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Fiscal Policy Effects on Swedish Inflation*

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Abstract

This paper provides the first empirical analysis of fiscal policy effects on inflation in Sweden—a small open economy with inflation targeting and a flexible exchange rate. While the literature has examined inflation responses in large, comparatively closed economies like the United States, no study has investigated these effects in small open economies despite their many additional transmission mechanisms. Using Blanchard-Perotti identification combined with local projections, we estimate inflation responses to shocks in five fiscal instruments over 1995Q1–2019Q4, also examining effects on GDP, employment, consumption, investment, the exchange rate, and the policy rate. We find striking heterogeneity across instruments. Government consumption, transfers, and indirect tax cuts all increase GDP and employment, but their inflation effects differ substantially: government consumption produces no significant response, while transfers and indirect tax cuts reduce inflation. Only direct tax cuts generate a positive inflation response, accompanied by a policy rate increase. Examining state-dependent effects, we find limited evidence that multipliers are larger during recessions or that large shocks produce amplified responses. These findings demonstrate that fiscal expansions are largely ineffective in generating inflation, with important policy implications: fiscal stimulus can support output and employment without significant inflationary pressures, while fiscal consolidation should not be relied upon as an inflation-control tool.

Keywords: Fiscal policy, inflation, local projections, small open economy.

JEL codes: E31, E62, C32.

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1 Introduction

The simultaneous surge in inflation and large-scale fiscal interventions following the COVID-19 pandemic has reignited fundamental questions about how government spending and taxation affect price levels. While decades of research have established that fiscal expansions raise output and employment, the inflationary consequences remain surprisingly contested—a knowledge gap that has become acutely policy-relevant as central banks worldwide have grappled with inflation rates not seen in decades.

The literature on output and employment effects of fiscal policy is extensive and broadly consensual. As documented in Ramey (2019), empirical studies using diverse identification strategies consistently find that expansionary fiscal shocks increase GDP and employment. Blanchard and Perotti (2002) established an influential identification approach exploiting decision lags in the implementation of fiscal policy and information about tax and spending elasticities, finding significant positive output multipliers for the United States. Subsequent work by Auerbach and Gorodnichenko (2012, 2013), employing the local projection method of Jordà (2005), confirmed these findings while exploring state-dependent effects. Beyond average effects, research has examined whether multipliers vary with economic conditions—particularly whether they are larger during recessions or when monetary policy is constrained at the zero lower bound (see e.g. Eggertsson and Krugman (2012) and Erceg and Lindé (2014)). However, as discussed by Ramey and Zubairy (2018), empirical evidence on such state-dependent effects remains contested, with studies by Gechert and Rannenberg (2018); Huidrom et al. (2020); Jordà and Taylor (2016) reaching varying conclusions depending on the fiscal instrument examined and identification strategy employed.

This consensus on output effects contrasts sharply with the state of knowledge regarding inflation effects, where the literature remains surprisingly limited and far from settled. Table A.1 in Appendix A summarizes the key contributions, revealing striking heterogeneity in findings regarding both the sign and magnitude of inflation responses to fiscal shocks. Early structural VAR (SVAR) studies using US data reached contradictory conclusions: Edelberg et al. (1999) found that prices increase following government spending shocks, while Fatás and Mihov (2001), employing Cholesky identification, found price declines. Caldara and Kamps (2008), using a Bayesian SVAR, found inflation increases, whereas Mountford and Uhlig (2009), applying sign restrictions, reported price declines. More recent work by Ben Zeev and Pappa (2017), using defense news shocks, found inflationary effects, while Jorgensen and Ravn (2022) find effects that are either declining or insignificant depending on identification approach. Ferrara et al. (2021), employing a Bayesian Proxy-SVAR, find positive inflation responses. The divergent findings reflect several factors: differences in identification strategies, sample periods spanning distinct monetary policy regimes, varying degrees of monetary policy accommodation, and heterogeneous fiscal composition across studies. The theoretical ambiguity underlying these diverse empirical findings reflects competing mechanisms through which fiscal policy may affect inflation. From a demand-side perspective, fiscal expansions increase aggregate demand, putting upward pressure on prices. However, supply-side effects may work in the opposite direction if government spending increases productivity or reduces marginal costs. Crucially, the net effect depends on the response of monetary policy—whether central banks accommodate or offset fiscal expansions. Recent research has emphasized the level of public debt as a potentially important conditioning factor. Eminidou et al. (2023) and Checherita-Westphal and Pesso (2024), studying euro area countries, find that inflation increases following fiscal expansions, with effects being stronger in high-debt countries—consistent with predictions from the fiscal theory of the price level.

A notable gap in the existing literature is its overwhelming focus on the United States or, more recently, euro area countries. As Table A.1 in Appendix A illustrates, the vast majority of studies examine US data. Strikingly absent are studies focusing on small open economies with independent monetary policy frameworks. This gap is consequential because such economies face many more additional transmission mechanisms than large, relatively closed economies. Most importantly, exchange rate channels are more prominent, import price pass-through is stronger, domestic markets are less able to absorb shocks, and monetary policy operates under different constraints. These structural differences suggest that inflation responses to fiscal shocks may differ fundamentally from patterns documented for the United States or the euro area. Sweden provides an ideal laboratory for examining fiscal policy effects in a small open economy. As an inflation-targeting economy with a flexible exchange rate and independent monetary policy, Sweden represents a canonical case of the institutional arrangement that characterizes many advanced small open economies. Yet the literature examining fiscal policy effects on Swedish inflation is essentially non-existent. On output effects, Hjelm and Stockhammar (2016) provide empirical evidence of positive GDP and employment responses to fiscal stimulus, while Almerud and Laun (2021) and Laun (2025), employing the National Institute of Economic Research's DSGE model SELMA, similarly find positive multipliers that vary substantially across fiscal instruments and depend critically on the monetary policy stance. Regarding inflation, the only existing studies are Almerud (2022) and Laun (2025), both of which use the SELMA model to examine Swedish inflation responses. They find weakly positive effects when monetary policy remains passive but effects close to zero when the Riksbank reacts, consistent with theoretical predictions regarding monetary policy accommodation. No empirical study has yet examined inflation effects using identified fiscal shocks and modern causal inference methods.

We make three main contributions to fill this gap. First, we provide the first comprehensive empirical analysis of fiscal policy effects on inflation in a small open economy with inflation targeting, using the Blanchard-Perotti identification approach combined with local projections that have become standard in the fiscal policy literature following Auerbach and Gorodnichenko (2012, 2013) and Ramey and Zubairy (2018). Second, we systematically examine five distinct fiscal instruments—government consumption, government investment, transfers to households, indirect taxes, and direct taxes on households—revealing important heterogeneity in their inflation effects that is masked in studies focusing on aggregate measures. Third, we explore theoretically-motivated non-linearities, investigating whether effects vary with the business cycle and whether large shocks have different effects than small shocks—dimensions that have proven important for output multipliers but remain unexplored for inflation responses in small open economies.

Our main findings challenge conventional demand-side intuition. Despite generating positive responses in GDP, consumption, investment, and employment, most fiscal expansions produce either insignificant or negative inflation responses. Government consumption and investment shocks produce no significant inflation response, while transfers and indirect tax cuts actively reduce inflation. Direct tax cuts on households produce a clear positive inflation response. Investigating the transmission mechanisms, we find that the Riksbank systematically reacts to direct tax cuts by raising the policy rate thereby containing inflationary pressures through exchange rate appreciation and demand compression. For other fiscal instruments, the muted or negative inflation responses occur despite no significant monetary policy reaction, suggesting that the exchange rate appreciation and supply-side effects play the dominant role in determining inflation outcomes. These findings have immediate policy relevance. Sweden, like many advanced economies, implemented substantial fiscal measures in response to recent economic challenges. With inflation having exceeded the Riksbank's two percent target for an extended period, understanding how different fiscal instruments affect price developments has become a first-order policy question. Moreover, as Sweden's fiscal framework comes under discussion, evidence on the heterogeneous effects of different fiscal instruments is essential for informed policy design.

The remainder of this paper is structured as follows. Section 2 describes the data and empirical methodology, including our identification strategy. Section 3 presents the main results for baseline specifications and extensive sensitivity analysis. Section 4 examines nonlinear effects, and Section 5 concludes.

2 Data and Empirical Specification

We estimate the effects of fiscal policy shocks using a two-step procedure. In the first step, we estimate fiscal policy shocks from a SVAR following the Blanchard and Perotti (2002) identification strategy, which exploits decision lags in implementation of fiscal policy and information about the elasticity of fiscal variables to economic activity. In the second step, we estimate the impulse response function to the identified shocks using Jordà (2005) local projections. This approach allows for flexible estimation of impulse responses while maintaining a parsimonious identification structure.

Our sample spans 1995Q1 to 2019Q4, beginning with Sweden's adoption of inflation targeting and the completion of the major fiscal consolidation following the early 1990s crisis, and ending before the COVID-19 pandemic to avoid the unprecedented shock and policy response that likely altered the transmission mechanism of fiscal policy. A similar approach to excluding the COVID-19 period is adopted by Klein and Linnemann (2022) in their analysis of US fiscal policy.

We start by identifying fiscal shocks from a VAR(1) model with the fiscal variable ordered first:

$$\begin{pmatrix} f_t^i \\ \mathbf{z}_t \end{pmatrix} = \mathbf{c} + \mathbf{\Phi}_1 \begin{pmatrix} f_{t-1}^i \\ \mathbf{z}_{t-1} \end{pmatrix} + \mathbf{u}_t \tag{1}$$

where f_t^i is the log of real fiscal variable i (government consumption, government investment, transfers, direct taxes, or indirect taxes), and $\mathbf{z}_t$ contains (seasonally adjusted) log foreign (KIX2-weighted) CPI and GDP, log real GDP, log employment, log real wages and the policy rate.[1] For spending shocks (government consumption, investment, transfers), we additionally include log real direct tax revenues in $\mathbf{z}_t$, while for direct tax shocks we exclude it to avoid redundancy. All fiscal variables are deflated using the GDP deflator.[2] The structural fiscal shock is constructed as $\varepsilon_t^i = u_t^f - \gamma_i \cdot u_t^{\text{GDP}}$, where u_t^f and u_t^{GDP} are the reduced-form residuals from the fiscal variable and GDP equations respectively, and γ_i captures the automatic response of fiscal variable i to GDP. Following Hjelm and Stockhammar (2016), we set $\gamma_{\text{gov cons}} = \gamma_{\text{gov inv}} = 0$, $\gamma_{\text{transfers}} = -0.5$, $\gamma_{\text{direct taxes}} = 1.8$, and $\gamma_{\text{indirect taxes}} = 1.0$. Each identified shock is normalized to generate a one-percent impact response in the fiscal variable at horizon zero, achieved by rescaling the shock such that the estimated coefficient from a local projection of the fiscal variable on the shock equals 0.01. For shocks to tax variables, we multiply by -1 to interpret the shock as a tax cut.

[1] The KIX2 index places an 85 percent weight on the euro area and 15 percent on the United States, reflecting the relative importance of these economies for Sweden's external economic environment.

[2] The results (available upon request) in this paper are robust to e.g. deflating using CPIF or the government consumption deflator.

Descriptive statistics of the identified shocks are presented in Appendix B. Figure B.1 plots the time series of the shocks over the sample period. The figures show that there is a good deal of variation over time of all five shocks. Table B.1 shows the mean absolute value and the standard deviation of the shocks. Government investment shocks show the largest degree of variation with a mean absolute value of 4.41 percent and a standard deviation of 5.90 percent. The corresponding values are 1.26 percent and 1.63 percent for government consumption, 1.82 percent and 2.41 percent for government transfers, 1.64 percent and 2.02 percent for direct tax cuts, and 1.42 percent and 1.79 percent for indirect tax cuts.

In the next step, we estimate the impulse response functions to the identified shocks using the following local projections:

$$y_{t+h} = \alpha_h + \beta_h \varepsilon_t^i + \sum_{j=1}^{p} \theta_{h,j} \mathbf{x}_{t-j} + u_{t+h}, \quad h = 0, 1, \ldots, 12 \tag{2}$$

where y_{t+h} is the outcome variable, ε_t^i is the normalized structural shock from Eq. (1), $\mathbf{x}_{t-j}$ is a vector of control variables, $p = 4$ is the number of lags, and u_{t+h} is the error term. The coefficient of interest, β_h, traces out the dynamic response of y to the fiscal shock at horizon h. Our outcome variables comprise the logs of real GDP, private consumption, private investment, CPIF (consumer price index excluding interest rates), employment, and the Riksbank policy rate (in levels). The vector $\mathbf{x}_{t-j}$ includes 4 lags of foreign CPI and GDP, domestic GDP, employment, wages, the policy rate, direct tax revenues (except when estimating direct tax shocks), the outcome variable and the fiscal shock itself. The inclusion of lagged shocks as controls follows Montiel Olea et al. (2025) and improves precision of the estimates. The selection of control variables is guided by standard macroeconomic models of fiscal policy transmission (Galí et al., 2007; Zubairy, 2014) and the openness of the Swedish economy (Ilzetski et al., 2013), while the lag structure of four quarters is standard in the quarterly fiscal multiplier literature (Ramey and Zubairy, 2018; Auerbach and Gorodnichenko, 2012) and supported by Akaike and Schwarz information criteria for our data. We verify robustness to alternative lag lengths ($p \in \{1, 2, 3\}$) and control variable specifications.

Our two-step approach offers several advantages over directly estimating impulse responses within the VAR. It allows for a richer set of control variables and longer lag structures in the local projections than would be computationally feasible in a large VAR, while maintaining parsimony in the shock identification stage (Ramey, 2016). We acknowledge that using VAR-identified shocks as regressors introduces a generated regressor problem, such that standard errors do not account for uncertainty in the first-stage shock estimation. While parametric bootstrap methods could address this (Stock and Watson, 2018), we follow Ramey (2016) in using Newey and West (1987) HAC robust standard errors with lag length $h+1$, which are conservative in practice. Our extensive robustness checks confirm that results are stable across specifications.

To examine potential non-linearities in the impulse response functions, we extend the baseline specification to allow for state-dependent effects following Auerbach and Gorodnichenko (2012):

$$y_{t+h} = I_t^A \left[\alpha_h^A + \beta_h^A \varepsilon_t^i + \sum_{j=1}^{p} \theta_{h,j}^A \mathbf{x}_{t-j} \right] + I_t^B \left[\alpha_h^B + \beta_h^B \varepsilon_t^i + \sum_{j=1}^{p} \theta_{h,j}^B \mathbf{x}_{t-j} \right] + u_{t+h} \tag{3}$$

where I_t^A and $I_t^B = 1 - I_t^A$ are indicator variables for states A and B, and β_h^A and β_h^B trace out the state-dependent impulse responses. We consider states defined by the level of slack in the economy and the size of the shocks. For the former, we define the states as whether the GDP gap is positive or negative. Given that the GDP gap is unobserved and needs to be estimated, we use both the Riksbank's estimate and an HP-filtered estimate.[3] As discussed in Ramey and Zubairy (2018), the hypothesis is that fiscal policy has larger effects in terms of economic slack. For the latter, we distinguish between shocks that are larger than 0.5 and 1 standard deviation above or below the mean and those that are not.[4] This test is to address the concern that smaller shocks may represent noise rather than actual fiscal policy shocks. We test the hypothesis of symmetric effects by comparing β_h^A and β_h^B across horizons.

3 Linear Results

3.1 Baseline Results

In this section, we present the estimated impulse response functions from our baseline, linear specification Eq. (2) to the five identified fiscal policy shocks. The blue solid lines in the figures report the point estimates and the dark and light blue shaded regions report 90% and 95% standard-error bands, respectively. The persistence of the shocks, i.e., the impulse response functions of the fiscal policy variables to their respective shocks, are shown in Figure B.2 in Appendix B. For all five variables, the responses are relatively short-lived, with discrete jump on impact that revert within the first couple of quarters.

To assess robustness of our baseline specification, we also present the results of 564 alternative specifications, which systematically test subsets of the chosen control variables,

[3] When estimating the HP-filtered GDP gap, we use a standard penalty parameter for quarterly data of 1600.

[4] To be able to estimate the effects of large shocks we had to reduce the number of lags to one because of the small number of observations in this state.

adding reasonable additional controls such as foreign policy rates, exchange rates, and inflation expectations, and varying the lag length. The gray dashed lines report the median of these alternative specifications and the yellow shaded regions report the interquartile range. While the standard-error bands around the baseline capture statistical uncertainty, the interquartile range of alternative specifications captures model uncertainty arising from different plausible choices of control variables and lag lengths. From a policy perspective, we recommend focusing on the baseline specification, which reflects our preferred choices based on theoretical considerations and information criteria. However, when the median closely tracks the baseline—as it does for most fiscal instruments—this provides additional evidence that results are not driven by arbitrary specification choices. There is some difference for impulse response functions to an indirect tax cut, which we comment on in more detail below.

Figure 1 shows the impulse response functions to a one percent increase in government consumption. The shock has an overall expansionary effect, with increases in GDP, consumption, investment, and employment that are significant for several periods. In terms of magnitudes, the peak responses of these respective variables are 0.40, 0.39, 0.85, and 0.18 percent. CPIF does not respond significantly for any period and the point estimates vary between mildly positive and mildly negative. Finally, the policy rate does not respond significantly either, indicating no systematic response from the Riksbank.

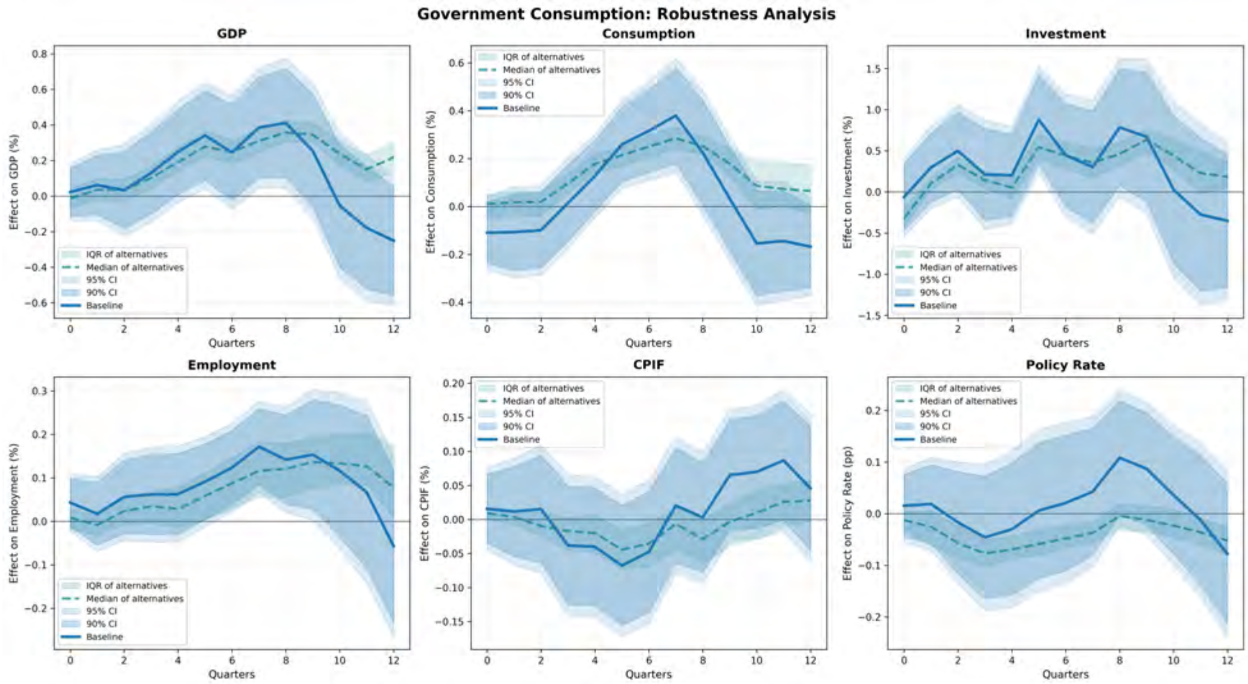

Figure 1: Impulse response functions to a government consumption shock.
Notes: The blue solid lines report the point estimates from Eq. (2) to a one percent expansionary government consumption shock. The dark and light blue shaded regions report 90% and 95% Newey and West (1987) standard-error bands, respectively, computed using a bandwidth of one plus the impulse response horizon. Gray dashed lines and the yellow shaded areas report the median point estimates and the inter-quartile range, respectively, from 564 alternative combinations of control variables and lag lengths.

In Figure 2 the impulse response functions to a one percent increase in government investment are shown. In contrast to government consumption, the overall effect is muted. GDP increases modestly reaching a peak of 0.06 percent after three quarters and then reverts to a trough of the same magnitude. However, the response is never significant. Consumption also increases, even significantly for some periods, with a peak of 0.06 percent until it reverts. Investment increases significantly on impact, but then falls back and remains insignificant until the final horizon. The responses of employment, CPIF, and the policy rate are small and insignificant.

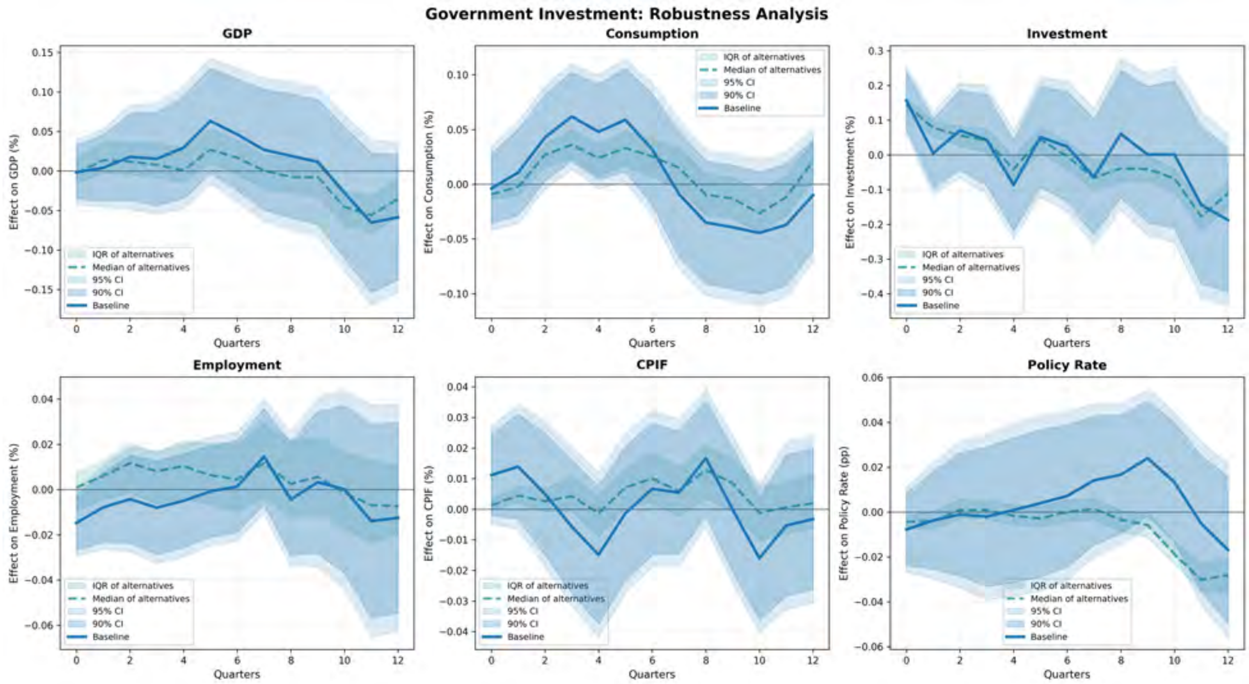

Figure 2: Impulse response functions to a government investment shock.
Notes: The blue solid lines report the point estimates from Eq. (2) to a one percent expansionary government investment shock. The dark and light blue shaded regions report 90% and 95% Newey and West (1987) standard-error bands, respectively, computed using a bandwidth of one plus the impulse response horizon. Gray dashed lines and the yellow shaded areas report the median point estimates and the inter-quartile range, respectively, from 564 alternative combinations of control variables and lag lengths.

Figure 3 shows the impulse response functions to a one percent increase in government transfers. The shock has an overall expansionary effect with an increase in GDP of just over 0.3 percent after 8 quarters. Consumption, investment, and employment also increase, although with some lag and less precisely estimated. Their respective peaks are 0.18, 0.49, and 0.12 percent. CPIF decreases significantly and persistently reaching a trough of -0.09 percent after 5 quarters. Finally, the policy rate does not react significantly.

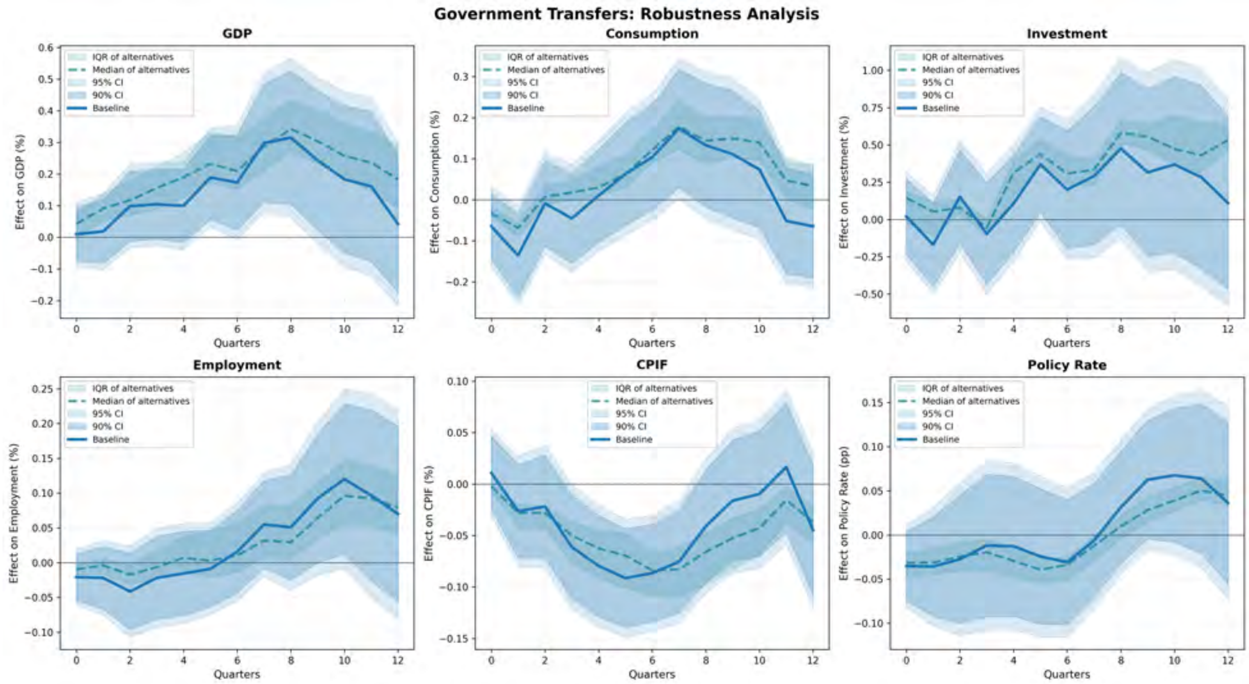

Figure 3: Impulse response functions to a transfer shock.
Notes: The blue solid lines report the point estimates from Eq. (2) to a one percent expansionary government transfer shock. The dark and light blue shaded regions report 90% and 95% Newey and West (1987) standard-error bands, respectively, computed using a bandwidth of one plus the impulse response horizon. Gray dashed lines and the yellow shaded areas report the median point estimates and the inter-quartile range, respectively, from 564 alternative combinations of control variables and lag lengths.

The impulse response functions to a one percent reduction of direct taxes to households are shown in Figure 4. GDP increases significantly by 0.2 percent on impact, but then falls and becomes significantly negative after 7 quarters. Consumption, investment, and employment respond similarly. CPIF increases significantly and persistently with a peak of 0.1 percent after 4 quarters. The policy rate also increases significantly reaching a peak of around 0.12 percentage points 5 quarters after the shock before reverting and eventually falling significantly below zero.

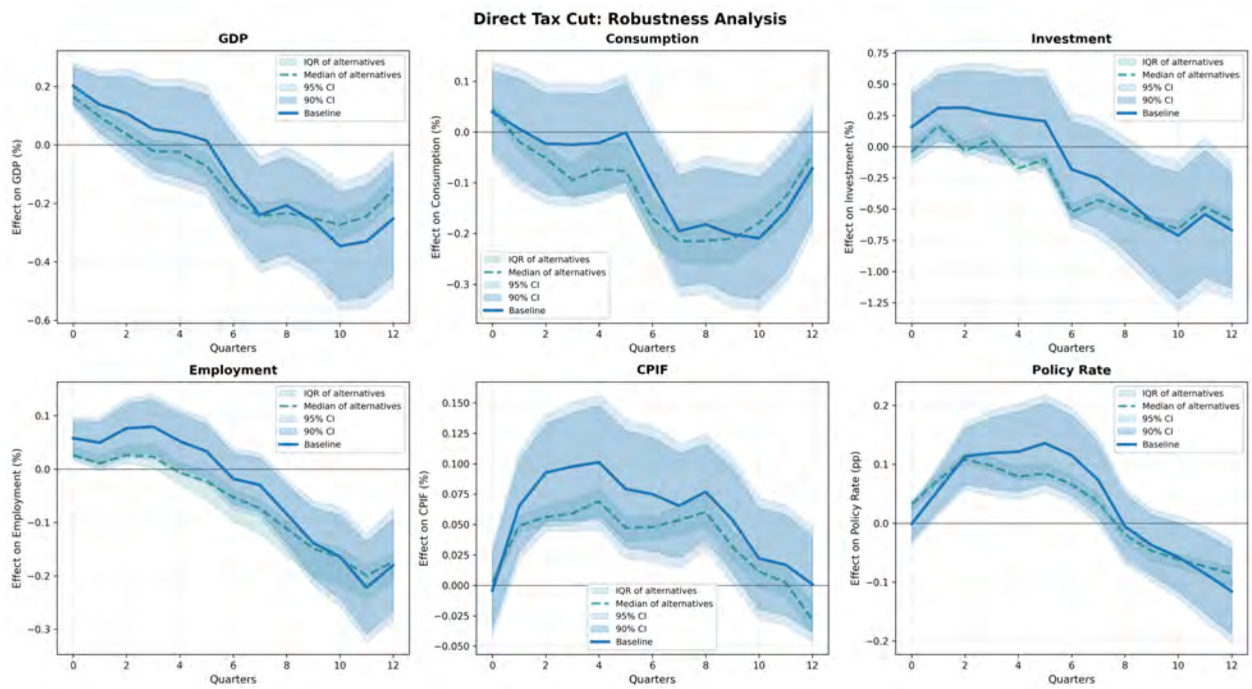

Figure 4: Impulse response functions to a direct tax shock.

Notes: The blue solid lines report the point estimates from Eq. (2) to a one percent expansionary direct tax shock. The dark and light blue shaded regions report 90% and 95% Newey and West (1987) standard-error bands, respectively, computed using a bandwidth of one plus the impulse response horizon. Gray dashed lines and the yellow shaded areas report the median point estimates and the inter-quartile range, respectively, from 564 alternative combinations of control variables and lag lengths.

Figure 5 shows the impulse response functions to a one percent reduction of indirect taxes. While the overall effect is expansionary with an increase of GDP, consumption, investment, and employment, the point estimates are only significant for one period for each variable. It is also noteworthy that the point estimates from our baseline specification are larger compared to the median from the 564 alternative specifications. Comparing the peak GDP response it is close to 0.4 percent for the former and just above 0.1 percent for the latter. CPIF falls significantly and persistently to a trough of -0.15 percent. This is in line with the ex-ante expectation given that indirect taxes mainly consist of VAT taxes, excise taxes, and payroll taxes. The fall in the price level suggests that the deflationary effect of the fall in these taxes dominates the inflationary effect of the increase in aggregate demand. The policy rate does not respond significantly.

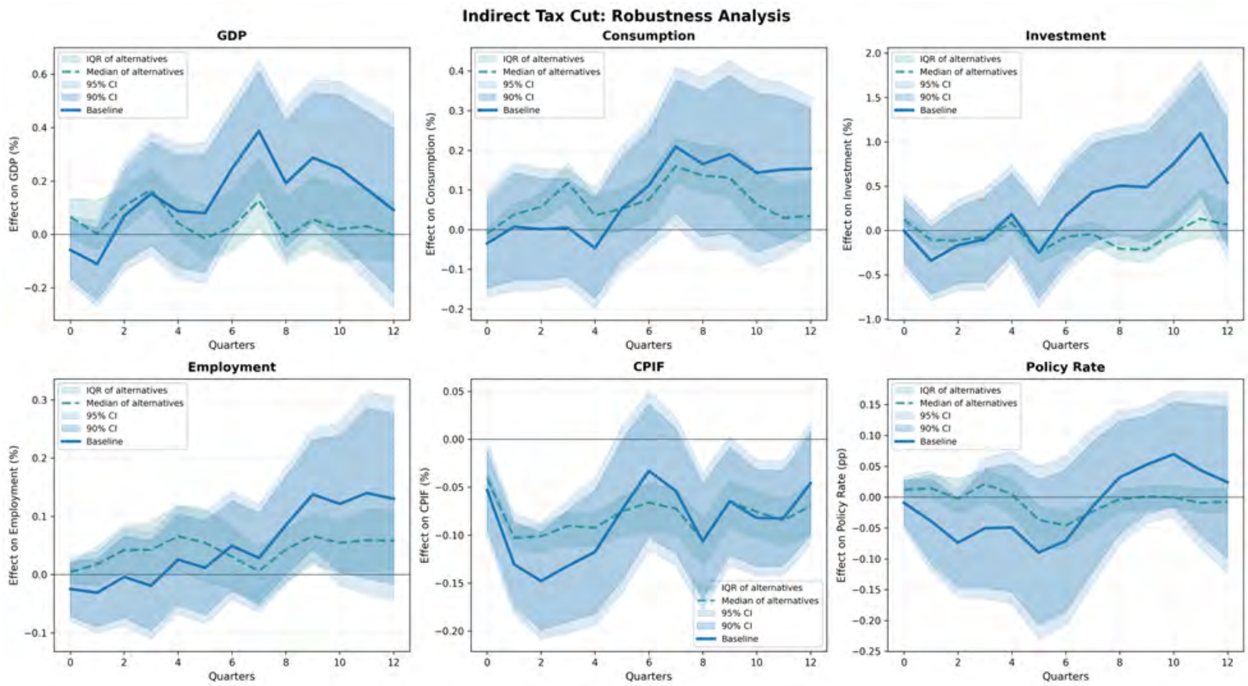

Figure 5: Impulse response functions to an indirect tax shock.
Notes: The blue solid lines report the point estimates from Eq. (2) to a one percent expansionary indirect tax shock. The dark and light blue shaded regions report 90% and 95% Newey and West (1987) standard-error bands, respectively, computed using a bandwidth of one plus the impulse response horizon. Gray dashed lines and the yellow shaded areas report the median point estimates and the inter-quartile range, respectively, from 564 alternative combinations of control variables and lag lengths.

Finally, Figure C.1 in Appendix C shows the impulse response functions of the real KIX2 exchange rate to the five fiscal policy shocks. The Swedish krona appreciates during the first two years in response to all five shocks, although not significantly in response to an indirect tax shock. The krona depreciates towards the end of the impulse response horizon in response to a government consumption shock, a transfer shock, and an indirect tax shock. The appreciation of the krona can cause a fall in the price level through, e.g., lower import prices, which may partly explain the muted price responses to the government consumption, investment, and transfer shocks. However, given that the real exchange rate responds relatively similar to all five shocks, it does not appear to be the only explanation for the differential responses of CPIF.

In summary, expansionary shocks to government consumption, government transfers, and indirect taxes have expansionary effects on GDP, consumption, investment, and employment. Government investment shocks have no significant effect overall while direct tax cuts are expansionary on impact, but then revert and even turn negative. The expansionary output and employment effects are broadly consistent with earlier Swedish evidence from Hjelm and Stockhammar (2016) and the range of spending multipliers surveyed in Ramey (2019).

CPIF does not react significantly to government consumption or investment shocks, falls significantly to government transfer and indirect tax shocks, and increases to direct tax shocks. The CPIF response to both direct and indirect taxes is in line with conventional theory, while the responses of government consumption, investment, and transfers go against it. For the latter three, conventional theory predicts that prices should increase through aggregate demand effects. However, as shown in the summary of previous studies in Table A.1 in Appendix A, this is not a unique finding in the literature. Insignificant or even negative price effects to expansionary fiscal shocks are a common feature in U.S. and euro area data.

3.2 Additional Results

In this section, we discuss some additional exercises, including using data on more disaggregated measures of fiscal policy, varying the lag length of the vector of control variables, using different price indices as outcome variables, and extending the sample period to 2025Q2. The results of these exercises are displayed in Appendix D.

We start by estimating the impulse responses to shocks using more disaggregated data on fiscal policy. The data we have access to are individual and collective government consumption (i.e., government consumption directed at individuals, such as healthcare, and the collective, such as defense), transfers to households and firms, and direct taxes on household and firms. Figure D.1 shows the impulse responses using the disaggregated government consumption data. Since the data are only available from 2001, we start by estimating the effect of a shock to total government consumption for the sample period 2001Q1-2019Q4. We see that the expansionary effect on GDP, consumption, investment, and employment disappears for the shorter sample. The responses of CPIF and the policy rate are more similar, however. Comparing individual and collective government consumption, we do not find any systematic difference between the two.

Figure D.2 and Figure D.3 show the impulse responses of shocks to government transfers to and direct taxes on households vs. firms. In both cases, we see that the responses to shocks to the household fiscal policy closely follow the baseline responses while shocks to firms are flat and very close to zero for all variables. This indicates that fiscal policy to households is driving the overall response to transfer and direct tax shocks.

Figure D.4 shows the response of CPIF to the five different fiscal policy shocks while varying the lag length of the vector of control variables in Eq. (2). The results show that the results are robust to using 1, 2, or 3 lags instead of our baseline of 4.

Figure D.5 shows the response of CPIF, CPIF excluding energy (CPIF-XE), and headline CPI to the five different fiscal policy shocks. Overall, the results are very similar. Particularly when comparing CPIF and CPIF-XE. For CPI there are some differences. The response of CPI is less persistently negative in response to a transfer shock, less positive and even negative in response to a direct tax cut, and zero and even significantly positive at the end in response to an indirect tax cut (compared to significantly negative responses of CPIF and CPIF-XE).

Finally, Figure D.6 - Figure D.10 show the impulse response function to the five fiscal policy shocks extending our sample period to 2025Q2. Apart from GDP and consumption falling on impact to a government transfer shock before turning positive and the expansionary effect on GDP to an indirect tax cut being more muted, the impulse response functions are very similar to the ones in our baseline.

4 Non-linearities

Having estimated the baseline, linear impulse response functions to our five identified fiscal policy shocks, we now turn to estimating the potential non-linear effects using the specification in Eq. (3). Specifically, we test whether the estimated impulse response functions depend on the level of economic slack and the size of the shocks. We report the non-linear responses in comparison to our baseline estimates. That is, blue solid lines and the shaded areas report the point estimates and standard-errors bands from our baseline estimates shown in Section 3. Red dashed lines show the point estimates estimated for periods when the GDP gap, using the Riksbank's measure, is negative. Yellow dashed-dotted lines show the same point estimates, but using a HP-filtered GDP gap. Light (dark) green dotted lines show the point estimates using only shocks 0.5 (1) standard deviation above or below the mean.

Figure 6 shows the impulse response functions to a one percent increase in government consumption. Overall, we see that the non-linear impulse responses are within the standard-error bands of the baseline, linear estimates. This indicates that neither the level of slack in the economy nor the size of the shocks matter for the overall effect of government consumption. The estimates using only shocks 1 standard deviation (in absolute value) above the mean are particularly close to the baseline estimates. The main noticeable difference is that the peak GDP response is smaller. For the estimates using only shocks 0.5 standard deviations above the mean, on the other hand, the peak response of GDP, consumption, investment, and employment is larger than the baseline. Also CPIF rises more prominently and the policy rate reacts stronger.

For the impulse responses estimated only in periods with negative output gap there are some notable differences. Both the point estimates using the Riksbank's gap and the HP-filtered output gap suggest a muted GDP response compared to the baseline. For CPIF, on the other hand, there is some evidence that government consumption has a more inflationary effect during recessions. For consumption, the estimate using the Riksbank's gap yields a more expansionary response, while the estimate using the HP-filtered gap is more muted.

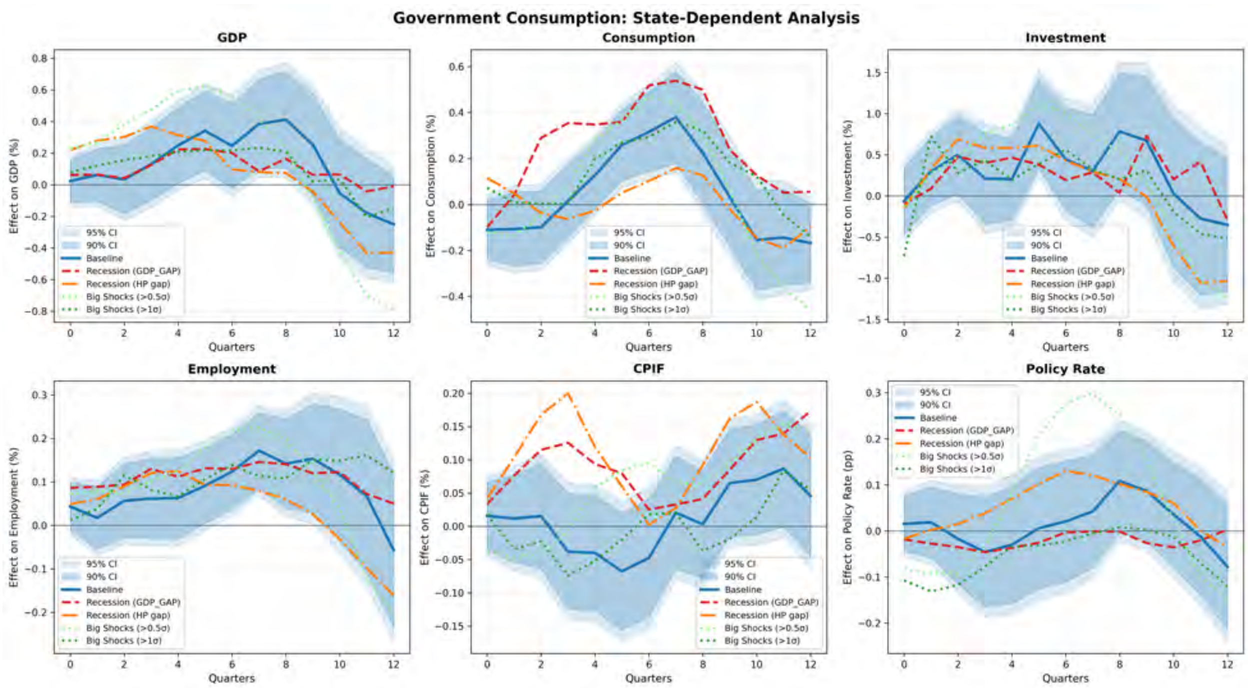

Figure 6: Impulse response functions to a government consumption shock.
Notes: The blue solid lines report the point estimates from Eq. (2) to a one percent expansionary government consumption shock. The dark and light blue shaded regions report 90% and 95% Newey and West (1987) standard-error bands, respectively, computed using a bandwidth of one plus the impulse response horizon. The remaining lines are estimated using the non-linear specification in Eq. (3). Red dashed lines show the point estimates estimated for periods when the GDP gap, using the Riksbank's measure, is negative. Yellow dashed-dotted lines show the point estimates when the GDP gap, using an HP-filtered gap, is negative. Light (dark) green dotted lines show the point estimates using only big shocks, i.e., shocks that are bigger than 0.5 (1) standard deviation in absolute value.

Figure 7 shows the impulse response functions to a one percent increase in government investment. The estimated non-linear responses are within the standard-error bands for most periods for all the outcome variables, and the conclusion of the overall effect being muted still holds. Quantitatively, the differences are small, with a maximum difference of around 0.1 percentage points for GDP, for example.

The estimates using only shocks 1 standard deviation above the mean are lower than the baseline for GDP, consumption, investment, and employment, close for CPIF, and somewhat larger for the policy rate. The estimates using only shocks 0.5 standard deviation above the mean are close to the baseline for most variables. For GDP, the response is somewhat more persistent. For investment, CPIF, and the policy rate, the responses are more volatile, displaying both larger peaks and lower troughs.

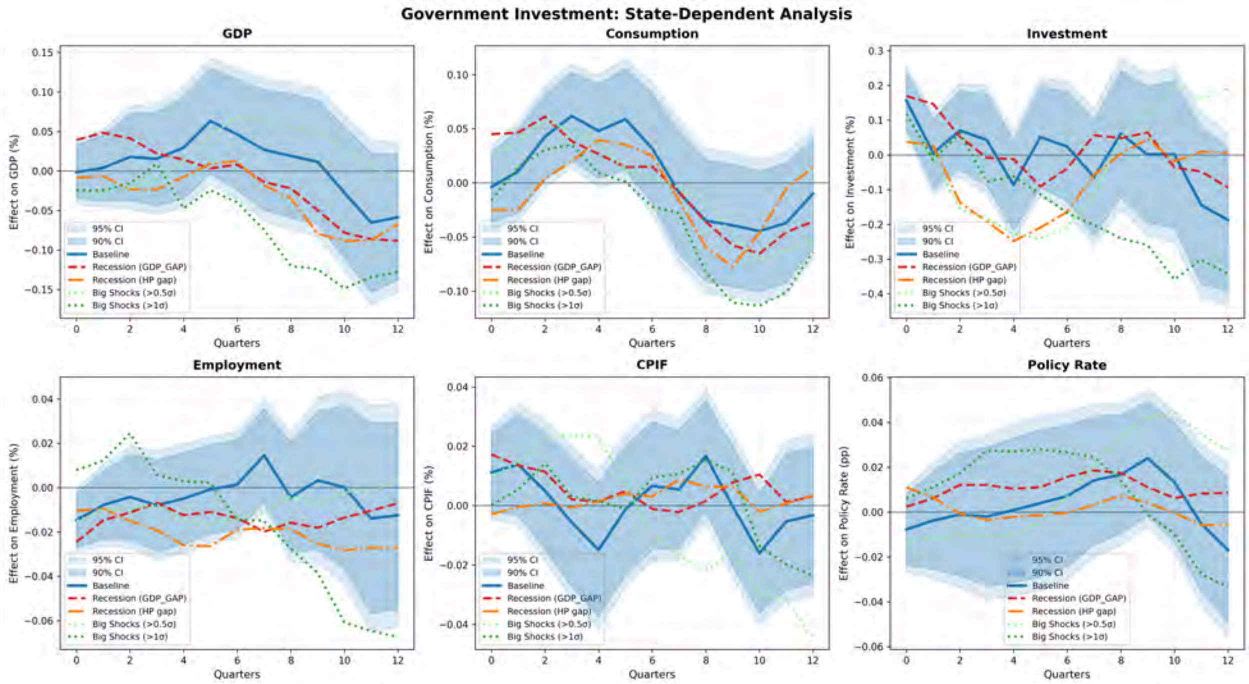

Figure 7: Impulse response functions to a government investment shock.
Notes: The blue solid lines report the point estimates from Eq. (2) to a one percent expansionary government investment shock. The dark and light blue shaded regions report 90% and 95% Newey and West (1987) standard-error bands, respectively, computed using a bandwidth of one plus the impulse response horizon. The remaining lines are estimated using the non-linear specification in Eq. (3). Red dashed lines show the point estimates estimated for periods when the GDP gap, using the Riksbank's measure, is negative. Yellow dashed-dotted lines show the point estimates when the GDP gap, using an HP-filtered gap, is negative. Light (dark) green dotted lines show the point estimates using only big shocks, i.e., shocks that are bigger than 0.5 (1) standard deviation in absolute value.

For the impulse response functions estimated during periods with a negative output gap, the estimated effects on GDP, consumption, investment, and employment are muted compared to the baseline, with point estimates that are negative for the majority of the impulse response horizons. This holds for both the Riksbank's gap and the HP-filtered gap, going against the hypothesis that fiscal policy is more expansionary in recessions. The responses of CPIF and the policy rate, on the other hand, are flat and close to the baseline. The most noticeable difference is the response of investment, which turns negative after one quarter before reverting back to zero when estimated using the HP-filtered gap.

Figure 8 shows the impulse response functions to a one percent increase in government transfers. For these shocks, the responses diverge more compared to the baseline. The impulse responses estimated when the GDP gap is negative are more muted and closer to zero, even negative for some periods, for GDP, consumption, investment, and employment. The CPIF response is positive when using the Riksbank's measure of the gap and more persistently negative when using the HP-filtered gap. The policy rate displays a somewhat positive response in both cases, although the estimates are within the standard-error bands of the baseline. For large shocks only, the responses are generally amplified. Particularly towards the end of the impulse response period and more so when using only shocks larger than 0.5 standard deviations compared to 1 standard deviation.

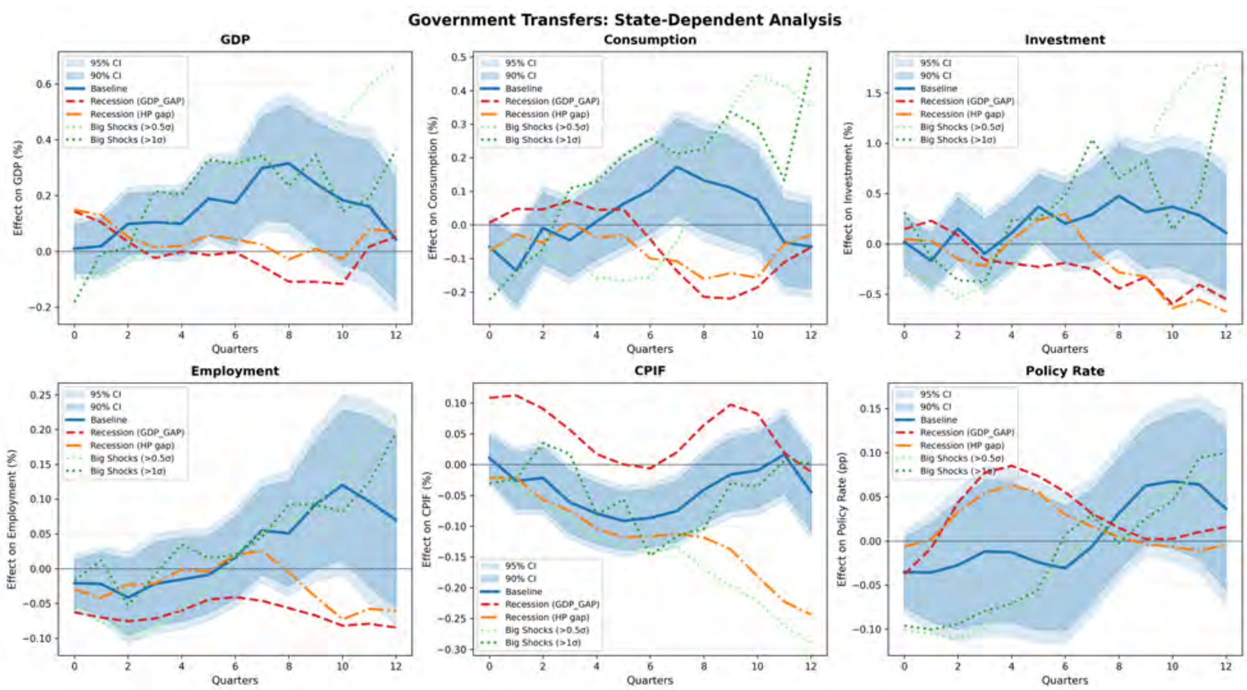

Figure 8: Impulse response functions to a government transfer shock.
Notes: The blue solid lines report the point estimates from Eq. (2) to a one percent expansionary government transfer shock. The dark and light blue shaded regions report 90% and 95% Newey and West (1987) standard-error bands, respectively, computed using a bandwidth of one plus the impulse response horizon. The remaining lines are estimated using the non-linear specification in Eq. (3). Red dashed lines show the point estimates estimated for periods when the GDP gap, using the Riksbank's measure, is negative. Yellow dashed-dotted lines show the point estimates when the GDP gap, using an HP-filtered gap, is negative. Light (dark) green dotted lines show the point estimates using only big shocks, i.e., shocks that are bigger than 0.5 (1) standard deviation in absolute value.

The impulse response functions to a one percent reduction of direct taxes are shown in Figure 9. The overall conclusion from the baseline estimates holds for the non-linear ones as well. That is, the shock has an expansionary effect on impact that reverts and then falls below zero for GDP, consumption, investment, and employment along with an increase in CPIF and the policy rate. One noteworthy difference, however, is that the CPIF response is more muted for all the non-linear estimates.

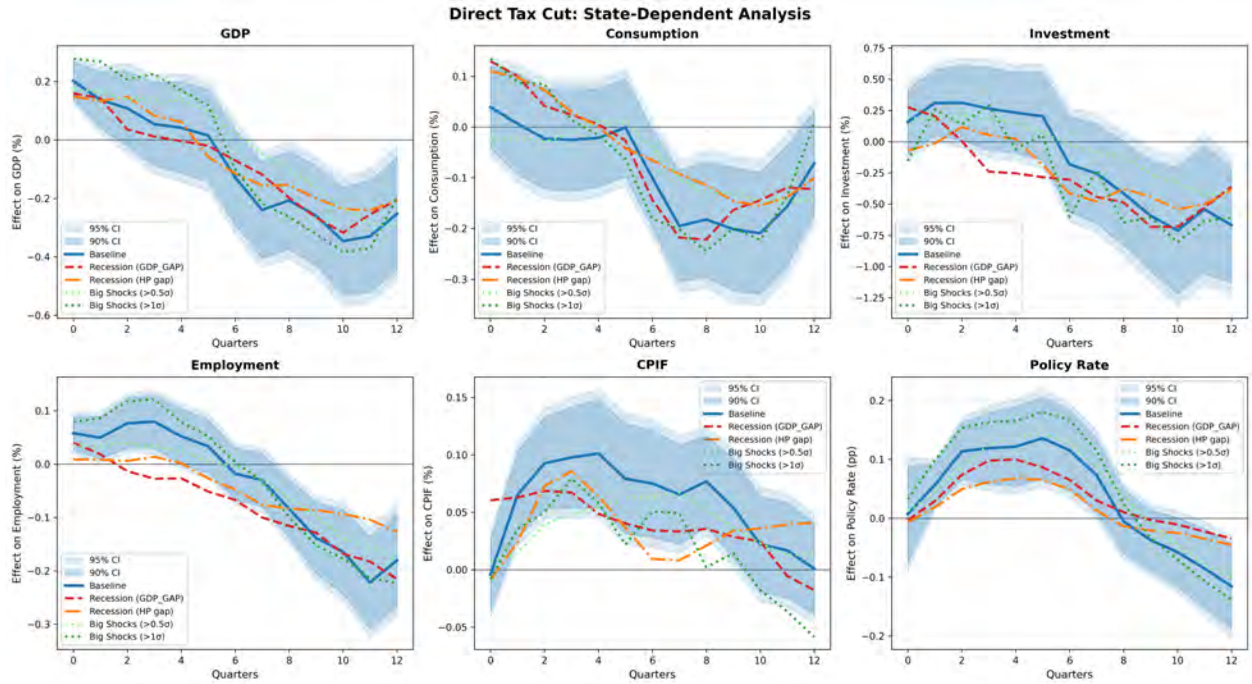

Figure 9: Impulse response functions to a direct tax shock.
Notes: The blue solid lines report the point estimates from Eq. (2) to a one percent expansionary direct tax shock. The dark and light blue shaded regions report 90% and 95% Newey and West (1987) standard-error bands, respectively, computed using a bandwidth of one plus the impulse response horizon. The remaining lines are estimated using the non-linear specification in Eq. (3). Red dashed lines show the point estimates estimated for periods when the GDP gap, using the Riksbank's measure, is negative. Yellow dashed-dotted lines show the point estimates when the GDP gap, using an HP-filtered gap, is negative. Light (dark) green dotted lines show the point estimates using only big shocks, i.e., shocks that are bigger than 0.5 (1) standard deviation in absolute value.

Figure 10 shows the impulse response functions to a one percent reduction of indirect taxes. The impulse response functions estimated with only shocks larger than 1 standard deviation deviates the most from the baseline. Particularly, the GDP response is stronger for the first five quarters, then it becomes smaller and even negative. The employment and consumption responses also stand out being a lot larger for the first five quarters before falling below the baseline.

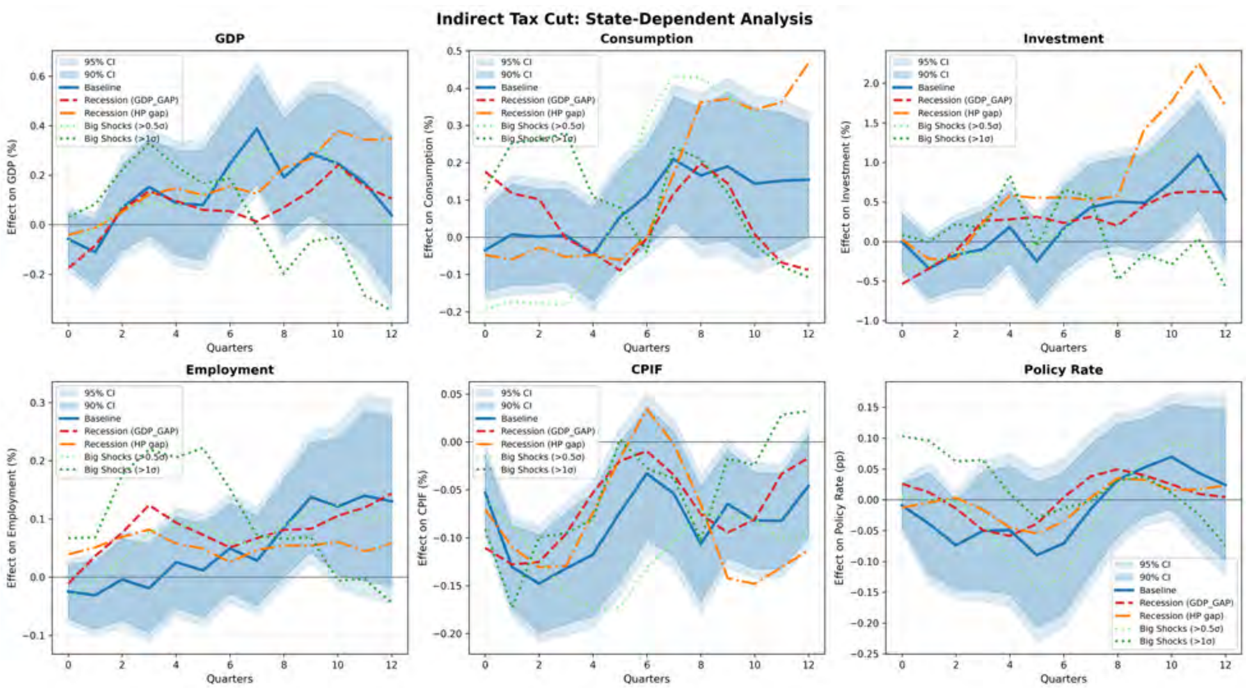

Figure 10: Impulse response functions to an indirect tax shock.
Notes: The blue solid lines report the point estimates from Eq. (2) to a one percent expansionary indirect tax shock. The dark and light blue shaded regions report 90% and 95% Newey and West (1987) standard-error bands, respectively, computed using a bandwidth of one plus the impulse response horizon. The remaining lines are estimated using the non-linear specification in Eq. (3). Red dashed lines show the point estimates estimated for periods when the GDP gap, using the Riksbank's measure, is negative. Yellow dashed-dotted lines show the point estimates when the GDP gap, using an HP-filtered gap, is negative. Light (dark) green dotted lines show the point estimates using only big shocks, i.e., shocks that are bigger than 0.5 (1) standard deviation in absolute value.

The rest of the non-linear impulse response functions, on the other hand, are generally within the standard-error bands of the baseline. However, there are some quantitative differences. Particularly for consumption and investment, the impulse response functions estimated with only shocks larger than 0.5 standard deviations and during a negative HP-filtered gap, the responses are larger than the baseline. There are also differences between the estimates using the HP-filtered gap and the Riksbank's gap, with the latter generally being more muted.

In summary, while there are some quantitative and qualitative differences between the baseline, linear estimates and the non-linear estimates focusing on only large shocks and shocks occurring when the GDP gap is negative, the non-linear impulse response functions are generally within the standard-error bands of the baseline. These estimates do not suggest that fiscal policy is more effective in times of economic downturns or that the estimated effects are larger when excluding small shocks. As discussed in the introduction, the lack of evidence for state-dependent effects of fiscal policy is not unique in the literature.

5 Conclusion

This paper adds to the empirical literature on the effects of fiscal policy on inflation and the business cycle by providing the first comprehensive study on Sweden. We estimate the effects of fiscal policy shocks using a two-step procedure combining the Blanchard and Perotti (2002) identification strategy with Jordà (2005) local projections. Our results show that shocks to government consumption, transfers, and indirect taxes have overall expansionary effects, with increases in GDP and employment. Shocks to government investment have an expansionary albeit more muted effect, and direct tax shocks are expansionary in the short run but contractionary in the longer run. Inflation does not react significantly in response to government consumption and investment shocks, falls in response to government transfer and indirect tax shocks, and increases in response to a direct tax shock. All these results are robust to varying the control variables and the lag length.

Moreover, we test for asymmetries of the impulse response functions by estimating whether they depend on the level of slack in the economy, measured by the output gap, and the size of the shocks. We find no evidence of systematic differences between our baseline, linear estimates and estimates from periods when the output gap was negative, echoing the findings of Ramey and Zubairy (2018) for the United States, or that large shocks produce amplified responses.

Our results add to the literature which goes against the theoretical prediction in workhorse New Keynesian models that fiscal expansions are unambiguously inflationary through aggregate demand effects. The muted or negative inflation responses we document align with findings from e.g. Fatás and Mihov (2001) and Mountford and Uhlig (2009) for the United States, while contrasting with the positive responses found by e.g. Caldara and Kamps (2008) and Ferrara et al. (2021). Our findings for output and employment effects are consistent with earlier Swedish evidence from Hjelm and Stockhammar (2016), Almerud (2022), and Laun (2025), but we are the first to apply modern empirical methods based on identified fiscal shocks to Swedish inflation. These findings point to the fact that additional mechanisms may dampen or even overturn the inflationary effects predicted by standard models. We leave a detailed investigation of these mechanisms for future research. Nonetheless, our results have important implications for policy design: fiscal stimulus can support output and employment without generating significant inflationary pressures, while fiscal consolidation should not be relied upon as an inflation-control tool.

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Appendices

A Selection of previous studies

	Response of Prices/Inflation	Method	Identification	Countries	Sample Period
Edelberg et al. (1999)	Prices increase	SVAR	Ramey–Shapiro war dummies	US	1948:Q1–1996:Q1
Fatás and Mihov (2001a)	Prices are insignificant	SVAR	Semi-structural VAR	US	1960:Q1-1996:Q4
Fatás and Mihov (2001b)	Prices decline	SVAR	Cholesky	US	1960:Q1-1996:Q4
Canzoneri et al. (2002)	Inflation declines	SVAR	Cholesky	US	1951:Q1–1995:Q4
Perotti (2005)	Mixed response (negative for US)	SVAR	Institutional info on gov. spending elasticities	5 OECD countries	1960:Q1–2001:Q4
Canova and Pappa (2007)	Mixed response of prices	Bayesian panel SVAR	Sign restrictions	47 US states, 9 EU countries	US: 1969–1995, EMU: 1997:Q1–2003:Q3
Caldara and Kamps (2008)	Inflation increases	Bayesian SVAR	Cholesky, sign restrictions, war dummies	US	1955:Q1–2006:Q4
Mountford and Uhlig (2009)	Prices decline	SVAR	Sign restrictions	US	1955:Q1–2000:Q4
Nakamura and Steinsson (2014)	Inflation is insignificant	Panel data regressions	Cross-state variation in military spending	US	1969–2006
Dupor and Li (2015)	Prices decline or insignificant	SVAR	Excess stock returns of military contractors	US	1951:M1–2002:M12
Ben Zeev and Pappa (2017)	Inflation increases	SVAR	Defense news (medium run restrictions)	US	1947:Q1–2007:Q4
Ricco et al. (2016)	Inflation declines or insignificant	Bayesian SVAR	Government spending news shocks	US	1981:Q3–2012:Q4
D'Alessandro et al. (2019)	Inflation declines	Bayesian SVAR	Cholesky, Ramey (2011) defense news shocks	US	1954:Q3–2007:Q4
Ferrara et al. (2021)	Inflation increases	Bayesian Proxy-SVAR	Ramey (2011) defense news shocks	US	1964:Q1–2015:Q4, excl. 2007:Q3–2009:Q4
Jorgensen and Ravn (2022)	Inflation declines or insignificant	SVAR	Cholesky or forecast errors	US	1966:Q4–2019:Q4 or 1966:Q4–2008:Q3 (FE)
Eminidou et al. (2023)	Inflation increases. More so in high-debt countries	SVAR	Cholesky	EA	2000:Q1–2019:Q4
Checherita-Westphal and Pesso (2024)	Inflation increases. More so in high-debt countries	SVAR	Narrative approach and “purged shocks”	EA	1999–2022

Table A.1: Selection of previous studies.

B The Shocks

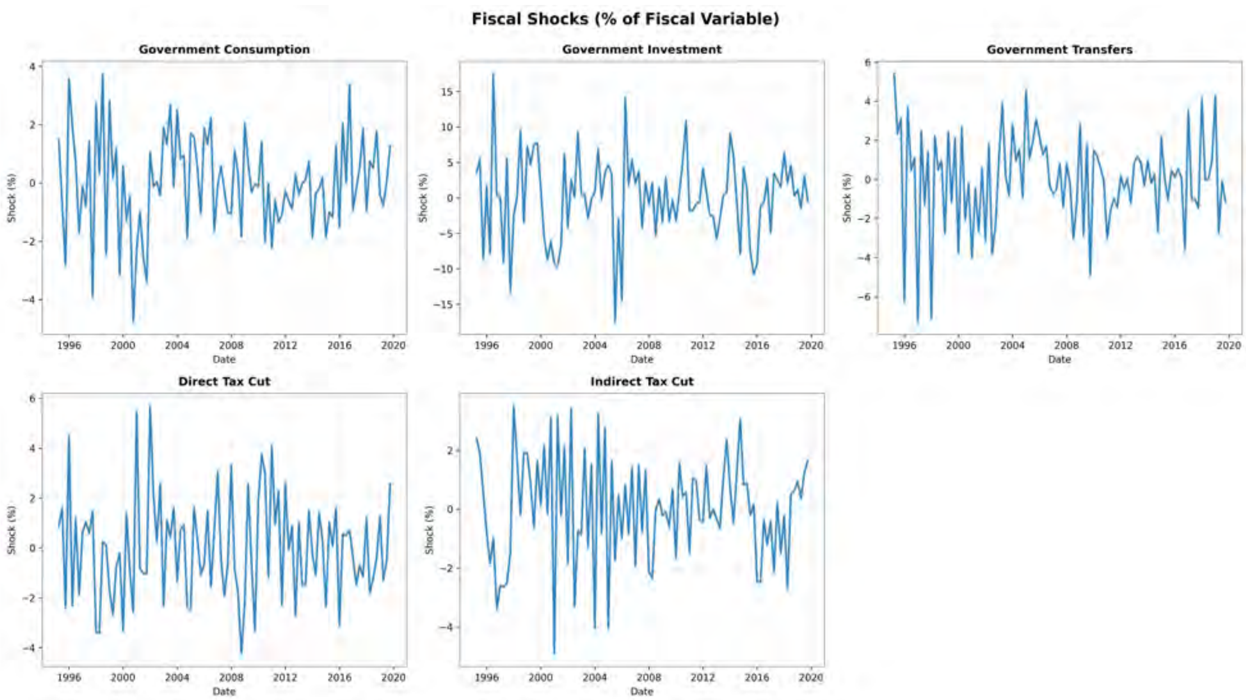

Figure B.1: The fiscal shocks.
Note: In per cent of the fiscal variables.

Fiscal Variable	Mean Absolute Shock (%)	Std Dev (%)	Mean Big Shock (%)	# Big Shocks
Government Consumption	1,26	1,63	2,48	32
Government Investment	4,41	5,90	9,50	28
Government Transfers	1,82	2,41	3,77	30
Direct Tax Cut	1,64	2,02	3,07	31
Indirect Tax Cut	1,42	1,79	2,71	32

Table B.1: Descriptive statistics of the fiscal shocks (baseline and for the big shocks non-linearities).

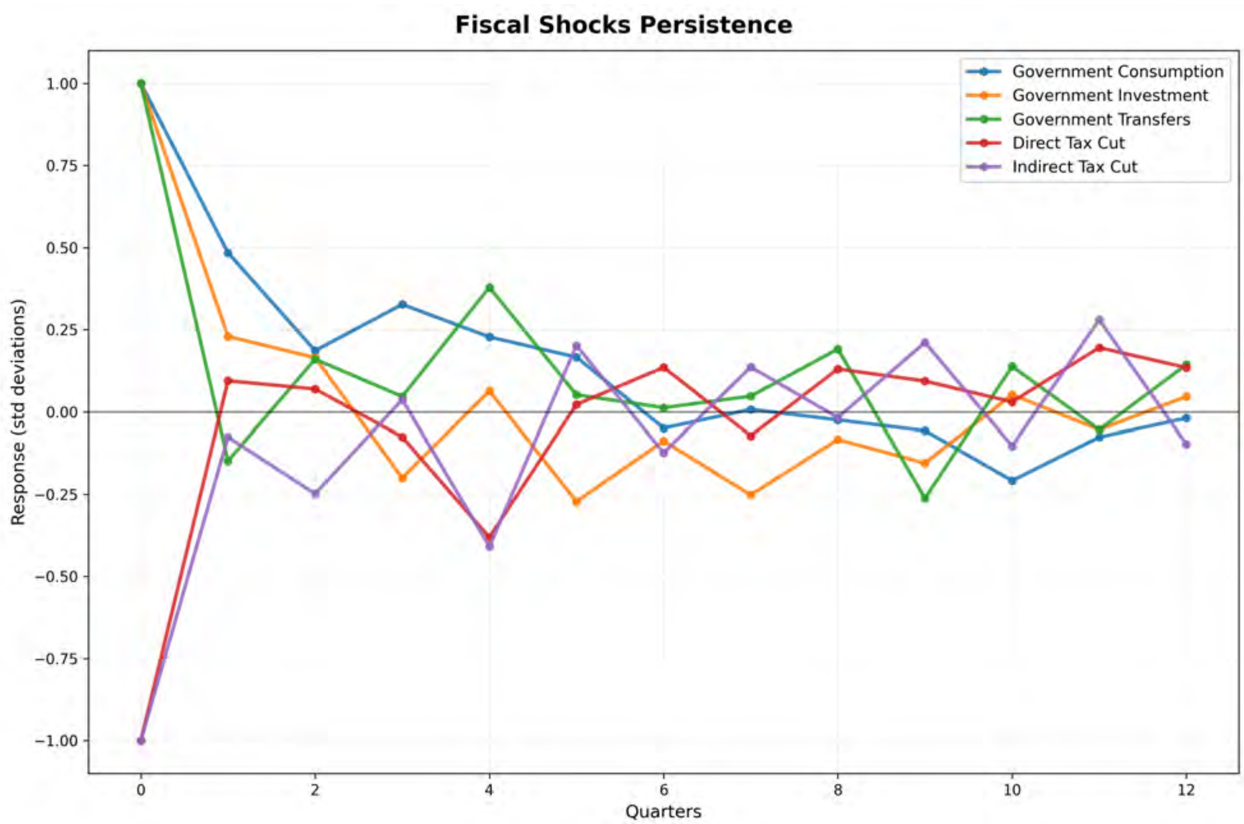

Figure B.2: Fiscal shocks persistence.
Note: One percent shock of the fiscal variable at impact. Tax shocks have multiplied by -1 in order for all shocks to be expansionary.

C The Exchange Rate

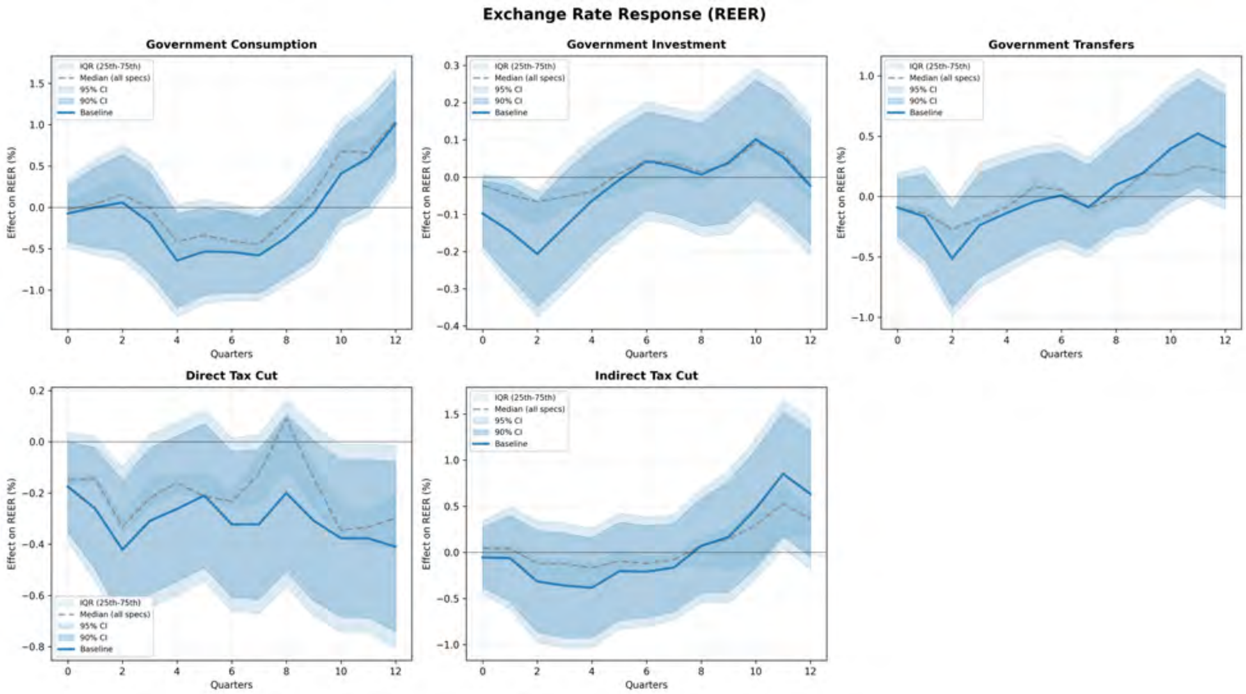

Figure C.1: Real exchange rate responses of a one per cent shock to each fiscal variable.

D Robustness exercises

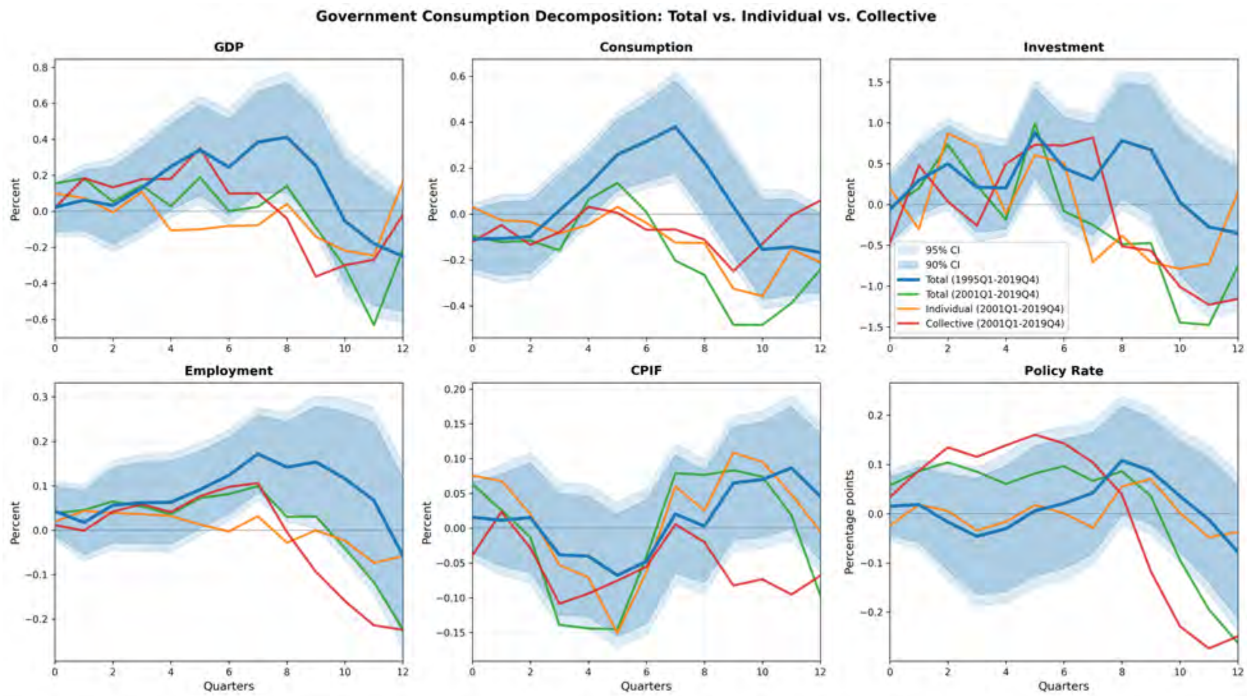

Figure D.1: Impulse response functions of disaggregated government consumption shocks.
Notes: The blue solid lines report the point estimates from Eq. (2) to a one percent expansionary government consumption shock. The dark and light blue shaded regions report 90% and 95% Newey and West (1987) standard-error bands, respectively, computed using a bandwidth of one plus the impulse response horizon. Green solid line report point estimates for the same specification for the sample period 2001Q1-2019Q4. Red and orange solid lines report the point estimates for individual and collective government consumption shocks, respectively, for the sample period 2001Q1-2019Q4.

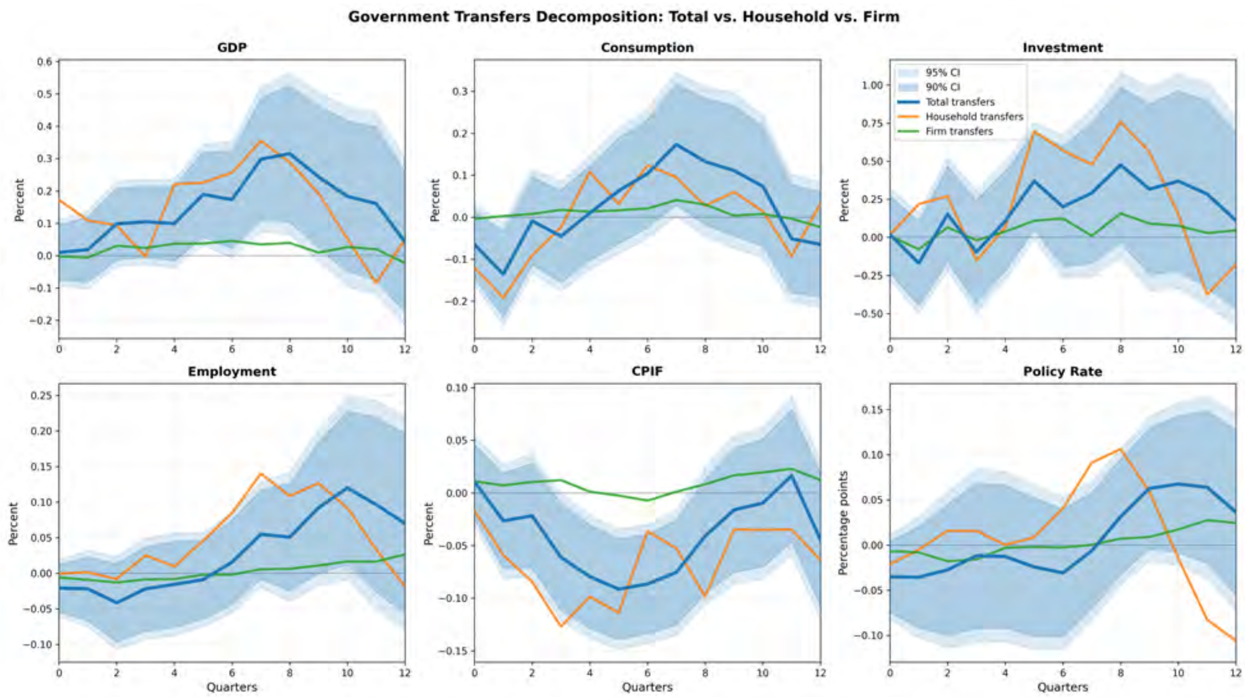

Figure D.2: Impulse response functions of disaggregated transfers shocks.
Notes: The blue solid lines report the point estimates from Eq. (2) to a one percent expansionary government transfer shock. The dark and light blue shaded regions report 90% and 95% Newey and West (1987) standard-error bands, respectively, computed using a bandwidth of one plus the impulse response horizon. Green and orange solid lines report the point estimates for transfers shocks to households and firms, respectively.

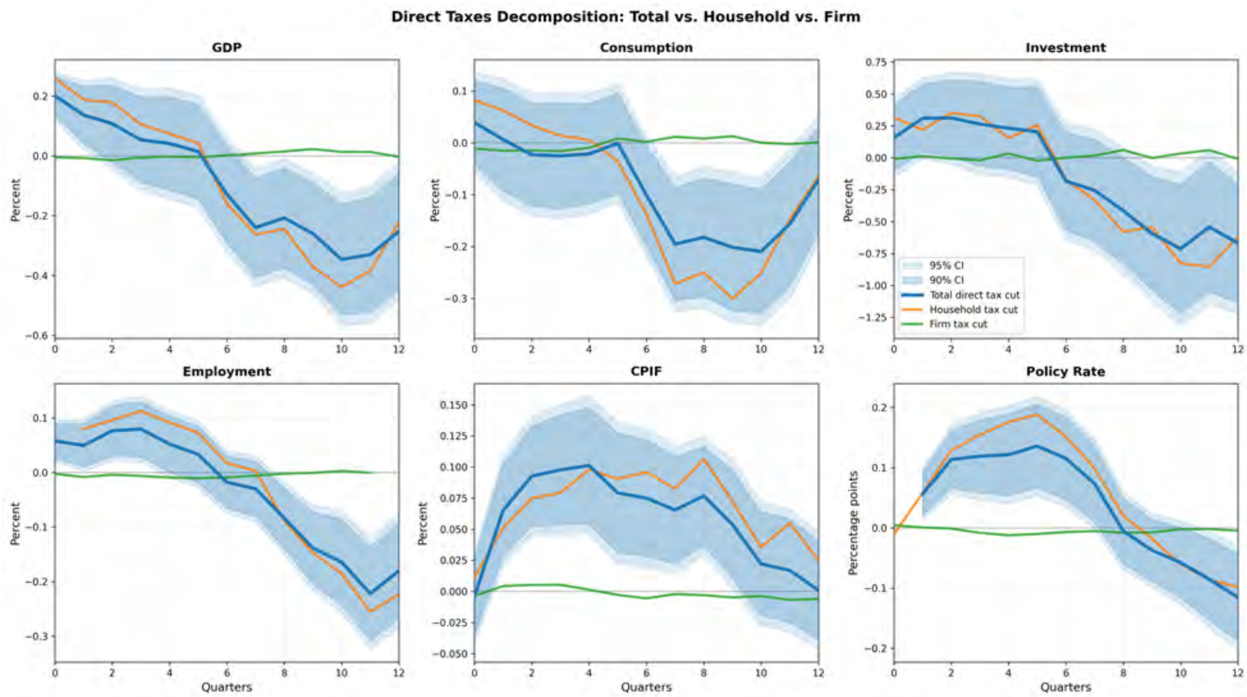

Figure D.3: Impulse response functions of disaggregated direct taxes shocks.
Notes: The blue solid lines report the point estimates from Eq. (2) to a one percent expansionary government transfer shock. The dark and light blue shaded regions report 90% and 95% Newey and West (1987) standard-error bands, respectively, computed using a bandwidth of one plus the impulse response horizon. Green and orange solid lines report the point estimates for direct tax shocks on households and firms, respectively.

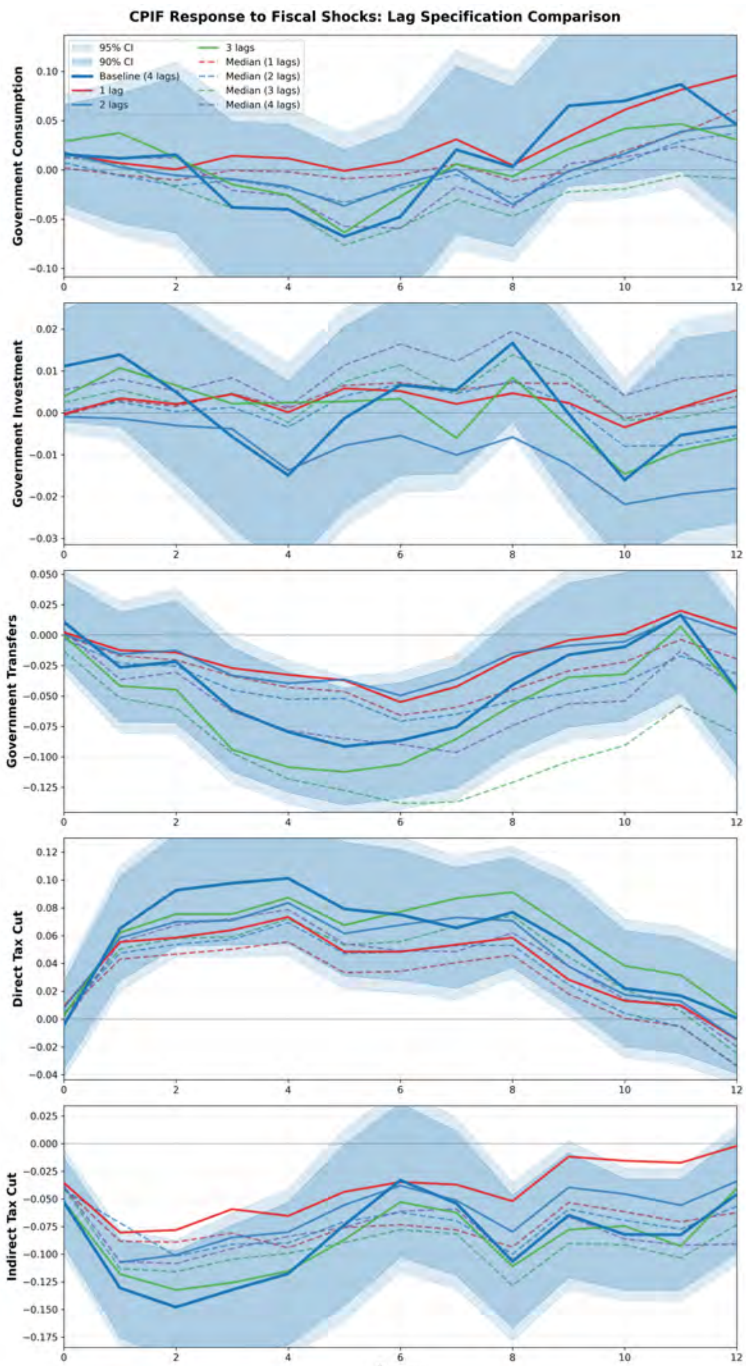

Figure D.4: Impulse response functions for CPIF using different number of lags.
Notes: The blue solid lines report the point estimates from Eq. (2) to a one percent expansionary fiscal policy shock. The dark and light blue shaded regions report 90% and 95% Newey and West (1987) standard-error bands, respectively, computed using a bandwidth of one plus the impulse response horizon.

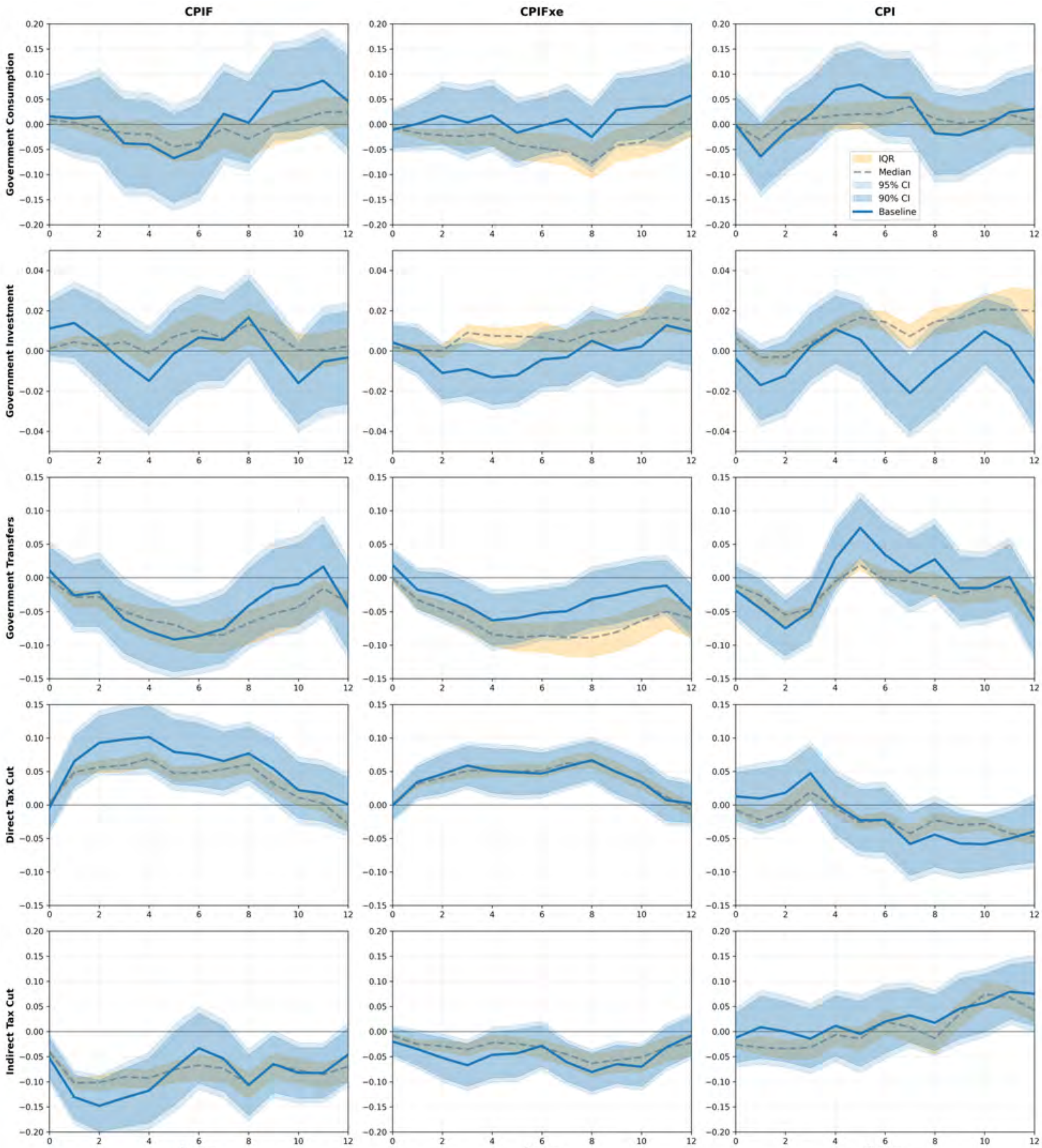

Figure D.5: Impulse response functions for prices using different consumer price indices.
Notes: The blue solid lines report the point estimates of CPIF, CPIF-XE, and CPI from Eq. (2) to a one percent expansionary fiscal policy shock. The dark and light blue shaded regions report 90% and 95% Newey and West (1987) standard-error bands, respectively, computed using a bandwidth of one plus the impulse response horizon. Gray dashed lines and the yellow shaded areas report the median point estimates and the inter-quartile range, respectively, from 564 alternative combinations of control variables and lag lengths.

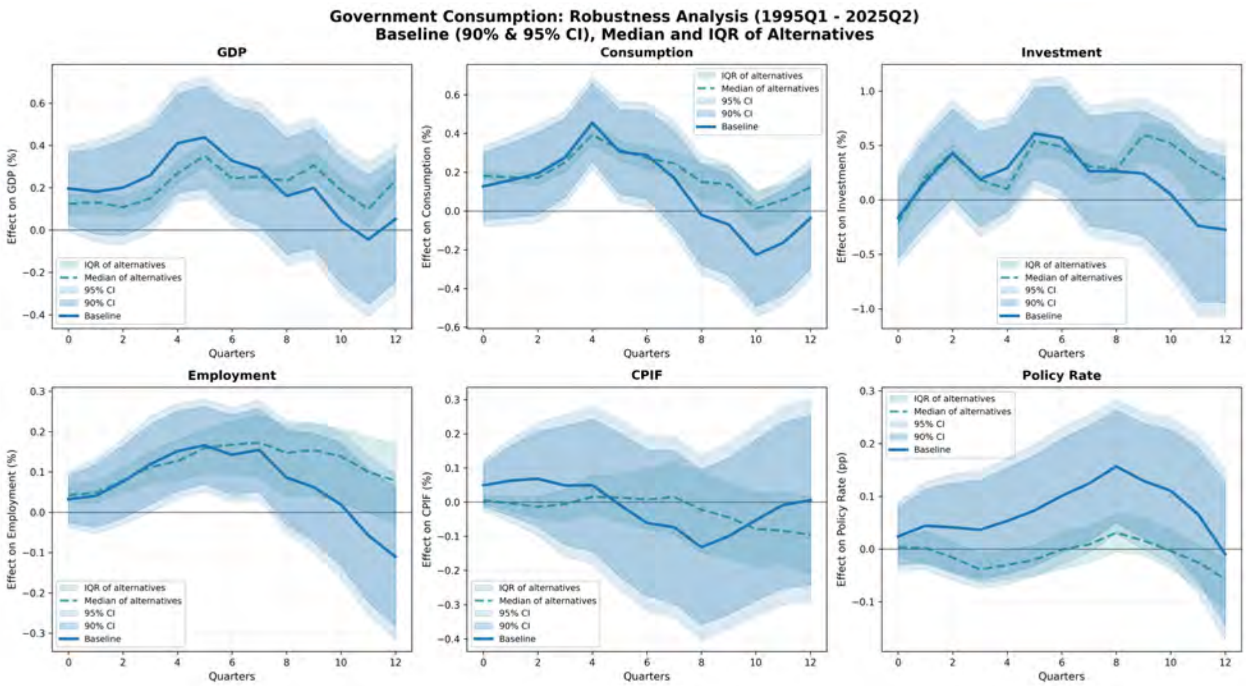

Figure D.6: Impulse response functions to a government consumption shock.

Notes: The blue solid lines report the point estimates from Eq. (2) to a one percent expansionary government consumption shock. The dark and light blue shaded regions report 90% and 95% Newey and West (1987) standard-error bands, respectively, computed using a bandwidth of one plus the impulse response horizon. Green dashed lines and the green shaded areas report the median point estimates and the inter-quartile range, respectively, from 564 alternative combinations of control variables and lag lengths. Sample period: 1995Q1-2025Q2.

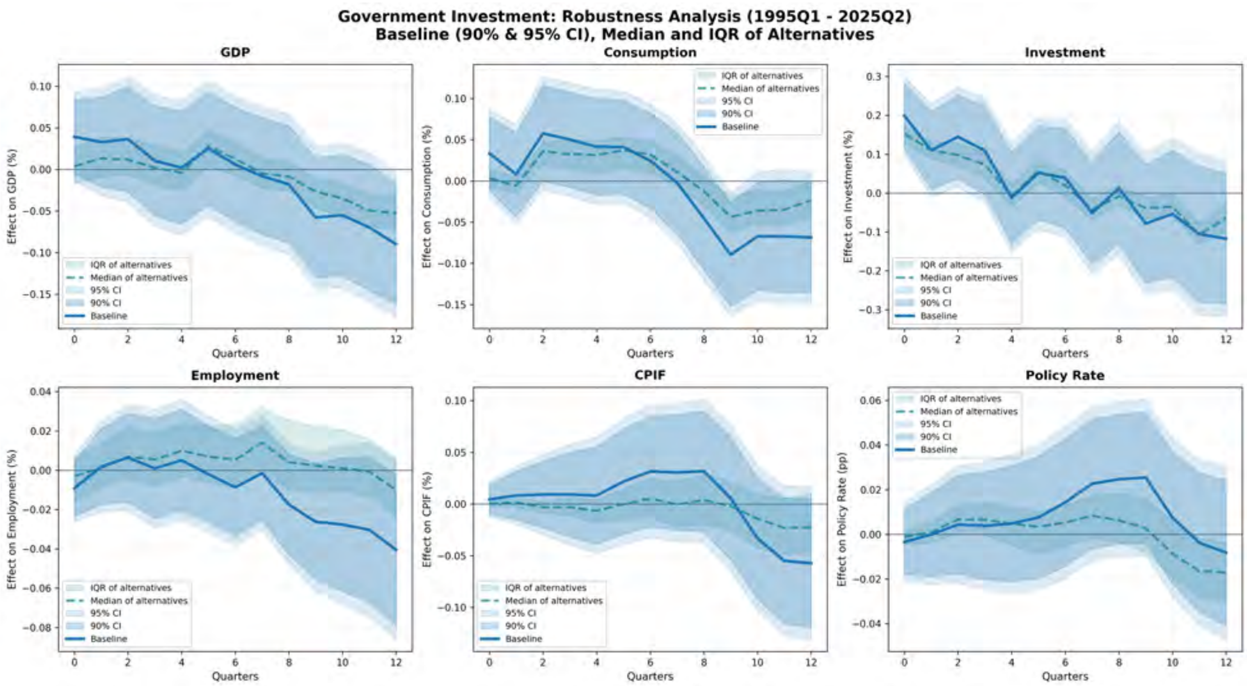

Figure D.7: Impulse response functions to a government investment shock.

Notes: The blue solid lines report the point estimates from Eq. (2) to a one percent expansionary government investment shock. The dark and light blue shaded regions report 90% and 95% Newey and West (1987) standard-error bands, respectively, computed using a bandwidth of one plus the impulse response horizon. Green dashed lines and the green shaded areas report the median point estimates and the inter-quartile range, respectively, from 564 alternative combinations of control variables and lag lengths. Sample period: 1995Q1-2025Q2.

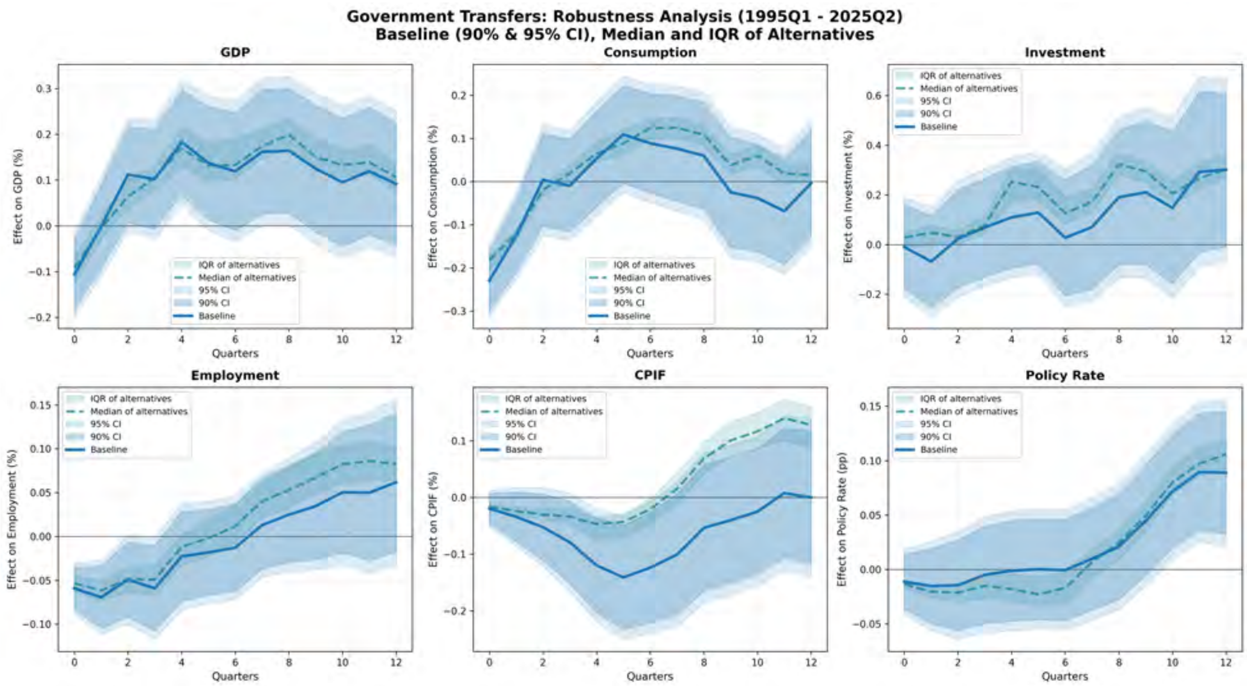

Figure D.8: Impulse response functions to a government transfer shock.

Notes: The blue solid lines report the point estimates from Eq. (2) to a one percent expansionary government transfer shock. The dark and light blue shaded regions report 90% and 95% Newey and West (1987) standard-error bands, respectively, computed using a bandwidth of one plus the impulse response horizon. Green dashed lines and the green shaded areas report the median point estimates and the inter-quartile range, respectively, from 564 alternative combinations of control variables and lag lengths. Sample period: 1995Q1-2025Q2.

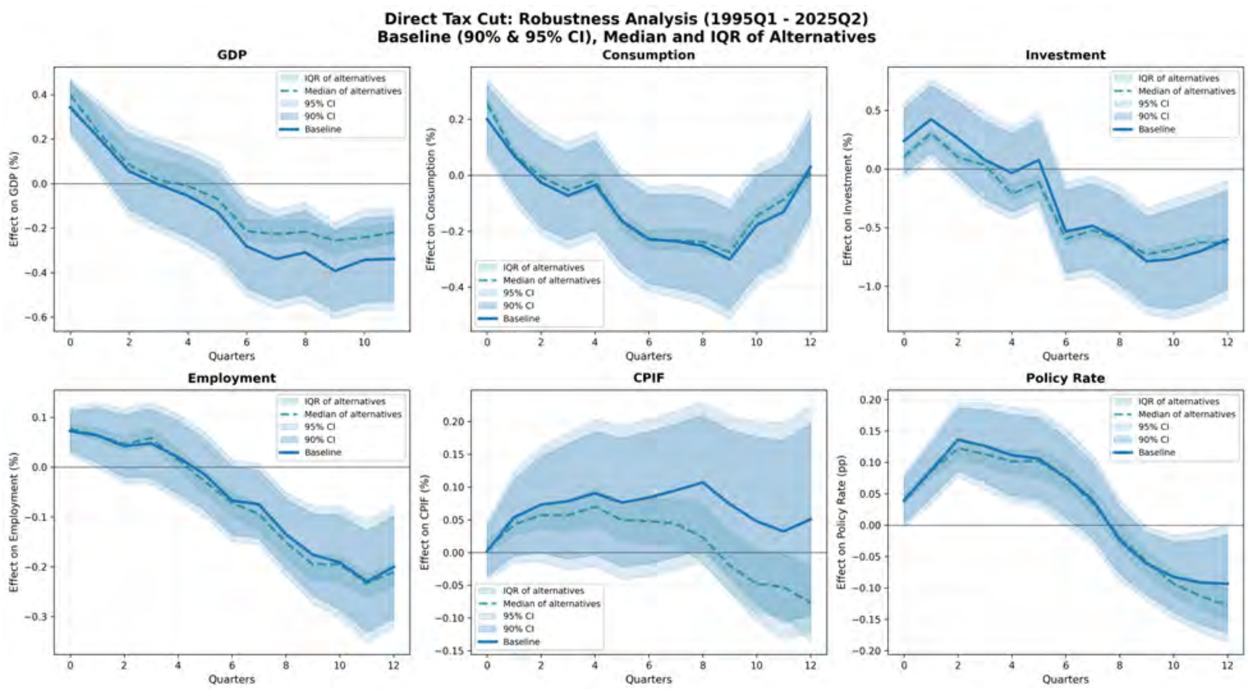

Figure D.9: Impulse response functions to a direct tax shock.

Notes: The blue solid lines report the point estimates from Eq. (2) to a one percent expansionary direct tax shock. The dark and light blue shaded regions report 90% and 95% Newey and West (1987) standard-error bands, respectively, computed using a bandwidth of one plus the impulse response horizon. Green dashed lines and the green shaded areas report the median point estimates and the inter-quartile range, respectively, from 564 alternative combinations of control variables and lag lengths. Sample period: 1995Q1-2025Q2.

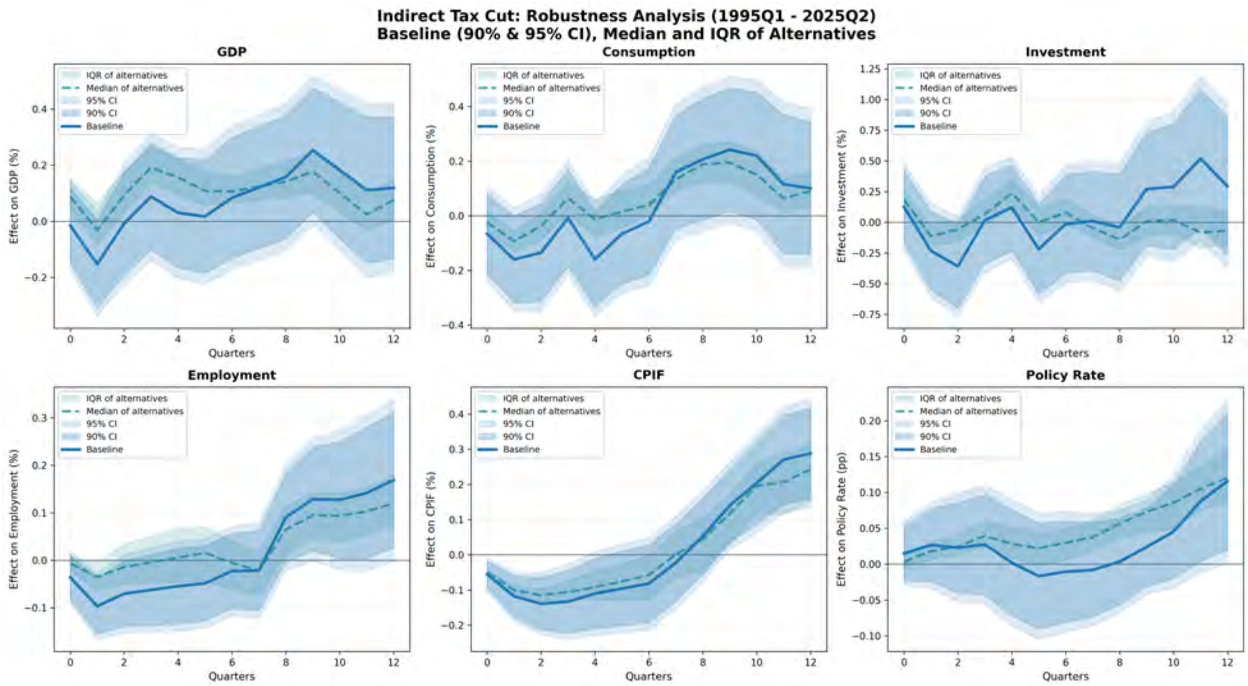

Figure D.10: Impulse response functions to an indirect tax shock.

Notes: The blue solid lines report the point estimates from Eq. (2) to a one percent expansionary indirect tax shock. The dark and light blue shaded regions report 90% and 95% Newey and West (1987) standard-error bands, respectively, computed using a bandwidth of one plus the impulse response horizon. Green dashed lines and the green shaded areas report the median point estimates and the inter-quartile range, respectively, from 564 alternative combinations of control variables and lag lengths. Sample period: 1995Q1-2025Q2.