# Fiscal Policy and Sentiments in a Monetary Union

Abhiprerna Smit*

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**Abstract**

Members of a monetary union have limited control over monetary policy. This can elevate the role of fiscal policy as the primary macroeconomic tool against country-specific shocks. This paper argues that there is an additional channel of transmission of fiscal policy in countries within a union via consumer sentiments. Using data for the European Economic and Monetary union, I provide evidence that the sentiments channel for fiscal policy is strongly present in some European countries but the effect is heterogeneous across countries. The strong response of sentiments to fiscal news makes fiscal consolidation more costly in relatively high debt euro area countries.

**JEL Classification:** E60; E62; E70; F45.

**Keywords:** fiscal policy, consumer sentiments, monetary union, fiscal consolidation

*asmit@wm.edu; William & Mary; Website: `https://abhiprernasmit.github.io/`

# 1 Introduction

The world is entering a new era of fiscal uncertainty with countries battling with sluggish economic growth and heightened global uncertainty. Meanwhile, consumer confidence globally has plummeted to its lowest levels since the pandemic. Reverting from their stance of fiscal austerity since the debt crisis, several European nations have recently announced substantial fiscal packages aimed at stimulating growth and strengthening economic resilience against disturbances like armed conflicts and trade wars. This paper argues that the success of these fiscal measures in stimulating growth can also depend on their ability to generate confidence about future economic outcomes. In other words, can fiscal policy be more effective in raising economic growth if it improves consumer sentiments?

Movements in consumer sentiments have important aggregate implications. Sentiments in the U.S., as measured by the Michigan Survey of Consumer Sentiments, have been shown to influence future output growth (Benhabib and Spiegel, 2019) and predict fall of future consumption (Blanchard, 1993). Sentiments can also explain large proportions of business cycle experienced in the U.S. (Milani, 2017). While consumer optimism is found to have positive effects on economic growth, Al-Amine and Willems (2023) show that optimism associated with higher confidence in financial markets can hurt an economy by allowing it to accumulate unsustainable amounts of debt.[1]

This paper focuses on whether economic optimism and pessimism as measured by surveys can influence the effectiveness of fiscal policy. To answer this question, we look at the countries in the European Monetary Union, or simply the euro area, where monetary policy is determined centrally by the European Central Bank while member countries set their fiscal policy independently[2]. A currency union is the ideal setting for teasing out channels of transmission of fiscal policy as the monetary policy only responds to union-wide shocks. This makes fiscal policy the main macroeconomic tool in combating country-specific shocks (Gali and Monacelli, 2008). Farhi and Werning (2016) show that the fiscal multiplier in a currency union is higher due to the constraints on monetary policy. An increase in public spending can thus transmit to consumer sentiments if agents believe fiscal policy to be the main policy tool for stabilization of domestic output and prices.

This paper shows that fiscal expansion coupled with higher sentiments can increase aggregate demand more than the standard Keynesian effects, resulting in higher fiscal multipliers.

[1] Nowzohour and Stracca (2020) provide an overview of literature on the contribution of sentiments to business cycles.

[2] National fiscal policies are subject to the constraints imposed by the European Stability and Growth Pact.

The analysis is conducted for eight euro area countries: Belgium, Finland, France, Germany, Italy, Netherlands, Portugal, and Spain. Consistent with the literature, consumer sentiments is measured using the household survey of consumer expectations conducted by the European Commission across all countries in the European union. The VAR includes five variables - government spending news, government expenditure, consumer sentiments, GDP, and real interest rate, with government spending news ordered first. The VAR also includes an interaction term between consumer sentiments and government spending news to capture the effects of fiscal shock on output through the additional consumer sentiments channel. To isolate the sentiments channel, I introduce a counterfactual exercise where the economy receives a zero confidence shock every period along-with the fiscal news shock in the first period. The resulting impulse response functions from the two exercises allow us to distinguish between the Keynesian effect of fiscal policy and the additional role played by sentiments in transmission.

One of the key challenges in studying the empirical effects of fiscal policy is identifying fiscal policy shocks. Ramey (2011) and Ramey and Zubairy (2018) have criticized the identification of fiscal shocks in a VAR using Choleski decomposition as it fails to distinguish between anticipated fiscal policy measures and unexpected "news" shocks. To address this, they introduce two methods for identifying the unanticipated component of fiscal policy: the narrative approach and forecast errors. For Europe, Alesina et al. (2019a) applies the narrative method to measure unexpected government expenditure shocks at the annual frequency. I use forecast of fiscal expenditure made by the OECD to identify fiscal policy news using the difference between actual and forecasted growth in government expenditure—an approach based on the forecast error method of Ramey (2011).[3]

Results show that there is significant heterogeneity in how much consumer sentiments matter for propagation of fiscal policy. In Spain, Italy, and Netherlands, the persistence in response of output to fiscal news is driven by consumer sentiments. In Spain and Netherlands, the fiscal multiplier is over four times as much in the baseline with consumer sentiments than the counterfactual with no confidence, while in Italy the multiplier with sentiments is one and a half times higher. For other countries in the sample, including, Belgium, France, and Portugal, there is no evidence of a sentiments channel of fiscal policy. For Germany and Finland, though the output response is lower under the counterfactual the difference is not significant. These findings imply a core vs periphery pattern among euro area countries where fiscal policy is more effective in generating optimism in peripheral nations.

An important application of this analysis is to understand whether consumer sentiments

[3]The construction of the news variable in discussed in the data section.

can make fiscal consolidation policies more effective. The consolidation measures adopted by the European Commission during the European debt crisis were largely criticized to be too costly in terms of loss of output. However, many have argued that fiscal consolidation can also raise confidence by reducing the probability of default in high debt countries which can translate into smaller and milder contractions, and even result in potential expansion of the economy (Afonso, 2010; Giavazzi et al., 2000; Fazzari et al., 2015). To test whether sentiments can make fiscal consolidation less costly, I divide the countries into panels of core and periphery economies. Sentiments increased in core countries during periods of consolidation, potentially due to improved outlook on sustainability of fiscal debt. On the other hand, in periphery countries, both sentiments and output were significantly lower during periods of consolidation than normal times. The results complement Beetsma et al. (2015) who find that consolidations lowered confidence in European countries with weak institutions. Other past studies corroborate the finding that optimal fiscal strategy across different regions in a monetary union can differ depending on the state of the economy. Cook and Devereux (2019) use a model of currency union with core and periphery regions to show that during periods of zero lower bound, fiscal expansion is the optimal policy for periphery countries while it can be can be either expansion or contraction for core countries .

While consumer sentiments have been extensively studied to understand movements in aggregate productivity and inflation, limited attention has been paid to how macroeconomic policy could influence these sentiments. Konstantinou and Tagkalakis (2011) studies a panel of 9 OECD countries (not in monetary union) and find that some components of fiscal policy can raise confidence while others reduce it. Bachmann and Sims (2012) show that sentiments make fiscal policy more effective in the U.S. during recessions. The heterogeneity in effectiveness of fiscal policy between countries within a monetary union is an important focus of this paper. The findings push against the idea of creating a fiscal union in politically independent countries, and suggest that nations should be allowed to make their fiscal decisions according to the effectiveness of policy in raising confidence within their economy.

## 1.1 Sentiments and the macroeconomy

To understand why consumer sentiments may matter for policymakers in determining the effectiveness of policy measures, we need to define what survey based consumer sentiments is capturing. One interpretation of sentiments is the news channel introduced by Beaudry and Portier (2006), Beaudry and Portier (2014), and Barsky and Sims (2012a). In particular, Barsky and Sims (2012a) argues that the expectations component of the Michigan Survey of Consumer Sentiments are noisy measures of changes in expected productivity over a long

period of time, and hence only reflect "news" about future productivity. Feve and Guay (2018) study the effect of sentiments orthogonal to news on total factor productivity and find evidence that the news channel is the main driver of business cycles.

The other interpretation is that consumer sentiments are animal spirits that captures optimism and pessimism about future economic outcomes. When incorporated in general equilibrium models, these waves of optimism and pessimism can persistently affect macroeconomic aggregates like labor market outcomes, and economic activity (Bhandari et al., 2024). Sentiments have also been incorporated in models studying fiscal policy. De Grauwe and Foresti (2020) use a model which generates waves of optimism and pessimism to show that fiscal multiplier is highest in periods of extreme optimism and pessimism. Other papers have used fiscal policy with models of bounded rationality to generate sentiments. Gabaix (2020) show that introducing cognitive discounting in a New Keynesian model generates a failure of Ricardian equivalence. Incorporating sentiments in a RBC model, Angeletos and Lian (2022) find that fiscal policy can be significantly more stimulative when the assumption of common knowledge is relaxed.

There are several reasons why fiscal policy news can influence optimism or pessimism about future economic activity. One perspective suggests that partisan bias plays a role where consumers who do not support the ruling party are more likely to have a pessimistic outlook on future economic conditions (Benhabib and Spiegel, 2019). Other reasons could include concerns about unsustainable fiscal debt, or news about development of public utilities and infrastructure. In the euro area it can also signify whether consumers in some countries perceive monetary policy as less responsive to domestic shocks.

The rest of the analysis is structured as follows. Section 2 discusses the sentiments data and the construction of the fiscal news variable used in the model. Section 3 underlines the methodology used in the study, while Section 4 discuss the findings for the baseline model and the fiscal consolidation exercise. Section 5 concludes.

# 2 Data

The analysis is based on quarterly data for eight Euro area countries including Belgium, Finland, France, Germany, Italy, Netherlands, Portugal, and Spain. These countries are selected based on the availability of sentiments measures and macroeconomic data series. Quarterly time series data on per capita real government consumption expenditure, per capita real GDP, and interest rate on three month government bonds are taken from OECD. The sample period for all countries start in 1997:Q1 with the exception of Germany and France for which the sample starts in 1991:Q1 and Italy for which it starts in 1995:Q1. The sample ends in 2019:Q4

| | Belgium | Finland | France | Netherlands | Italy | Spain | Portugal |
|---|---|---|---|---|---|---|---|
| **Correlation with Germany** | 0.62 | 0.24 | 0.48 | 0.48 | -0.1 | 0.27 | 0.19 |

Table 1: Sentiments correlation with Germany

for all countries to avoid confounding effects from expenditure policies during COVID.[4]

The European Commission conducts a monthly and quarterly climate survey in multiple sectors for each country that is part of the European Union. The survey for the consumer sector is comparable to the Michigan Survey of Consumer Sentiments. Consumers are asked about personal financial spending- "How do you expect the financial position of your household to change over the next 12 months?" and "Compared to the past 12 months, do you expect to spend more or less money on major purchases (furniture, electrical/electronic devices, etc.) over the next 12 months?". Additionally the survey asks two questions about general economic conditions- "How do you expect the general economic situation in this country to develop over the next 12 months?" and "How do you expect the number of people unemployed in this country to change over the next 12 months?". The data reports the balance of all positive and negative responses for each question.

To create a forward looking index, the consumer sentiments measures the average balance share of the above four questions and normalized to 100 at the starting of the sample period for each country (Barsky and Sims, 2012b). By limiting the sentiments index to only measure expectations component allow us to abstract from any reverse causality from current economic conditions to macroeconomic policy and outcomes.

Figure 1 displays the relation between national sentiments across countries over time. The shaded region are the periods of recessions in Europe as identified by CEPR. Sentiments fell sharply in all European countries at the beginning of the 2008 financial crisis but recovered to pre-crisis levels in low debt countries like Germany, Netherlands, and Belgium, while confidence in most high debt countries remained low with the looming threat of a fiscal crisis. The series is highly correlated with domestic economic cycles and varies significantly across countries. Table 1 shows the heterogeneity in correlation of sentiments measure across countries. Consumer sentiments in Belgium, France, and Netherlands are highly correlated with that in Germany. Aside from being two of the smallest countries in the sample, both Belgium and Netherlands also have high economic integration with Germany, which can explain the high correlation

[4]The sample period varies across countries due to availability of OECD forecasts of government expenditure. The sample is also restricted to only reflect the periods of fixed exchange rate first under the Exchange Rate Mechanism and then under the European Monetary Union.

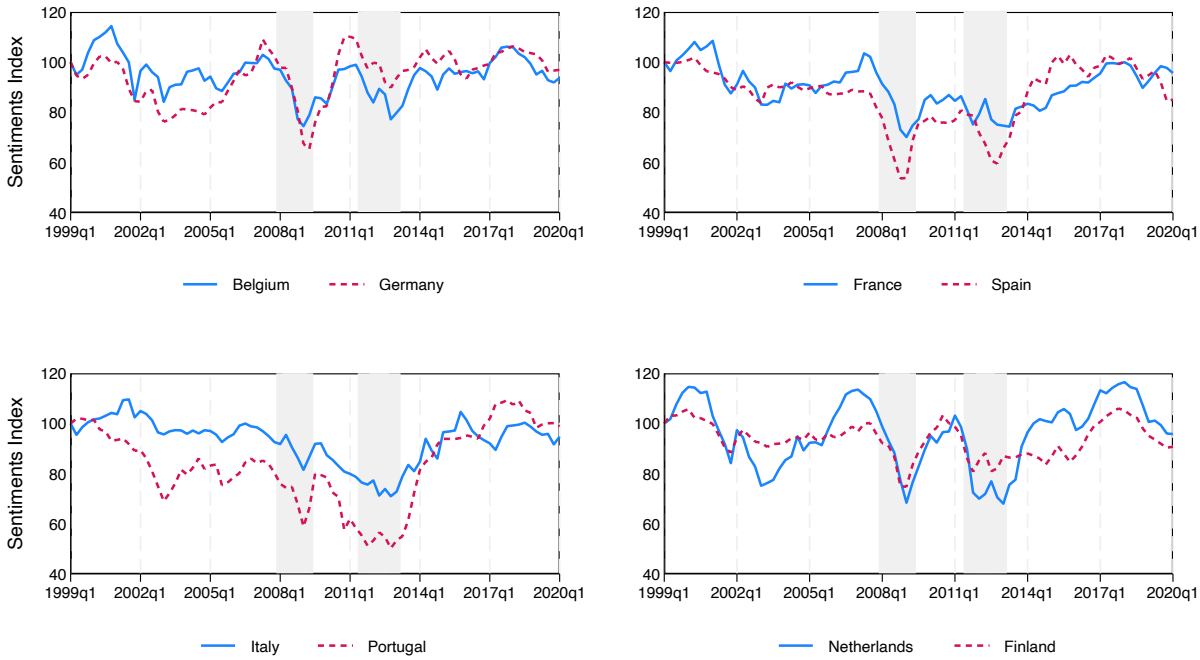



Figure 1: Consumer Sentiments Index

**Notes:** Figure shows the consumer sentiments index normalized to 100 in 1999:Q1 for all countries to facilitate easy comparison. Shaded regions are quarters identified as periods of recession in Europe by CEPR.

in consumer sentiments. The difference of movements in sentiments measures highlight the difference in beliefs about economic outlook across countries part of the monetary union.

## 2.1 Construction of News Shock

A primary concern in analysis of fiscal policy is that many changes to fiscal policy are announced to the public much before the implementation of the policy. As a result, anticipation of fiscal expenditure may have already influenced sentiments, spending, and production before the actual spending is reflected in the data. To correct for these anticipation effects the literature has instead turned to alternative measure of fiscal shocks including narrative approach where timing of large military expenditure is accurately assessed by reading government documents.

This paper follows the approach taken by Ramey (2011) of using forecast error from professional forecasts to measure the unanticipated component of fiscal expenditure. Fiscal news is then defined as the difference between forecasted growth and actual growth in government consumption expenditure where the forecast of expenditure is collected from quarterly economic

projections made by the OECD.[5]

OECD Economic Outlook and Projections data releases bi-annual forecast reports (May and November) for all OECD countries for a series of economic variables. The earliest available forecasts for Belgium, Finland, Netherlands, Portugal, and Spain starts in 1996 edition 2 of the report while that of Germany and France are available since 1960. Until 2003 edition 1, each report forecast government expenditure at semi-annual frequency (combined forecast for Q1 and Q2 and a second combined forecast for Q3 and Q4). Since 2003 edition 2, the forecasts are released at quarterly frequency (one forecast for each quarter). As the forecast reports are only generated twice a year, the forecasts for quarters 2 and 4 in my data is taken from the first edition of the report, and the forecast for quarter 1 and 3 is taken from the second edition of the report. This implies that the forecast is made using information up to period t for quarters 2 and 4, and using information up to period t-1 for quarter 1 and 3. Mixed frequency in fiscal projections before and after 2003 is dealt with imputed data using the Kalman filter.[6]

The news shock variable is defined as the unanticipated growth in government expenditure equals the difference between actual and forecast of growth in expenditure:

$$\text{News shock}_t = \text{Actual growth}_t - \text{Forecast of growth}_t$$

The forecast of quarterly growth of real government expenditure is given by-

$$\text{Forecast of growth}_t = \left( \frac{f_t(d_{t+1}) - f_t(d_t)}{f_t(d_t)} \right)$$

where $f_t(d_{t+1})$ is the forecast made in the current period for government expenditure in period $t+1$ and $f_t(d_t)$ is forecast made in period $t$ for the same period. Figure 2 shows the news shock constructed above against the current growth of government consumption expenditure for a sample country, Spain. The shock closely follows the actual growth in quarterly government expenditure. For majority of our sample, the forecast of growth is less than the actual growth indicating significant surprises in expenditure policies. During the debt crisis, the news shock is greater than actual growth in expenditure suggesting that forecasters were expecting smaller cuts in expenditure than what the government implemented.

[5]A similar method has also been used by Cavallari and Romano (2017) in the context of Europe using the European Commission annual forecasts (ECF). The ECF forecasts are only available in annual frequency and cannot be used for this analysis.

[6]The forecast variable is described in more detail in Appendix A.

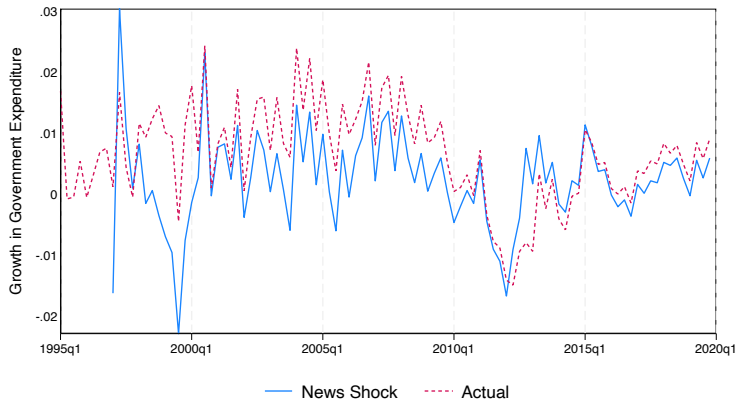



Figure 2: Growth in Government Expenditure and News Shock

**Notes:** Figure shows the growth in government consumption expenditure and the news shock constructed as the difference between actual and forecasted growth in expenditure for Spain.

# 3 Methodology

For the baseline analysis I use a vector auto-regression framework (VAR) with first order interaction term between sentiments and government spending news. The interaction term allows us to capture the non linear effects of fiscal policy due to different levels of confidence. The interacted VAR has been used to capture the non linear effects in Bachmann and Sims (2012) and Caggiano et al. (2017). Consider the baseline specification-

$$Y_t = \alpha + \sum_{k=1}^{L} A_k Y_{t-k} + \sum_{k=1}^{L} B_k (Sentiments_{t-k} \times Fiscal_{t-k}) + u_t \tag{1}$$

$$E(u_t u_t') = \Omega_u$$

where $Y_t$ is a vector of five variables: government spending news, log real government expenditure per capita, consumer sentiments index, log real GDP per capita, and real short term interest rate as a measure of monetary policy in the model, in that order. The government spending news variable ($Fiscal_t$) is constructed to account only for the unanticipated component of fiscal policy in period $t$ and thus, does not respond contemporaneously to shocks to other variables. I use two lags for baseline estimation based on the lowest information criterion for lag length selection for a maximum length of eight lags.

*Counterfactual Exercise:* The hypothesis of the paper is that positive sentiments associated with government expenditure can result in higher spending multiplier. To isolate the role of sentiments in propagation of spending shocks, I introduce a counterfactual exercise where the response of consumer sentiments to fiscal shocks is shutdown with concurrent sentiments shock

in every period. This exercise if similar to the one used in Bachmann and Sims (2012); Sims and Zha (2007); Bernanke et al. (1997), and is illustrated below. Consider our baseline specification in the structural VAR form:

$$Y_t = \alpha + A(L)Y_{t-1} + S\epsilon_t$$

where $\epsilon$ is the vector of structural shocks and $S$ is a $5 \times 5$ upper triangular matrix where $SS' = \Omega_u$. Each element of the $S$ matrix measures the response of $Y$ to structural shock $\epsilon$. Isolating the sentiments channel relies on introducing a sequence of shocks that sets the response of sentiments to the fiscal news shock to zero at every horizon $t$. The series of confidence shock generated each period will then take the form: $\epsilon_{3,1} = -\frac{S_{3,1}}{S_{3,2}}$.

*Threshold VAR:* There has been a growing body of fiscal policy literature focused on heterogeneity in government expenditure multipliers across different states of the economy. The Threshold VAR (TVAR) models are one of the most popular estimation techniques to study this non linearity when the shift in regimes are exogenous. Studies have used TVARs to tease out the differences in fiscal multipliers across expansionary and recessionary regimes (Auerbach and Gorodnichenko, 2012; Fazzari et al., 2015; Ramey and Zubairy, 2018), assessing tail risk due to macroeconomic shocks (Loria et al., 2024), among other applications. In this paper, the TVAR model is applied to study the effect of fiscal policy under two states: fiscal consolidation vs normal times.

Many studies have shown that the effect of a contractionary fiscal policy shock under fiscal consolidation is significantly less contractionary than Keynesian estimates especially when consolidation is used to bring stability in high debt countries. The primary channel for the less negative effects of consolidation operates through higher expectations of economic and financial stability (Alesina et al., 2015). A positive outlook of the economy should be captured in the forward looking consumer sentiments. In the second part of the paper I test the response of sentiments and output to fiscal policy under normal times and times of fiscal consolidation using the following TVAR model-

$$\begin{aligned} Y_t = (1 - I_{t-1})[\alpha_A + \sum_{k=1}^{L} \psi_{A,k} Y_{t-k} + \sum_{k=1}^{L} \phi_{A,k}(Sentiments_{t-k} \times Fiscal_{t-k})] \\ + (I_{t-1})[\alpha_B + \sum_{k=1}^{L} \psi_{B,k} Y_{t-k} + \sum_{k=1}^{L} \phi_{B,k}(Sentiments_{t-k} \times Fiscal_{t-k})] + u_t \end{aligned} \tag{2}$$

$I_t$ is the indicator variable which takes the value 1 or 0 depending on the state of the economy. If consolidation inspires higher confidence, we should expect sentiments to increase in response to a *negative fiscal news shock*, and a lower contractionary effect on output.

*Generalized Impulse Response Functions:* In a linear VAR, the traditional impulse response functions are symmetric, i.e. positive and negative shock have symmetric responses, linear in

shocks, and history independent, i.e., past realizations does not affect the responses to the shock. Koop et al. (1996) show that introducing non-linearity in a VAR model makes the impulse responses dependent on the choice of history and shocks. As an alternative, they suggest the algorithm to compute history independent impulse response functions i.e. the Generalized Impulse Response functions (GIRFs). GIRFs are calculated as the difference in conditional expectations given the history and shock. The impulse responses for each horizon is then averaged over all the histories. The computation of GIRFs can be summarized by the following equation:

$$GIRF_y(n, \nu_t, \omega_{t-1}) = E[Y_{t+n}|\nu_t, \omega_{t-1}] - E[Y_{t+n}|\omega_{t-1}] \tag{3}$$

Here I provide a brief description of the computation steps. For a given history of data, draw a sequence of shocks using the residuals of the VAR. The impulse responses for each history and sequence of shock are then given by the difference between forecast of value of a variable with and without a one standard deviation fiscal news shock in period $t$. The impulse responses are calculated for period $t+1$ to $t+H$. Repeat the process for N draws of shocks for each history of the data.[7] The impulse response for each history is the average response over all draws of shocks. The Generalized impulse response is then the average of impulse responses for all histories for all horizons 1 to H.[8] The issue of history dependence of impulse responses in the Threshold VAR model can also be addressed by calculating GIRFs over all histories in a given state of the economy.

# 4 Baseline Results

I first discuss how unanticipated fiscal shock affects the economy and whether the sentiments channel matter for the propagation of fiscal policy to output. Figure 3 presents the result for Spain to illustrate the mechanism in play. Figure 4 presents the results for rest of the countries in the sample. The solid line in each panel is the generalized impulse response functions (IRFs) for log government spending, consumer sentiments, log GDP, and real interest rate to a one standard deviation fiscal news shock. The dotted line is the IRF under the counterfactual scenario where the economy experiences concurrent sentiments shock which keeps the response of sentiments at zero at every horizon.

[7] For the simulation, I set N=500 and H=20.

[8] For more details on construction of GIRF, refer to Koop et al. (1996).

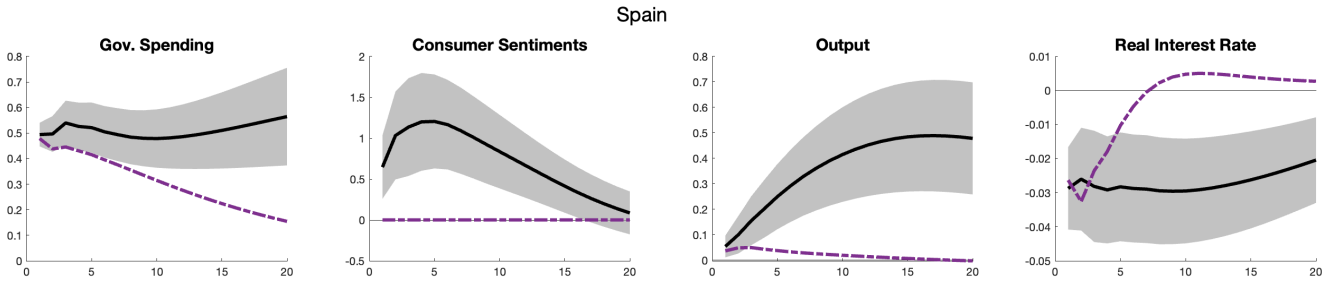



Figure 3: Results from the Baseline VAR model

**Notes:** Sold lines are the Generalized impulse responses (GIRFs) for a positive one standard deviation shock to fiscal news in the baseline model. The dashed line is the impulse responses for the counterfactual with no confidence, discussed in Section 3. Shaded region is the one standard error bands around the GIRFs for the baseline model generated through a bootstrap procedure with 1000 simulations.

In Spain, an expansionary fiscal news shock increases government spending, consumer sentiments, and output on impact. The response for government expenditure and output is also significantly persistent for over twenty quarters while the response for consumer sentiments stays positive for approximately two years. The baseline hypothesis is that fiscal policy impacts output through two effects: the direct Keynesian effect of government expenditure on output, and through lagged interaction between sentiments and fiscal policy news. The above hypothesis is confirmed in the counterfactual impulse responses (dashed line) for Spain in Figure 3.

In the counterfactual exercise, the economy experiences a 'zero-confidence' shock such that consumer sentiments does not respond to the fiscal news shock at any horizon. This is akin to shutting down the sentiments channel and significantly changes the effect of fiscal news on the Spanish economy. The effect of fiscal news on government spending and output is same on impact but significantly less persistent. A better comparison of baseline and counterfactual results would be through government spending multipliers. While the impact multiplier is roughly the same for Spain under both analysis, the maximum multiplier under baseline with sentiments is 5.1 and under counterfactual with no confidence is 0.6.[9] Our result for Spain is comparable to Bachmann and Sims (2012) who also find that the dampening of consumer sentiments in the U.S. during recessions affect the persistence of output multiplier and not the impact.

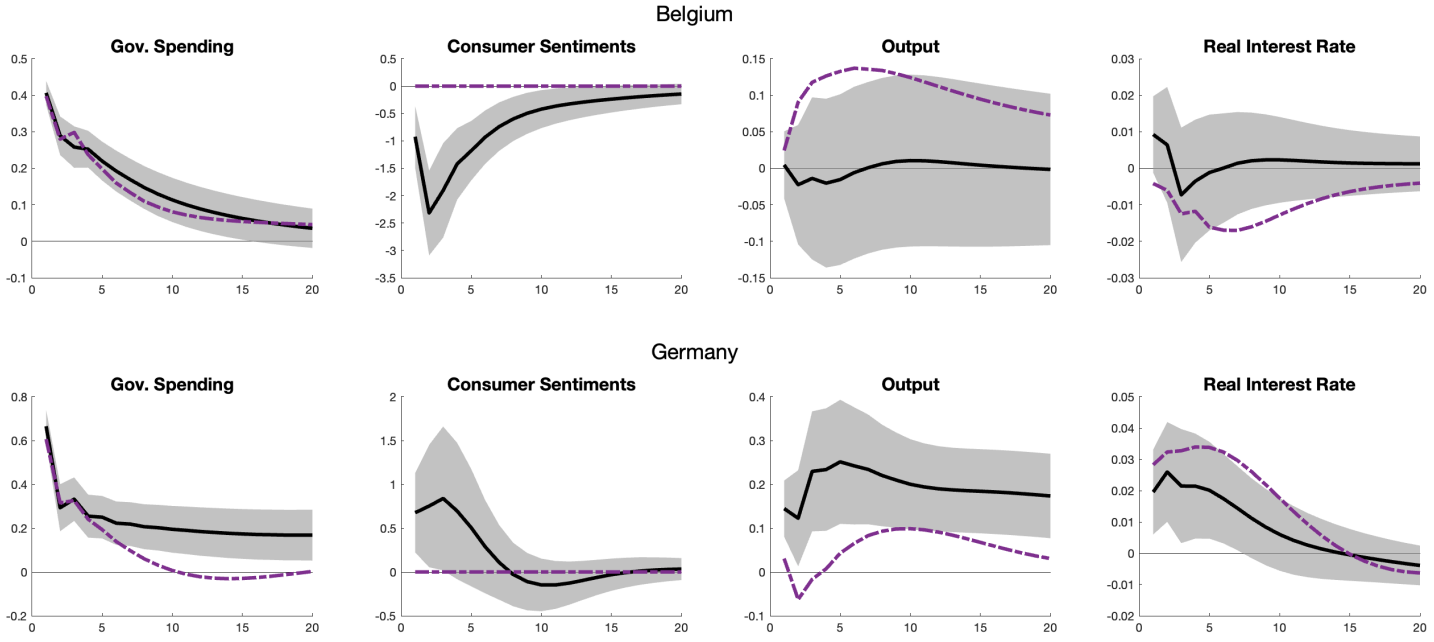
Figure 4 presents the results for rest of the countries in the sample. For all countries, an

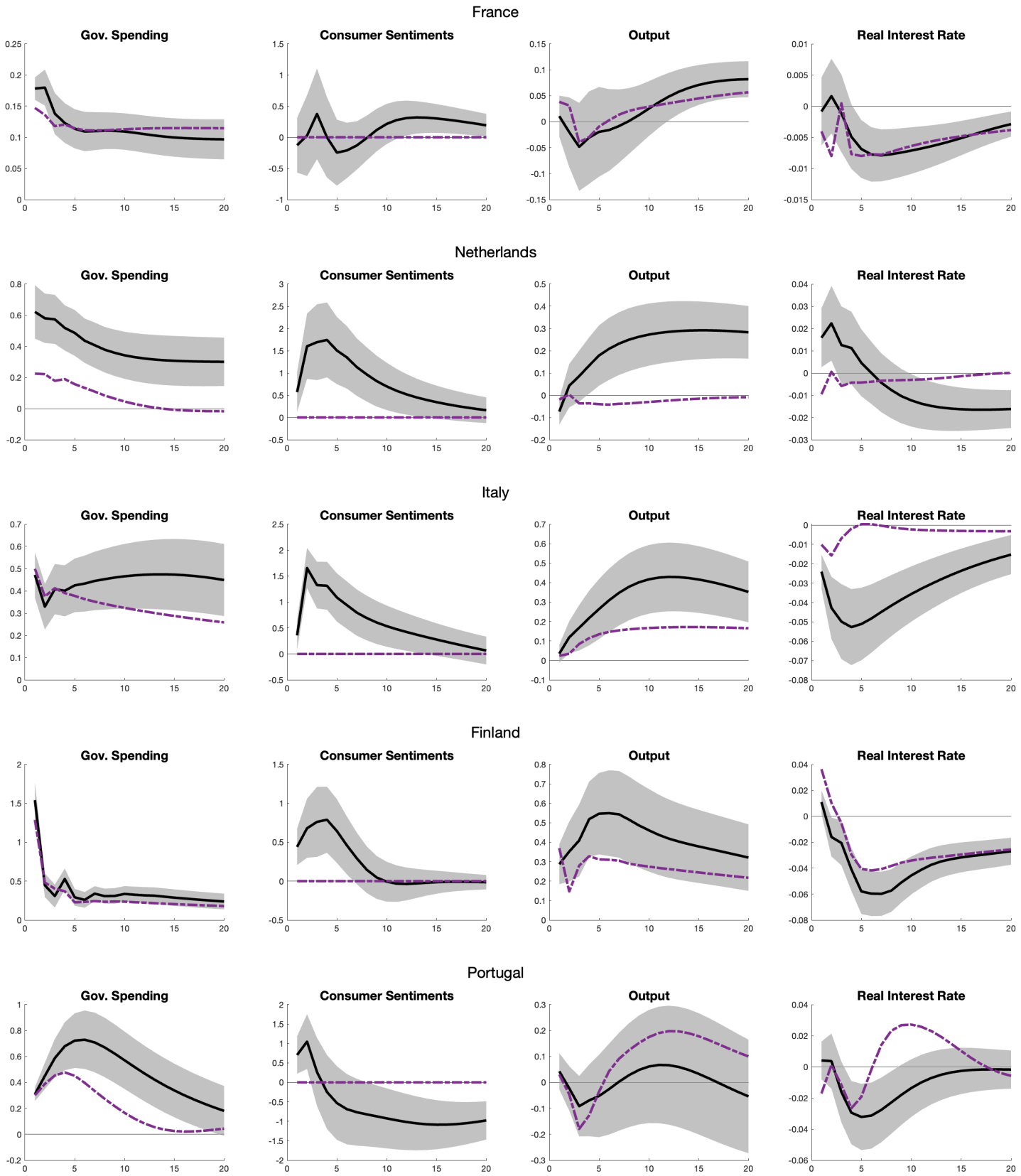
[9]Owyang et al. (2013) criticized this back of envelope calculation to calculate multiplier as the use of average output to government spending ratio over the sample influences the multiplier computed across countries or even time periods. However, the calculation is still useful to compare across our baseline and counterfactual within the same country and sample period.

expansionary fiscal news shock increases output in line with the Keynesian model, although this effect is not significant in Belgium and Portugal. The shock also increases consumer sentiments on impact in all countries with the exception of Belgium. In Belgium, consumer sentiments decreases significantly before converging to zero.

The response of consumer sentiments also does not play an equally important role in propagation of fiscal policy in all countries in our sample. Like Spain, in Italy and Netherlands forward looking consumer sentiments are important in making fiscal policy more effective. The maximum multiplier under baseline is 4.8 in Italy and 3.9 in Netherlands, while the counterfactual no confidence multiplier is 3.1 and -1.3 respectively. Even in Germany, shutting down the sentiments channel lower the effectiveness of fiscal policy on output, especially in the first four quarters. For Belgium, where sentiments decrease in response to a government spending shock, shutting down sentiments raises output more than the baseline in the short run. In France, Finland, and Portugal, the multipliers are indistinguishable under the baseline and counterfactual analysis.

Figure 4: Results from the Baseline VAR model - All Countries






Sold lines are the Generalized impulse responses (GIRFs) for a positive one standard deviation shock to fiscal news in the baseline model. The dashed line is the impulse responses for the counterfactual with no confidence, discussed in Section 3. Shaded region is the one standard error bands around the GIRFs for the baseline model generated using bootstrap.

These findings are supported by other country-level studies in the Euro area. Wolff et al. (2006) find mixed evidence for impact of government spending shock in Germany. An increase in personnel expenditure results in contraction of the output while an increase in the consumption expenditure is approximately zero. The response is positive for an increase in the government investment expenditure. On the other hand, Giordano et al. (2007) find a hump shaped response of private GDP to government expenditure in Italy. The response is persistent for roughly 2 years. Both these papers identify fiscal policy shock based on Blanchard and Perotti (2002), and hence are not directly comparable to the analysis in this paper.

The high degree of trade and macroeconomic linkages between countries of Euro area makes the heterogeneity in findings of the VAR puzzling. Households in relatively higher debt economies like Italy and Spain display stronger sentiments in response to fiscal policy than households in lower debt economies like Belgium and Germany. One potential explanation of this heterogeneity is that economic agents in euro area countries perceive monetary policy differently. Agents in Italy and Spain, also sometimes called the peripheral countries, might view monetary policy as less responsive for domestic shocks resulting in a stronger co-movement of sentiments with expansionary fiscal measures.

An example of the divergence in economic conditions within countries that are part of the euro area can be found after the financial crisis. As unemployment rates in Germany and France stabilized after the crisis and even started to fall in Germany, the unemployment rate in both Italy and Spain started to worsen due to the impending risk of a debt crisis. In April 2011, unemployment rate in Germany was 5.6% and falling, while that in Spain was over 20%, and rising. Over the next two quarters the European Central Bank (ECB) raised its key policy rates by 50 basis points citing the signs of economic recovery in some countries. Increase in interest rates worsened the economic conditions in countries like Spain, Italy, and Portugal. The challenges of setting a uniform monetary policy in a currency union can render central bank decisions sub-optimal for some countries in the union, leaving fiscal policy as the main macroeconomic policy tool in responding to domestic economic shocks.

## 4.1 Sentiments under Fiscal Consolidation

Fiscal expansions in many European economies are coupled with higher risk of default (Bianchi et al., 2021), resulting in higher borrowing cost and lower market confidence. The literature on austerity in Europe argues that exogenous fiscal consolidation can potentially have zero or positive effects on output by raising economic sentiments of agents (Alesina et al., 2019a). Cuts in government expenditure in high debt countries can lower the risk of government default potentially lowering the borrowing cost for private borrowers. However, these benefits of

consolidation are only realized at longer horizon while still being costly for households in the short run due to large cuts to public sector employment and social security programs.

This section tests the hypothesis that fiscal consolidation can be less costly for some high debt countries through its positive effects on consumer sentiments. As the economy is expected to behave differently during periods of fiscal normalcy and consolidation, the ideal model for this test is the Threshold VAR model described in Section 3. The objective of this analysis is to assess how costly fiscal contractions are during periods of consolidation. To test this we shock our VAR with a one standard deviation contractionary fiscal news shock. Under normal times, a contractionary shock should lower consumer sentiments and output for all countries. However, under consolidation, the sentiments channel is expected to work against the traditional Keynesian channel. Contractions during periods of consolidations can be viewed as necessary by consumers, raising their confidence and making fiscal contractions less costly.

The periods of fiscal consolidation are identified using the data constructed by Alesina et al. (2019b). They use narrative approach to identify fiscal consolidation as the year in which the general government tightens expenditure or increases tax exogenously for the purpose of correcting its primary deficit, and reducing debt. They exclude periods in which the reduction in expenditure or increase in tax revenue is endogenous to the state of the economy. Their dataset expands for the years 1970-2014. I use their methodology to identify the years for which a country in my sample enters fiscal consolidation for the years 2015-2019.[10] As the data on consolidation is only annual, a given quarter is classified as a period of consolidation if the country was under consolidation at any time during that financial year. Table 2 shows the number of quarters for which a country undergoes expenditure or tax based fiscal consolidation.

| | Belgium | Germany | Spain | Finland | France | Italy | Portugal |
|---|---|---|---|---|---|---|---|
| Fiscal Consolidation | 32 | 68 | 32 | 32 | 44 | 66 | 44 |
| Total Observations | 92 | 116 | 92 | 92 | 84 | 100 | 84 |

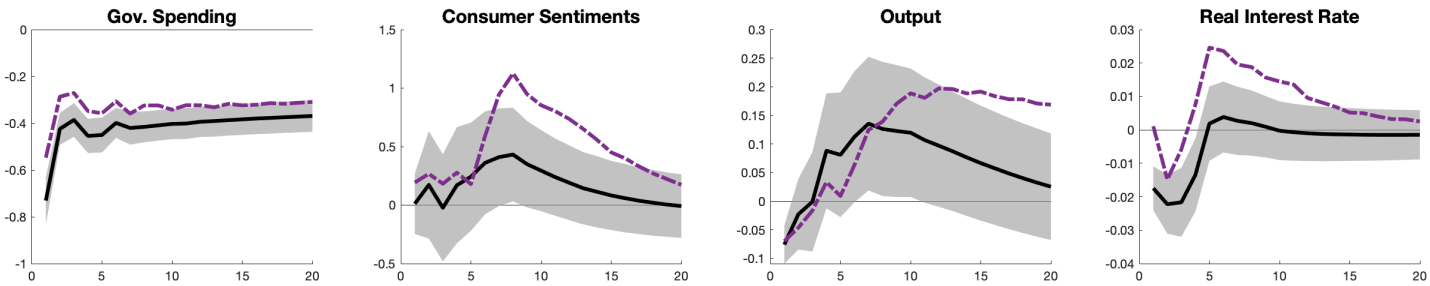
Table 2: Periods of Fiscal Consolidation

Three out of eight countries in the sample were under fiscal consolidation for only 32 quarters. The small sample size for individual countries results in an issue of insufficient power when estimating the VAR for two different states of the economy. To circumvent the sample size issue, the countries in the sample are split between two panels- core and periphery countries. The panel of core countries consists of Germany, France, Belgium, and Finland, and the panel of periphery countries include Spain, Portugal, and Italy. Netherlands is dropped from the

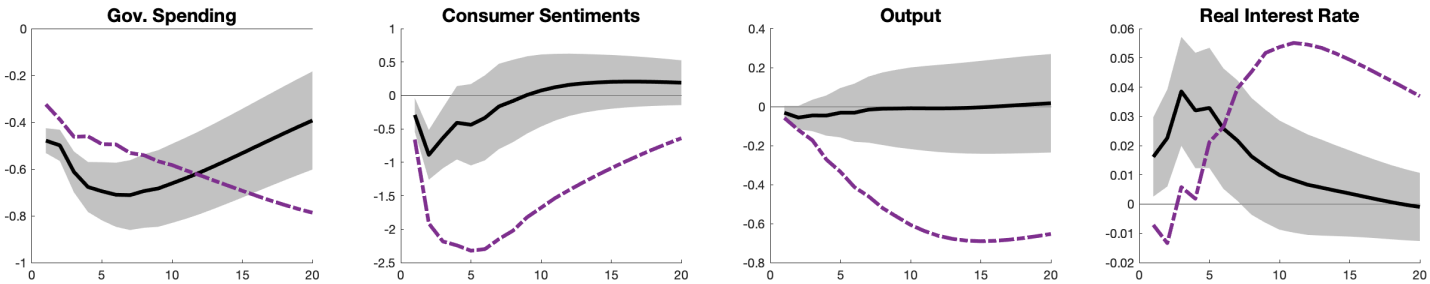
[10]Details on identifying periods of fiscal consolidation between 2015 to 2019 is included in the online appendix.

analysis due to lack of data on consolidation episodes. Consistent with the baseline model, the panel VAR consists of five variables: Government spending news, log real government expenditure per capita, consumer sentiments, log real GDP per capita, and real long term interest rate to capture the borrowing cost from the financial markets. I include four lags in the estimation.

Figure 6 shows the Generalized impulse response of government spending, consumer sentiments, output, and long term real interest rate to a one standard deviation contractionary fiscal policy news shock. The solid line shows the response during normal times while the dashed line shows the response during fiscal consolidation. The shaded region is the one standard error bands around the GIRFs for normal times.




(a) Core Economies




(b) Periphery Economies

Figure 6: Fiscal Consolidation: Non-linear effects of fiscal policy

Solid line is the generalized impulse response functions for a one standard deviation contractionary fiscal news news under normal times. The dashed line is the impulse responses during periods of fiscal consolidation. Shaded region is the one standard error bands around the GIRFs for normal times. The panel of core countries include Germany, France, Belgium, and Finland; and periphery countries include Spain, Portugal, and Italy.

For the panel of core countries, an unanticipated contraction in fiscal policy results in an insignificant response of consumer sentiments on impact during both normal and consolidation periods. The response of sentiments is positive and significant in medium run, before converging to zero. At the end of one year, the increase in sentiments is higher during periods of consolidation. Consistent with the Keynesian theory of fiscal policy, the response of output is

negative on impact during both normal times and consolidation. Under normal times, output increases in the medium run before converging to zero, mimicking the response of consumer sentiments. Under consolidation, output rises positively and significantly in the medium run and stays persistently high. The response of sentiments and output is consistent with the view of advocates of fiscal consolidation where consolidation raises consumer sentiments about future macroeconomic outcomes making it less costly for the economy.

In periphery countries, an unanticipated contraction in fiscal policy reduces consumer sentiments under both normal times and consolidation. While sentiments converges to zero quickly under normal times, the response remains negative and significant under consolidation. The response of output mimics the response of sentiments. Output is negative and significant on impact but converges quickly to zero during normal times while remaining significantly below zero during periods of consolidation. The response of government expenditure to a contractionary fiscal policy shock is also more negative and persistent during consolidation than in normal times. The above result suggests that for peripheral countries fiscal contraction during consolidation significantly reduces consumer sentiment and output. This contradicts the argument that fiscal consolidation is less costly for some high debt countries by increasing confidence.

Other studies have also found significant cost of fiscal consolidation for some European economies depending on the type of expenditure cuts and the households' sentiments towards these cuts (Hommes et al., 2018; Gechert et al., 2016; Cugnasca and Rother, 2015; Erceg and Linde, 2013). Several theories can explain why fiscal consolidation can make consumers so pessimistic about future economic outcomes in certain countries despite its significant long term advantages for the sustainability of government budget. Consistent with the findings that fiscal policy is more effective in Italy and Spain in raising confidence than in Germany, the results suggest that how consumers view effectiveness of monetary policy can affect their confidence about fiscal policy. Bergbauer et al. (2020) analyzed self reported views of citizens in the EMU towards the ECB, and found that trust in ECB's policies hinged on the perception of households of their personal and general economic conditions in their country of residence. A negative response of sentiments to consolidation would then also suggest lower trust in ECB in using monetary policy to mitigate cost of consolidation.

The cost of fiscal consolidation can also vary by the perceived credibility of the government's promise of enhanced fiscal responsibility. If fiscal consolidation measures are perceived to be credible by the financial markets, the long term real interest rate on government bonds should decrease in response to a contractionary government spending under consolidation. The last panel of Figure 6 presents the results for long term real interest rates. As expected, consolidation in lower debt, core countries are perceived more credible and the interest rate

decreases on impact in both states of the economy. Interest rates increase slightly in the short run before converging to zero. On the other hand, for periphery countries, interest rate decreases on impact during consolidation but increase significantly before converging back to zero. The response of real interest rate suggests that between the two set of countries, consolidation is perceived less credible in higher debt countries.

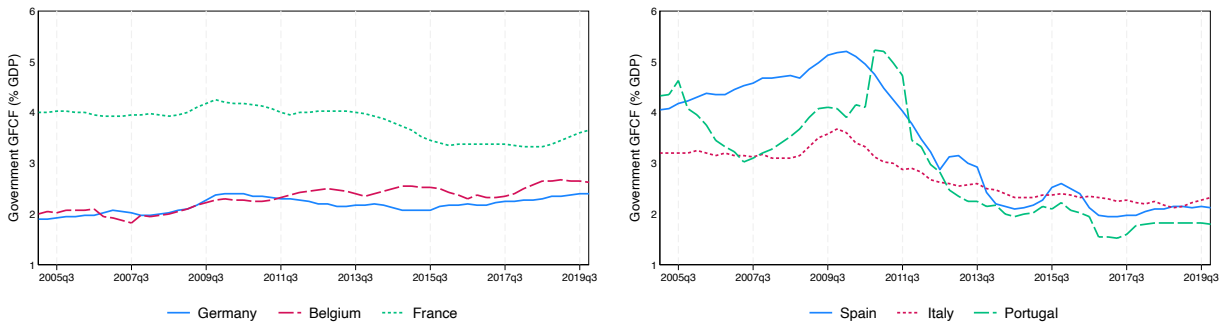



Figure 7: Government Fixed Capital Formation (% of GDP)

**Notes:** The figure plots the moving average of government gross fixed capital formation (unadjusted values) as percentage of GDP, for six European countries. The data is obtained from Eurostat.

Another explanation for the significant fall in sentiments for some countries is the type of expenditure cuts during consolidation. Cugnasca and Rother (2015) find that cuts in investment expenditure during crisis can exacerbate the cost of consolidation. Figure 7 shows the moving average of government fixed capital formation as percentage of GDP for countries in our sample of fiscal consolidation between 2005 and 2019. Panel (a) shows the GFCF for Germany, Belgium, and France. Only France shows a slight decline in government investment expenditure ($\approx 0.5\%$) while the value is largely stable across time for Belgium and Germany. Panel (b) shows the GFCF for Spain, Italy, and Portugal. Government investment in Spain and Portugal fell by roughly 3% between 2011 and 2016. We can argue that if cut in government consumption expenditure is coupled with large cut in government investment expenditure it can increase pessimism in the economy about the prospects of future economic growth. A fall in investments can then explain the large and statistically significant decline in sentiments and output for peripheral countries, but the lack of it in core countries. The results complement the findings of Erceg and Linde (2013) who study the effect of fiscal consolidation in a New Keynesian model of currency union. They show that under limited monetary accommodation in a currency union, fiscal consolidation is more contractionary under spending-based consolidation.

## 4.2 Sensitivity Analysis

This section demonstrates that the main results presented in the paper are robust to two main data related criticisms. First, the analysis is restricted to semi-annual frequency which addresses concerns for the semi-annual release of forecasts and the Kalman smoothing required to impute forecast data at quarterly frequency before 2003. Results are reported in Appendix B. Only results for Netherlands and Portugal look slightly different from the baseline estimates. For Netherlands, the sentiments channel which was more significant in the baseline is weaker now while for Portugal the channel is now significantly stronger. It should also be noted that forecasts errors at semi-annual horizon are more noisy measures of unanticipated fiscal shocks.

Second, while the current Euro area countries adopted a fixed exchange rate under the Exchange Rate Mechanism as early as the 1980s, the formation of the currency union in 1999 resulting in a complete loss of independent monetary policy can be considered a structural break in the economy. Accordingly, Figure 10 restricts the sample of all countries to start from 1999:Q1 and end in 2019:Q4. The results are very similar to the baseline results.

# 5 Conclusion

This paper hypothesizes that movements in consumer sentiments can determine the efficacy of macroeconomic policy in stimulating the economy. I analyze the interaction between fiscal policy and consumer sentiments using data on the countries in the European economic and monetary union. The results show that in the absence of complete access to monetary policy in combating domestic shocks, fiscal policy strongly influences consumer sentiments. I find that consumer sentiments respond positively for most countries to an expansionary fiscal policy shock. A core vs periphery pattern emerges in fiscal multiplier with or without confidence channel. For about half the countries in the sample, including Spain, Italy, Netherlands, a positive response of consumer sentiments translates into a bigger fiscal multiplier. However, for countries like Belgium, France, and Germany, the confidence channel is less important for transmission of fiscal policy.

This paper re-examines the debate on fiscal consolidation in European countries, finding no evidence that consolidation leads to economic expansion through increased confidence. The analysis reveals that fiscal consolidations are more detrimental for periphery countries, significantly dampening consumer sentiments. In contrast, core countries experience relatively lower costs from consolidation measures. A unified fiscal policy can then be sub-optimal within the union by shutting down the sentiments channel.

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# A Construction of News Shock - Dealing with mixed frequency

The forecast data is available in semi-annual frequency until 2003:Q3 and quarterly frequency starting from 2003:Q4. To handle different frequency in the data, the semi-annual data is used as estimates for the quarter in which it was released and passed through Kalman Filter to get a continuous series of forecasts in quarterly frequency. This implies that the forecast of government expenditure for S1 and S2, taken from edition 1 of each year, is divided by 2 and considered as the current and next period forecast for Q2. Similarly, the forecast for S2 and S1 of next year, taken from edition 2, is divided by 2 and considered as the current and future period forecast for Q4. The forecast values for Q1 and Q3 are missing as no reports are released for these quarters. The data is then passed through Kalman Filter using an ARMA(1,0) model with time trend. The model is selected among competing models based on the log likelihood. The Kalman Filter predicts values for missing observations and gives estimates of current latent states. I use the predicted forecasts given by Kalman Filter to compute the fiscal policy news shock. The forecast growth is computed using the predicted forecast for period $t$ and $t+1$. To test the robustness of the results to data imputation and information asymmetry, Section B runs baseline specification with semi-annual data for each country.

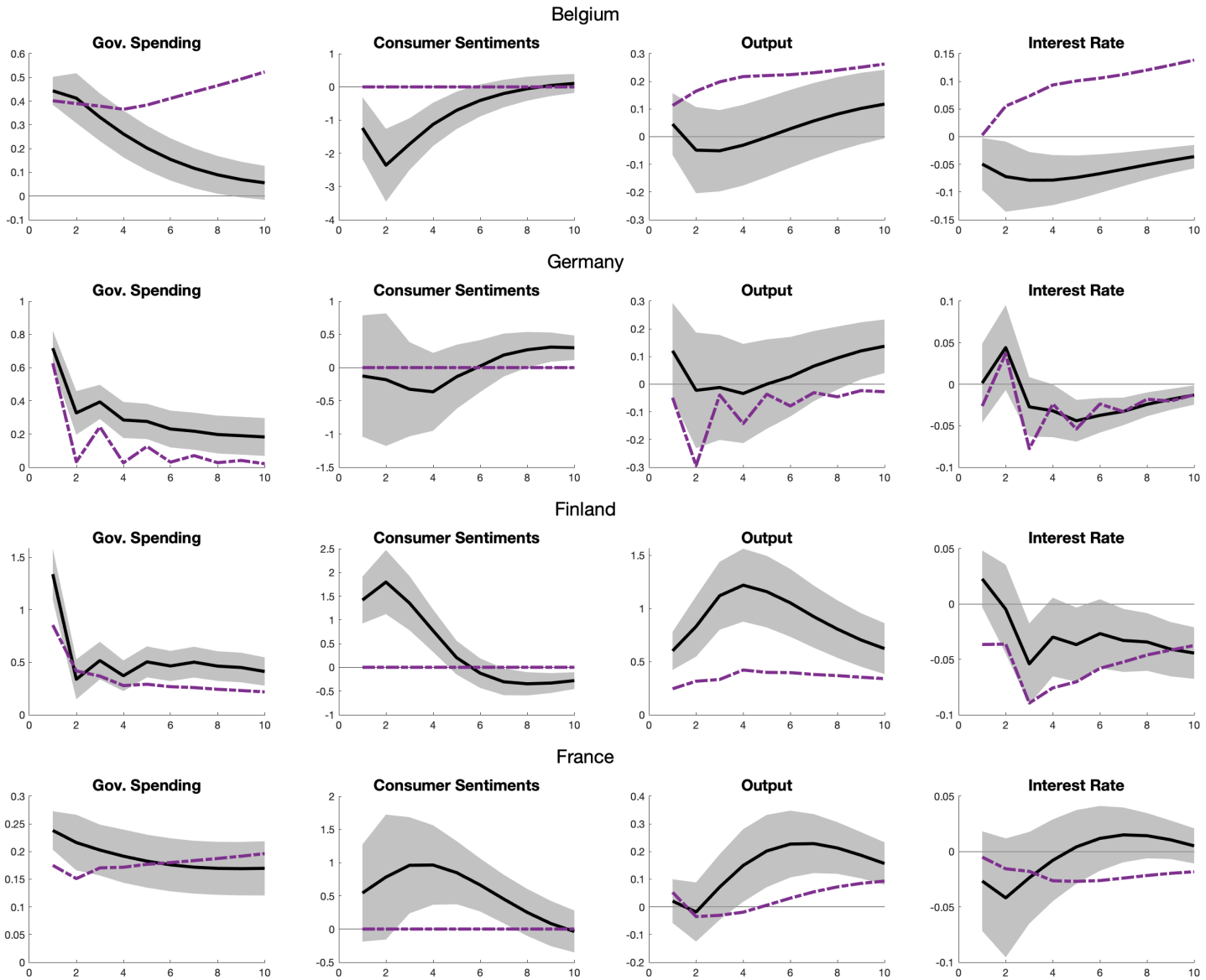
# B Robustness

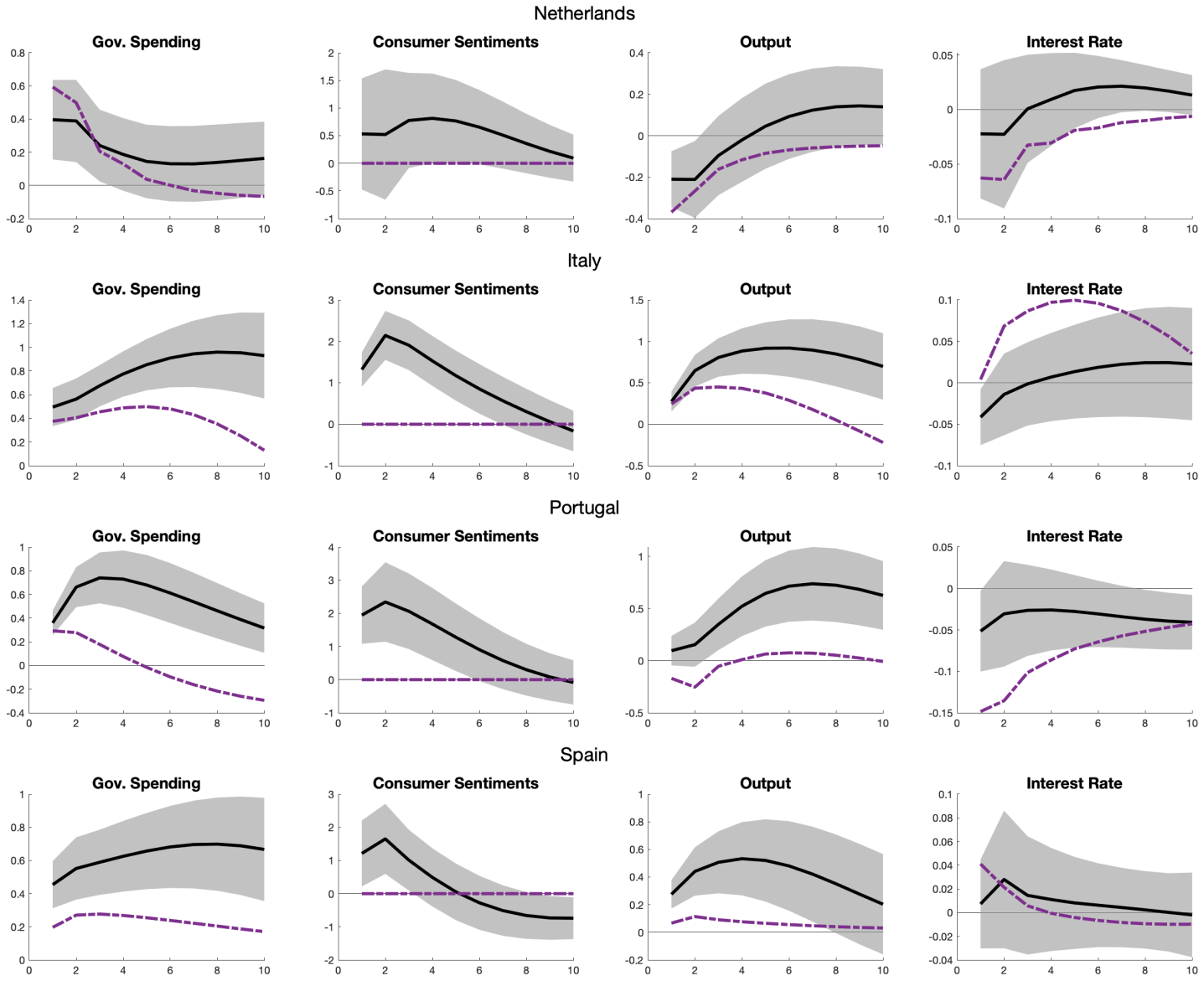
The forecast data used to compute fiscal policy news variable is only available in semi-annual frequency until 2003. Moreover, the forecasts are generated only twice a year which results in different horizon for Q1 and Q3 compared to Q2 and Q4. Conducting the baseline analysis in semi-annual frequency solves the issue of mixed frequency data and information asymmetry that may result in different horizons for quarterly forecasts. This section tests the robustness of the baseline results by using semi-annual data. All variables except consumer sentiments is converted from quarterly to semi-annual frequency by summing the values for two quarters. For example, the government consumption expenditure for the first half year is equal to the sum of government consumption expenditure in Q1 and Q2. For sentiments indicator, I calculate the mean sentiments index at semi-annual frequency. The lag length for all countries is one, as picked by the information criterion.

Figure 8 shows the impulse response from the baseline model discussed in Section 3 with the semi-annual data frequency. The solid line shows the impulse response of log real government spending, consumer sentiments, log real GDP, and real interest rate to a one standard deviation expansionary shock to the fiscal policy news. The dashed line shows the response

for a one standard deviation shock in the counterfactual analysis with zero confidence. The shaded area is the one standard error bands around the GIRFs. The results for the baseline hypothesis is largely robust with the lower frequency data.

Figure 8: Results from the Baseline VAR model with Semi-Annual Data

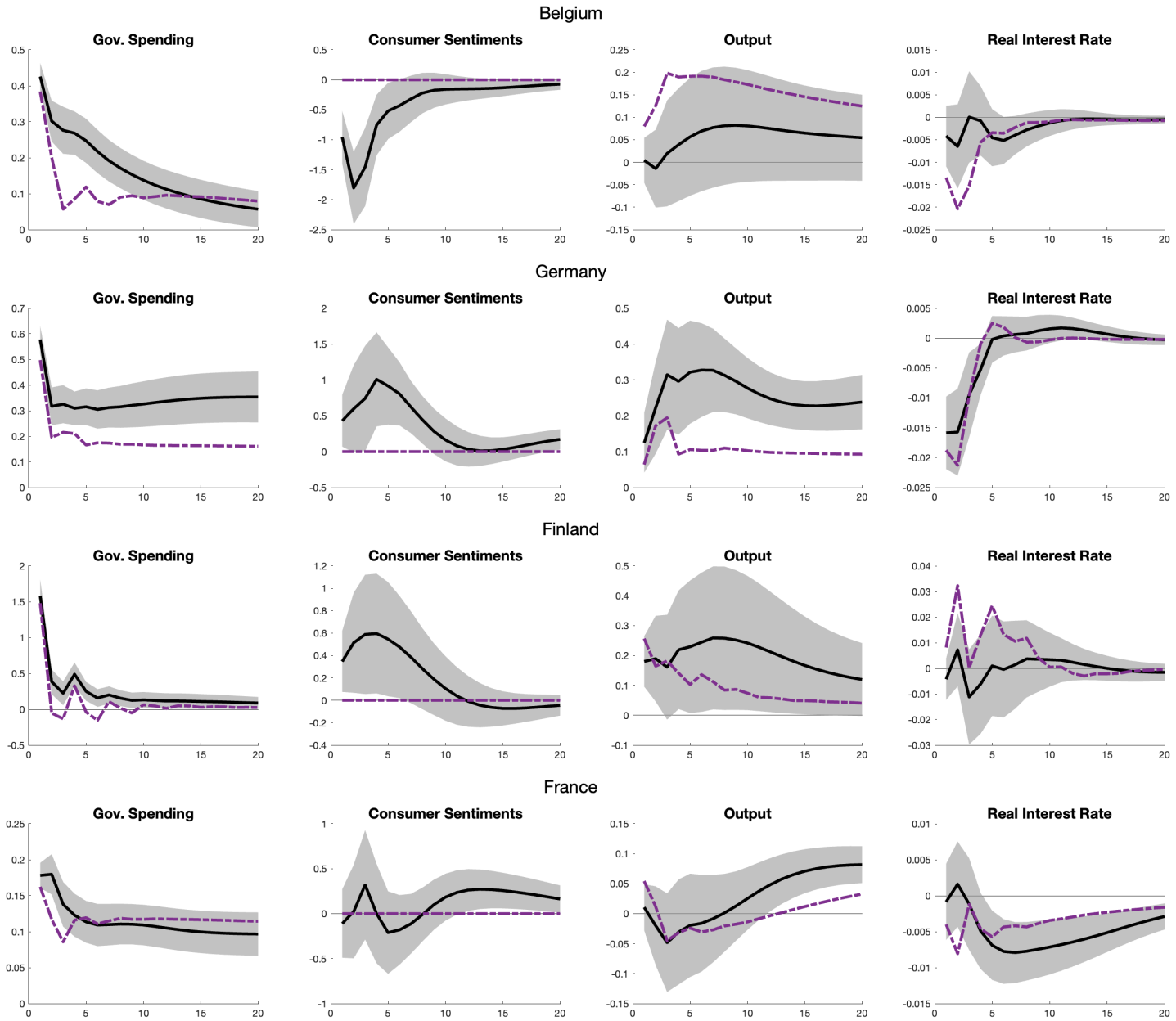


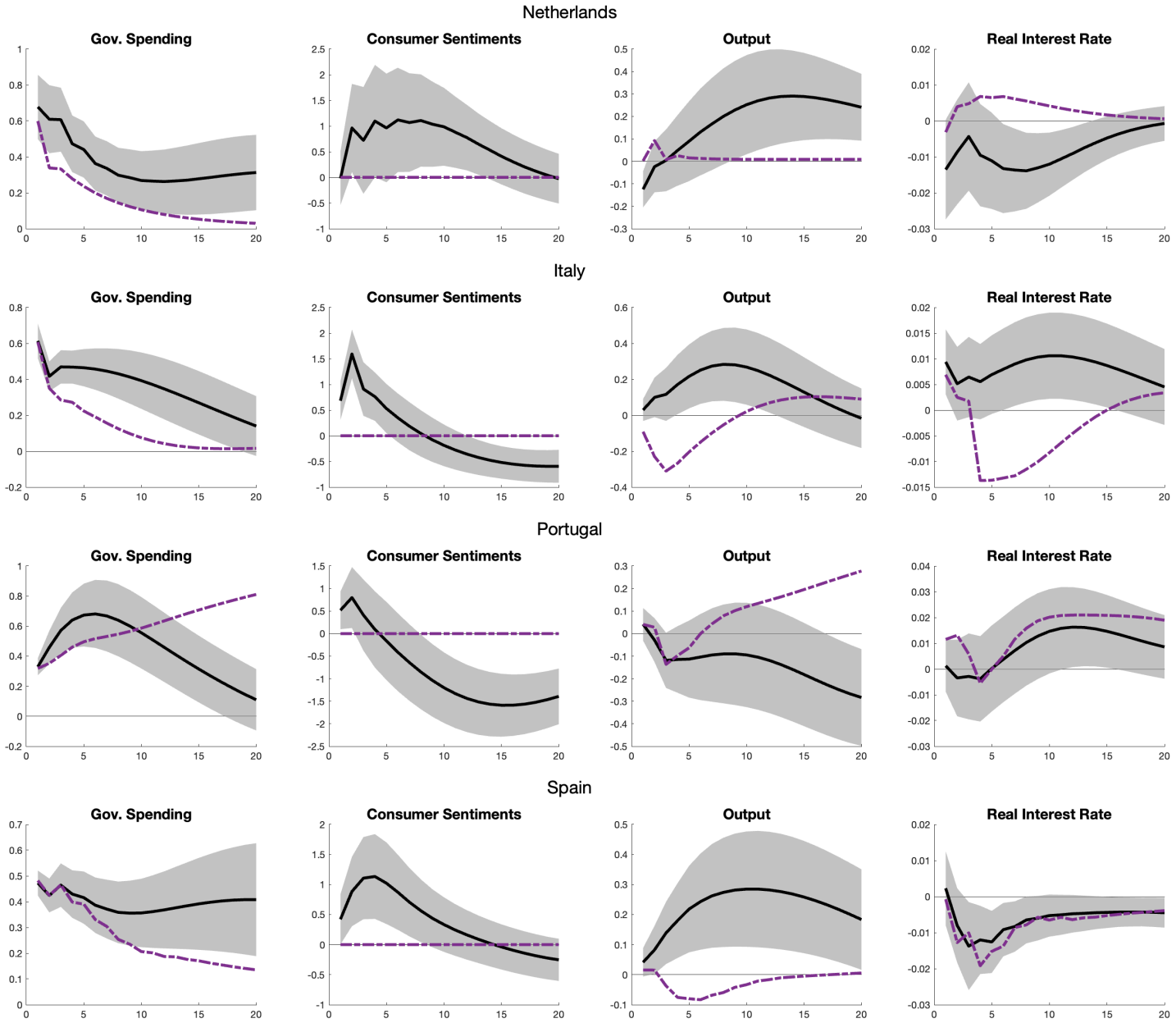



Sold lines are the Generalized impulse responses (GIRFs) for a positive one standard deviation shock to fiscal news in the baseline model. The dashed line is the impulse responses for the counterfactual with no confidence, discussed in Section 3. Shaded region is the one standard error bands around the GIRFs for the baseline model generated using bootstrap.

## B.1 Robustness: Restricting sample to 1999:Q1

Figure 10: Baseline Results with Start of Sample Restricted to 1999:Q1



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