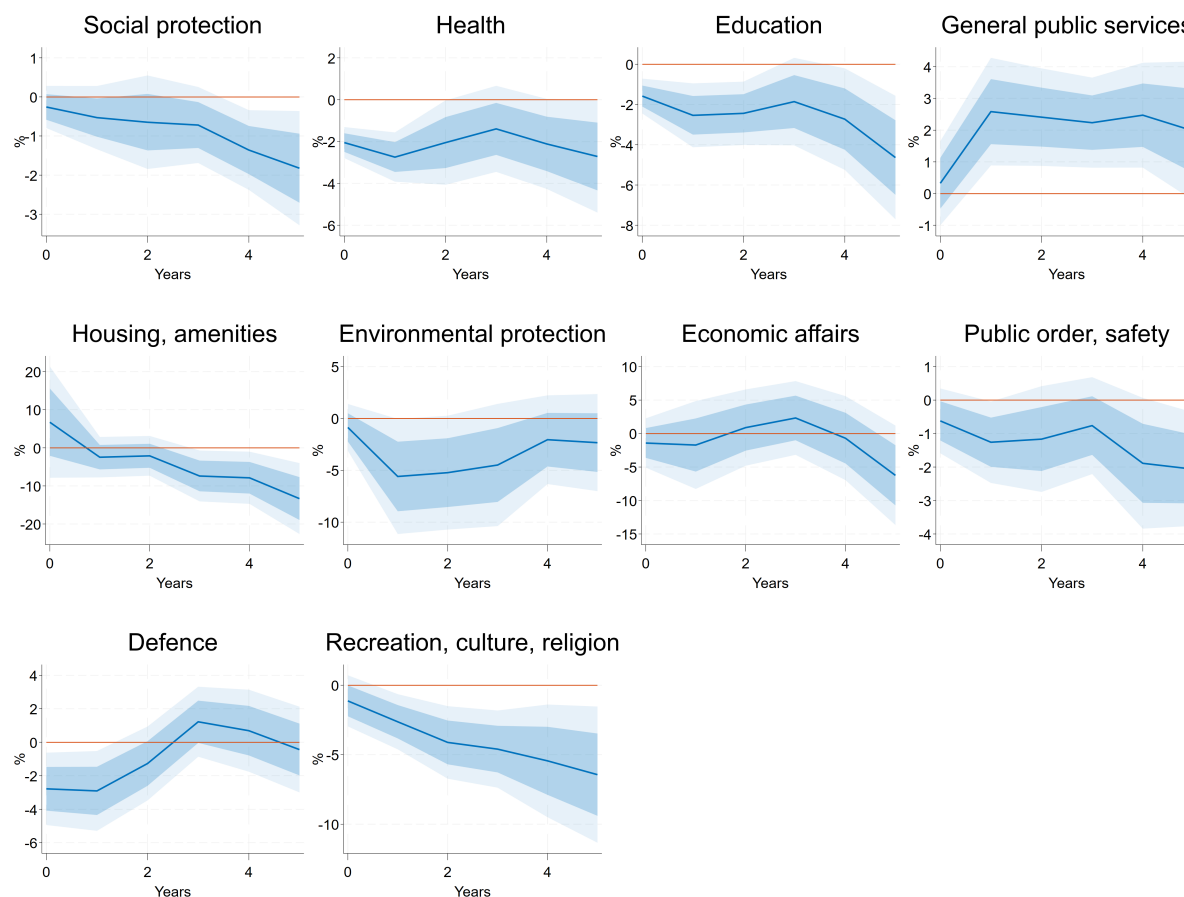
Notes: Impulse responses to a fiscal consolidation shock of 1 pp of GDP excluding the lagged left-right government index from the control set. Shaded light (dark) areas represent 90% (68%) confidence bands.

Figure B.7: Robustness: IV (Maastricht threshold)



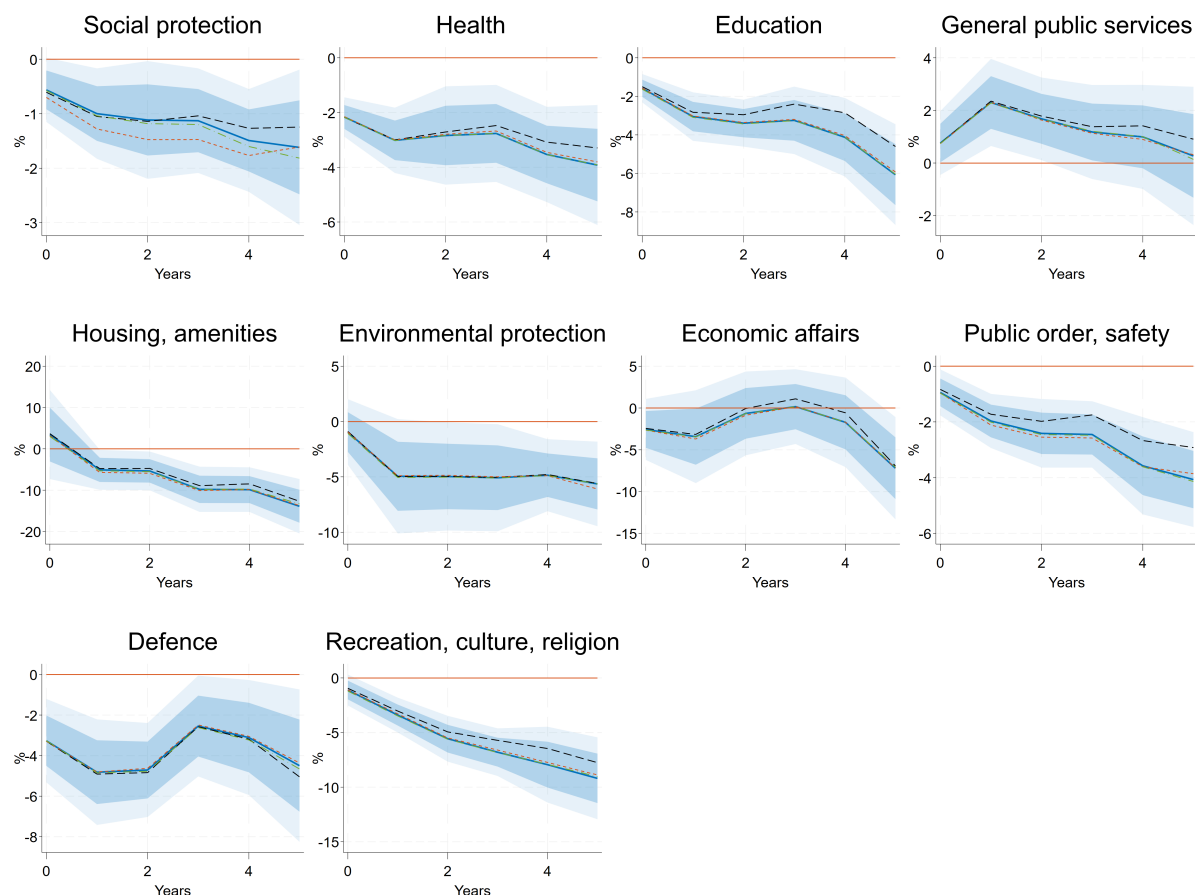
Notes: Impulse responses to a fiscal consolidation shock of 1 pp of GDP using a binary indicator defined by the fiscal balance falling below -3% as instrument. Shaded light (dark) areas represent 90% (68%) confidence bands.

Figure B.8: Robustness: EU subsample COFOG categories



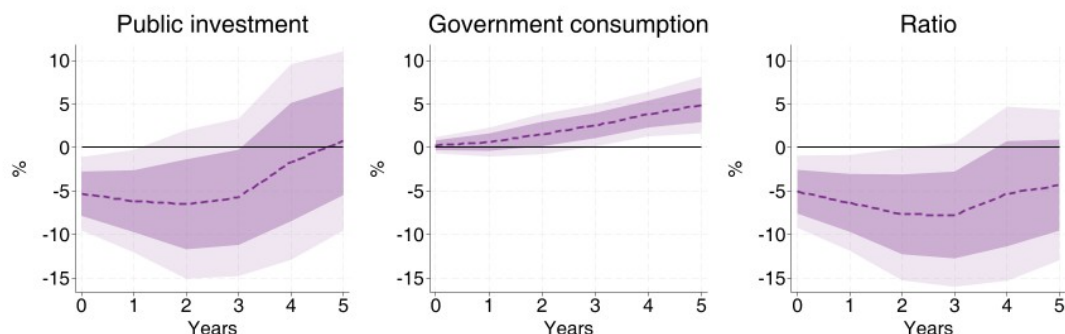
Notes: Impulse responses to a fiscal consolidation shock of 1 pp of GDP for the EU subsample. Shaded light (dark) areas represent 90% (68%) confidence bands.

Figure B.9: Robustness: control set COFOG categories



Notes: Impulse responses to a fiscal consolidation shock of 1 pp of GDP. Solid blue lines display the point estimates of the baseline results; black and red dashed lines display the point estimates including lagged public debt ratio and the lagged output gap as additional controls, respectively. Green dashed lines display the point estimates of excluding the lagged left-right government index from the control set. Shaded light (dark) areas represent 90% (68%) confidence bands.

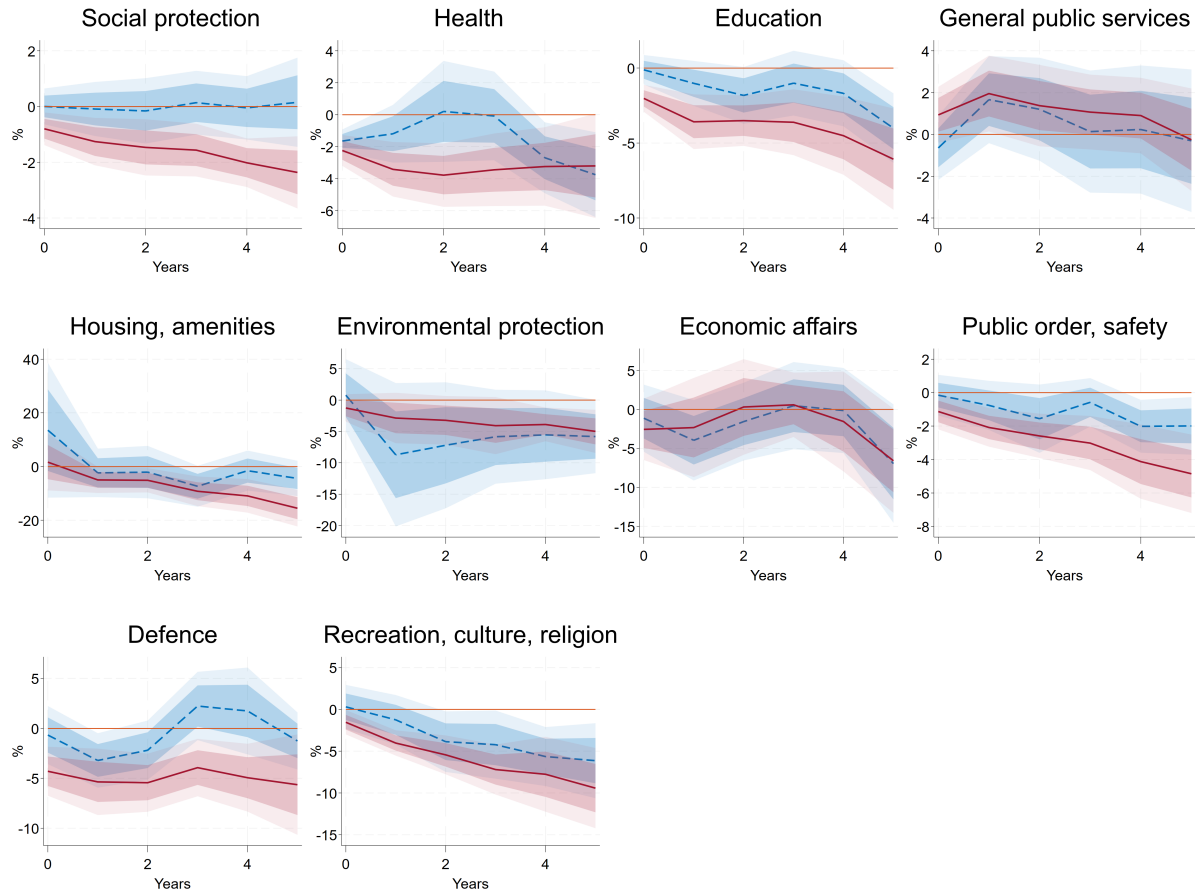
Figure B.10: Robustness: 40th percentile of the output gap distribution to define threshold



Notes: The figure shows the responses to fiscal consolidation for the upper regime (blue) and the lower regime (red), estimated according to Equation 2. We use the 40th percentile of the output gap distribution to determine the states. Shaded light (dark) areas represent 90% (68%) confidence bands.

Appendix C Additional results

Figure C.1: State-dependent effects of a fiscal consolidation shock of 1 pp of GDP: functional government spending categories



Notes: The figure shows the responses to fiscal consolidation for the upper regime (blue) and the lower regime (red), estimated according to Equation 2. We use the 20th percentile of the output gap distribution to determine the states. Shaded light (dark) areas represent 90% (68%) confidence bands.

IMPRESSUM

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