Fiscal Retrenchment and Sovereign Risk

Felix Strobel

E-mail felix.strobel@wiwi.hu-berlin.de

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Abstract

How does sovereign risk affect the dynamic consequences of identified contractionary government spending shocks? I apply a regime-switching SVAR on Italian data and find that in periods in which government bond yield spreads are high, cumulative government spending multipliers are smaller than in the calm regime. This empirical finding supports theoretical arguments that associate fiscal distress with low multipliers (e.g. Corsetti, Kuester, Meier, and Müller (2013)). An additional result is that in the crisis regime, risk spreads increase after contractionary government spending shocks. This challenges the suggestion that declining risk premia are the reason for the attenuated output response in the crisis regime.

Keywords: Government Spending Multipliers, Sovereign Risk, Fiscal Retrenchment, State-Dependent Multipliers

JEL Classification: E32, E62, E63, H60

1 Introduction

In the recent years, sovereign bond yields have spiked in several countries in the Eurozone, signalling the risk of impending sovereign defaults. As a reaction, these countries are running programs of fiscal retrenchment cutting government expenditures with the goal to consolidate their public finances. The effects of fiscal policy depend on the economic conditions under which it is conducted. One of the most important fiscal policy tools is government spending. As turmoil in the sovereign bond markets has been an important feature of the economic environment in the Eurozone, a natural question to ask is: How does the presence of sovereign risk affect the dynamic consequences of government spending shocks?

This paper identifies empirical government spending shocks and shocks to the growth rate of public debt applying the regime-switching STVAR approach, developed by Auerbach and Gorodnichenko (2012). This technique allows for differences in the impulse responses to identified shocks across a crisis and a calm regime, focussing on the interaction of government spending, output and the sovereign risk spread. In the sovereign risk crisis regime, sovereign bond yields are high and volatile, indicating uncertainty in the financial market about the sustainability of public finances. While often sovereign risk is associated with low output growth, which itself has an influence on the effectiveness of fiscal policy[1], in the case of Italy, correlation between the growth rate of GDP and the risk spread measure I apply to separate the regimes is small and insignificant. This prevents the difference of the government spending multipliers in the two regimes from being driven by output growth dynamics, and allows me to study in isolation the influence of sovereign risk on multipliers as a particular determinant.

In a comparison of the effects across regimes, I find that the cumulative government spending multipliers over a horizon of 7 or more quarters are smaller in a sovereign risk crisis than in the calm regime, providing evidence for a dampening impact of the presence of sovereign risk on the effects of government spending shocks. Impact multipliers do not differ significantly across regimes. An additional result is that after a negative government spending shock in the crisis regime, the risk spread on government bonds rises on impact, presenting a challenge to the hypothesis that fiscal retrenchment calms down financial markets.

The finding of a weaker output response to fiscal retrenchment in times of sovereign risk, presents evidence, which is in line with theoretical considerations on

[1] see e.g. Auerbach and Gorodnichenko (2012), Baum, Polawski-Ribeiro, and Weber (2012) Batini, Callegari, and Melina (2012)

fiscal multipliers in the presence of strained public finances. The strongest statement in this regard in the theoretical literature is the expansionary fiscal contraction hypothesis (EFC), which posits the possibility that fiscal multipliers can even be negative. Much of the arguments of the proponents of this hypothesis relies on the idea, that fiscal consolidation may restore the credibility of public the government's commitment for sustainable finances, thus creating a more stable environment for the economy. In such a case a cut of government spending may over-proportionally crowd in private demand (see e.g. Bertola and Drazen (1993), Alesina and Perotti (1997)). Blanchard (1990), Bertola and Drazen (1993) and Sutherland (1997) argue that when agents perceive the current fiscal path to be unsustainable, a pronounced fiscal consolidation may over-proportionally crowd in consumption. More recently and motivated by the crisis in the Eurozone, Corsetti et al. (2013), focus on the effect of fiscal retrenchment in the presence of sovereign risk. In the context of a New Keynesian model with financial frictions they find that to the extent, that a fiscal contraction decreases risk premia on public debt, it facilitates financial intermediation and thus stimulates lending and investment, thereby dampening the contractive effects of fiscal consolidations.[2] Similarly, van der Kwaak and van Wijnbergen (2014) show that in a model with financial frictions à la Gertler and Karadi (2011) sovereign risk can lower the government spending multiplier substantially.
While I do not find not find government spending multipliers that support the expansionary fiscal contraction hypothesis, my findings are consistent with the general notion, that the presence of fiscal stress attenuates the effects of fiscal retrenchment. However, the initial increase in the spread is at odds with arguments that rely on a decline of risk premia.

The empirical literature on state-dependent multipliers has been growing in the last years. Closest to my paper are Born, Müller, and Pfeifer (2015). They investigate on the difference of government spending multipliers in times of high and low fiscal stress in a panel of countries. For this, they employ a panel smooth transition autoregressive model which, like the STVAR, allows for differences in the impulse responses to identified fiscal shocks across a crisis and a calm regime. They base their indicator for fiscal stress on default risk spreads is based on global bond and CDS data. They find that a negative government spending shock lowers output in the risk regime, and expands output in the calm regime. With regard to the default premium they find that fiscal retrenchment increases the premium in

[2] In the model by Corsetti et al. (2013) a prerequisite for the relation between the fiscal multiplier and sovereign risk is that monetary policy does not act to no neutralize the effects of risk premia on lending condition. The authors model monetary policy to be at the zero lower bound. In most of my sample, monetary policy is not constrained. However, in those periods in my sample in which the volatility of bond yields is most pronounced, the central bank either does not lower the policy rates, or the policy rate is very close to the ZLB such that monetary policy does not have much leeway.

the crisis regime. The latter finding is in line with my results. My analysis differs from theirs in some key aspects. The main difference is that, I study the case of a single country, namely Italy, instead of a panel of country. As the literature shows, the heterogeneity of fiscal multipliers across countries is substantial. Thus, the focus on a specific country is likely to add information to the pooled results of a panel analysis. Additionally, while Born et al. (2015) document that typically sovereign risk spreads tend to be negatively correlated with output growth, Italy represents a case in which sovereign risk spreads and output growth are only weakly correlated. This enables me to separate the influences of recessions and sovereign risk on the multiplier.

Further papers that are close to mine in their motivation are Perotti (1999), Corsetti, Meier, and Müller (2012) and Ilzetzki, Mendoza, and Végh (2013), who investigate on the difference of government spending multipliers in times of high and low fiscal stress in a panel of countries. These authors find that the multipliers are lower, when the fiscal stress is high. The main difference between the approach of my paper and these studies is that they use the debt-to-GDP ratio or the public deficit as indicators of fiscal stress. However, debt measures can only be imperfect proxies to sovereign risk. Naturally, the sustainability of public finances does not rely on the public debt measure alone, but also on factors such as, for example, the monetary policy regime, the exchange rate regime, output growth, political risk, and non-fundamental factors. Exploiting the sovereign bond yield has the advantage that, in principle, it should reflect the expectations of market participants about all relevant factors, making it a more comprehensive measure of sovereign risk. Corsetti et al. (2012) find the differences between the multipliers in the regime to be rather small, whereas Perotti (1999) finds it to be sizable. Ilzetzki et al. (2013) even find evidence for large, negative long-run fiscal multipliers in their group of high debt countries.

Empirical studies, which find evidence supporting the expansionary fiscal contraction hypothesis, analyze episodes of fiscal consolidation in the 1980s, mainly with a focus on Denmark (e.g. Giavazzi and Pagano (1990), Alesina and Perotti (1997), Alesina and Ardagna (2010), Bergman and Hutchison (2010)). In these episodes, they find evidence for a stimulating effect of fiscal retrenchment. Alesina and Perotti (1997) reach a similar conclusion for a panel of OECD countries. More recently, some studies have cast some doubt on these empirical results. Perotti (2011) discusses expansionary effects of fiscal consolidation for episodes in Denmark, Ireland, Sweden and Finland, and finds that only in the first case domestic demand was stimulated, while in the other three increased exports were driving output growth. In a panel of OECD countries Guajardo, Leigh, and Pescatori (2011) identify fiscal shocks with the narrative approach and do not find evidence which would support the EFC.

While theoretical arguments and empirical studies link fiscal distress with lower fiscal multipliers than in normal times, larger-than-normal multipliers are typically associated with situations, where the economy is at the zero lower bound (see, e.g. Christiano, Eichenbaum, and Rebelo (2011) and Eggertson and Krugman (2012)) or recessions (see, e.g. Auerbach and Gorodnichenko (2012), Baum et al. (2012) and Batini et al. (2012)). Referring to these studies, Blanchard and Leigh (2013) state that "conditions for larger-than-normal multipliers were ripe" in Europe, and suggest that the fiscal impact multipliers during the Eurozone crisis were potentially far higher than 1.0. As my study focuses on sovereign risk instead of output growth dynamics, and since as mentioned above the correlation between output growth and the volatility measure is close to zero, the low fiscal multipliers that I find in the sovereign risk regime do not contradict the results of the studies that focus on the effect of fiscal policy in recessions. However, they cast a very different light on the effects of fiscal policy in the Eurozone crisis.

The remainder of the paper is structured as follows: section two discusses the choices of the sovereign risk indicator as well as the sample period with regard to fiscal developments in Italy. Section three outlines the econometric methodology. The fourth section presents the results of the analysis. Section five concludes.

2 Sovereign risk and the case of Italy

The case of Italy provides an ideal case for the analysis of sovereign risk for several reasons. Italy has had a long history of high sovereign debt. As can be seen in the lower panel of figure (1), its debt-to-GDP ratio has been higher than 100 percent for two decades, and it experienced several periods of high and volatile risk spreads. Nonetheless, it did not experience a default event that would have resulted in a structural break in the pricing of default risk. Thus, Italy represents the rare case for which time-series data of sufficient length is available to analyze sovereign risk in conjunction with macroeconomic dynamics. In the empirical analysis, I use quarterly data for the period 1993Q3-2013Q2. Sovereign risk enters the study in two ways. First, the sovereign risk indicator used as a variable in the VAR is the real interest rate spread of Italian government securities with a five-year term over German Bunds with the same term. Secondly, a moving average of the spread is used to distinguish two regimes. The regimes with high and low real interest rate spreads are labelled crisis regime and calm regime, respectively. These choices are discussed below.

The sample starts in 1993Q3. Data on Italian sovereign bond yields is available as of 1978. However, at that time the secondary market for Italian Treasury bills

was very tightly regulated (see Frattiani and Spinelli (1997), Vercelli and Fiordoni (2003)) and the bond yields were managed by the fiscal and monetary policy makers. The central bank actively participated in government bond auctions. Banks were required to hold a fixed percentage of their new flow of deposits in government bonds, which was regularly adjusted by the authorities. Strict capital controls were in place, and the discount rate was set by the Treasury instead by the Italian central bank. During the 1980s and until the beginning of the 1990s, the Italian policy mix shifted considerably from fiscal dominance towards an empowerment of the central bank, and the financial sector underwent a step-wise liberalization. Portfolio restriction for banks disappeared in 1987. Capital and exchange rate controls were fully abolished in May 1990 (Frattiani and Spinelli (1997)). In 1992, the central bank was granted the right to set the discount rate. The shift in the Italian monetary policy regime was part of the plan to join the European Exchange Rate Mechanism (ERM), and, eventually, to introduce the Euro. Yet, as monetary policy became more restrictive, fiscal policy was slow to adjust, and kept running large deficits. The stock of public debt, which grew rapidly in the 1980s, exceeded the Italian GDP for the first time in 1992. Throughout the whole sample period, the Italian debt-to-GDP ratio is above 100 percent. Thus, Italy represents a country, which is being confronted with fiscal vulnerability for more than two decades. Small changes in the interest rate of government yields have a sizable effect on the debt service of Italy. In the view of this situation, explaining the periods of high and volatile bond yield spreads with sovereign default risk is plausible, and excluding the 80s and first years of the 90s, ensures that fluctuations in the bond yields are not distorted by active management by policy makers. An additional distortion to the bond yield as a sovereign risk measure is the influence of exchange rate risk. In 1992, speculative attacks forced several countries to depreciate their currencies below the narrow bands around the Deutsche Mark that were instituted in the ERM. While the interest rate differentials between most European sovereign bonds and German Bunds increased, the Italian-German interest rate differential spiked higher than most. It then decreased again in the beginning of 1993 after the lira had depreciated against the Deutsche Mark by roughly 25 percent. The high bond spreads in Europe at that time are typically explained with exchange rate risk instead with sovereign risk. Hence, I discard the observations before 1993Q3 from the sample, to ensure that the risk drives Italian bond yields is mainly credit risk. However, also for the other years prior to 1999, fluctuations in yield are affected by exchange rate movements.

By subtracting the inflation differential of Italy and Germany from the nominal yield spread of Italian bond with a five year maturity over German bonds with the same maturity, I construct a simple an ex-post real interest rate spread to capture sovereign

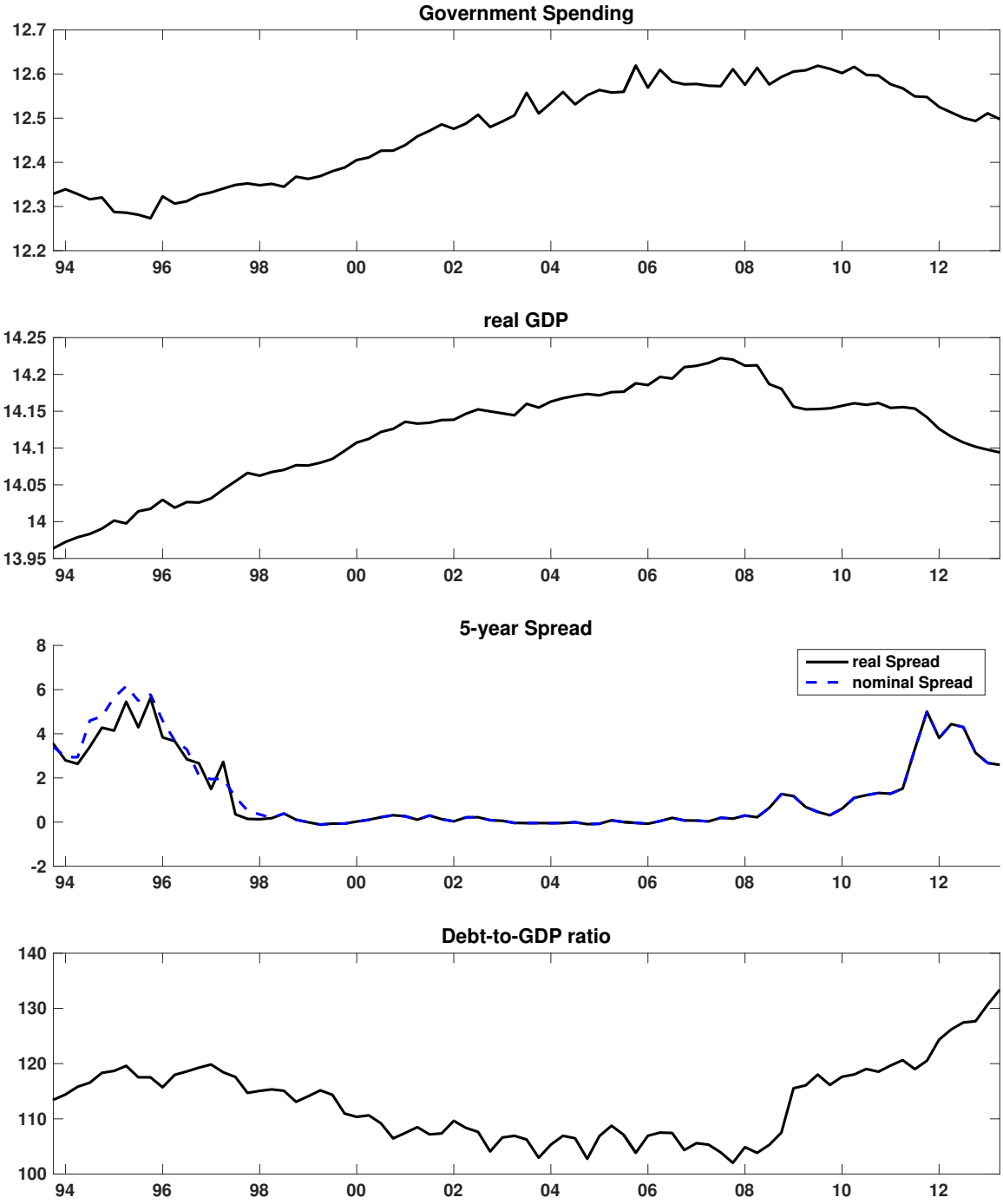

Figure 1: real government expenditures (seasonally adjusted), real GDP (seasonally adjusted), real and nominal interest rate spreads of 5-year Italian government bonds over German bonds, and the debt-to-GDP ratio

risk in the VAR. [3] Regarding the high nominal yield spreads in the 90s of the European countries, cases have been made for sovereign credit risk, as well as for devaluation risk, driven by fears about high inflation, as drivers of the bond yield spreads (see Wright (2014)). However, in a study of asset swap data of these countries, Codogno, Favero, Missale, Portes, and Thum (2003) find that security yield spreads of Italy and Spain stand out, insofar as they were driven almost entirely by the underlying default risk. The third panel in figure (1) shows the difference between the spread used in this study, and the nominal spread. Between 1993Q3 and 1997Q4 the real interest rate spread is consistently lower than the nominal spread. The closer the date of the accession to the Euro comes, the smaller is the gap between the two spreads, and in the quarters directly before the accession, the gap is virtually closed. After the accession to the Euro, the exchange rate risk is systematically eliminated, the inflation risk becomes irrelevant, and the real spread and the nominal spread coincide.

Two periods in the sample feature particularly high bond yield spreads. The first one is in 1994, shortly before the still growth of public debt halted and the Italian debt-to-GDP ratio reached its maximum (see figure (1)). In this year the non-partisan government led by Carlo Azeglio Ciampo, who, as the former governor of the central bank had led the period of disinflation in the 80s, and was regarded as committed to fiscal consolidation, was replaced in the elections. The new government coalition led by Silvio Berlusconi only lasted for a few months and collapsed in December 1994.
Additional to this political instability, which threatened to undermine fiscal consolidation, Borio and McCauley (1998) ascribe the increased volatility in the Italian bond markets at the same time to the experience of the Mexican peso crisis, which made investors unwilling to finance potentially unsustainable public debt. A smaller peak of the spread can be observed in 1997, before it became clear that the government would be accepted in the first round of accession to the Euro area. In this year, the Italian Treasury announced a seven percent primary surplus and, thus, demonstrated a commitment to decrease the public debt. The second period with particularly high bond yield spreads represents the high-time of the recent Eurozone crisis, around 2012. This period was preceded by a financial crisis in several countries and a slump of the world economy in 2009. The risk of an impending sovereign default in Greece quickly spilled over to other European countries, including Italy, where the debt-to GDP ratio was rising again. While other countries in Europe suffered from bursting housing bubbles or collapses of major banks, the banking system at that time

[3] Yang (2007) finds that the inclusion of forward looking variables into a fiscal SVAR with the Blanchard-Perotti identification scheme, reduces the size of the multiplier. She interprets this as tentative evidence for fiscal foresight. This paper does not address the invertibility problem, that comes along with fiscal foresight and which is carefully explained by Leeper, Walker, and Yang (2008). However, the inclusion of the forward looking spread, should to some degree mitigate this problem (see Sims and Zha (2006)), while partly accounting for the low fiscal multipliers that I find.

appeared to be relatively stable in Italy. Hence, while bank rescue measures heavily contributed to the public debt in other countries in Europe, Italy spent only small amounts on bank aid in crisis times. The contribution of bank rescue measures to official public debt in Italy have only been roughly 4bn Euro.[4]
The second sovereign risk indicator in this study determines the choice of the regime. Here, I use a lagged three quarter moving average of the real interest spread described above. This choice ensures that the indicator is not driven by contemporaneous shocks. Furthermore, it allows me to limit outlier effects of observations with particularly high spreads, and to smooth the dynamics of the states and make the estimation feasible. The structural break that the accession to the Euro area arguably presents will hence be captured, by a marked decline in the sovereign risk indicator, which pushes the economy towards the calm regime.

The deepest recessions in the sample period are in 2009, in the aftermath of the subprime crisis in the US, and in 2002 after the dot-com bubble. Notably, periods of higher spreads do not necessarily coincide with periods of lower output growth. More importantly, as mentioned above, output growth and sovereign risk are virtually uncorrelated. In the sample, the crisis indicator and the growth rate of output are virtually uncorrelated. The correlation between GDP growth and the risk spread is at -0.166 and is statistically insignificant at a significance level of 5%. The correlation between GDP growth and the sovereign risk indicator, which separates the regimes, is at -0.099 and is statistically insignificant at a significance level of 10%. Hence, underlying business cycle movements will not drive the difference between my results in the crisis and in the calm regimes.

3 Econometric Methodology

The three variables used in the VAR are the general government final consumption expenditures, GDP and the bond yield spread, discussed above, in the quarters 1993Q3-2013Q2. The nominal series for government consumption and GDP are deflated using the GDP deflator. [5] I demean all variables and remove a linear quadratic trend from

[4] Financial guarantees to the financial sector, which, did not affect the debt of the general government were larger, yet, measured in percentage of GDP, still small in comparison to other cases in Southern Europe. (see: http://ec.europa.eu/eurostat/web/government-finance-statistics/excessive-deficit/supplemtary-tables-financial-crisis)

[5] The series for general government final consumption expenditures, nominal GDP and the GDP deflator are from stats.OECD (Series: B1_GE, Measures CARSA and DOBSA). The first two are already seasonally adjusted. The series for the Italian interest rate for government bonds with a five-year term stem from the Banca di Italia (Series: MFN_BMK.D.020.922.0.EUR.205), and their German counterpart stems from the Bundesbank (Series: BBK01.WZ9816)

real government consumption and real GDP.
As an econometric framework, I employ the smooth transition vector autoregression method (STVAR) developed by Auerbach and Gorodnichenko (2012). This method models the economy as fluctuating between two states, which in this application are simply labelled "crisis regime" and "calm regime". Each period the economy is to a certain degree (or probability) in one state and to a degree in the other.[6] The degree to which the economy is in a crisis or in a calm regime is determined by an underlying state variable.[7] This approach has the advantage that in the estimation for each regime it exploits all observations. The estimation and inference results are thus more stable than SVARs estimated separately for each state, which - in the study at hand - would be based on relatively few observations in each state. The STVAR approach allows for the contemporaneous responses to structural shocks and for the dynamic responses to differ across states. As discussed, the state variable which determines, in to what degree the economy is in which state, will be three-quarter moving average of the intra-quarter volatility of the yield of Italian government bonds with a five-year term. The econometric specification reads:

$$X_t = (1 - F(z_t))\, A_{CA}(L) X_{t-1} + F(z_t)\, A_{CR}(L) X_{t-1} + u_t \tag{1}$$

$$u_t \sim N(0, \Omega_t) \tag{2}$$

$$\Omega_t = \Omega_{CA}(1 - F(z_t)) + \Omega_{CR} F(z_t) \tag{3}$$

$$F(z_t) = \frac{exp(\gamma z_t)}{1 + exp(\gamma z_t)}, \quad \gamma > 0 \tag{4}$$

$$var(z_t) = 1; \qquad E(z_t) = 0, \tag{5}$$

where $X_t = [G_t, Y_t, S_t]'$, and G_t, Y_t and S_t are the measures for government spending, GDP and the spread, as discussed above. The lag polynomial in (1) is a weighted average of the lag polynomials in the calm and in the crisis state ($A_{CA}(L)$ and $A_{CR}(L)$, respectively). The VAR is estimated with two lags.[8] The weights are determined by the function $F(z_t)$, depending on the state variable, denoted by z_t, and the parameter γ. Ω_t is the covariance matrix of the residual vector, u_t, and is also a state weighted average of its state dependent counterparts. The functional form of $F(z_t)$ is chosen such its

[6] In this aspect it differs from the threshold VAR (TVAR) approach, which assigns to each observation a regime, based on an estimation of the threshold, which separates the different regimes. While the TVAR is an interesting alternative, I prefer to take a more moderate stand on whether particular observations belong to the calm or the crisis regime.

[7] For the question at hand, this is an advantage over time-varying coefficient models (TVC), as in the latter approach the variation of the coefficients is unrelated to the state of the economy (see Auerbach and Gorodnichenko (2012)).

[8] This is in accordance with the HQC and the SIC criterion for a linear VAR.

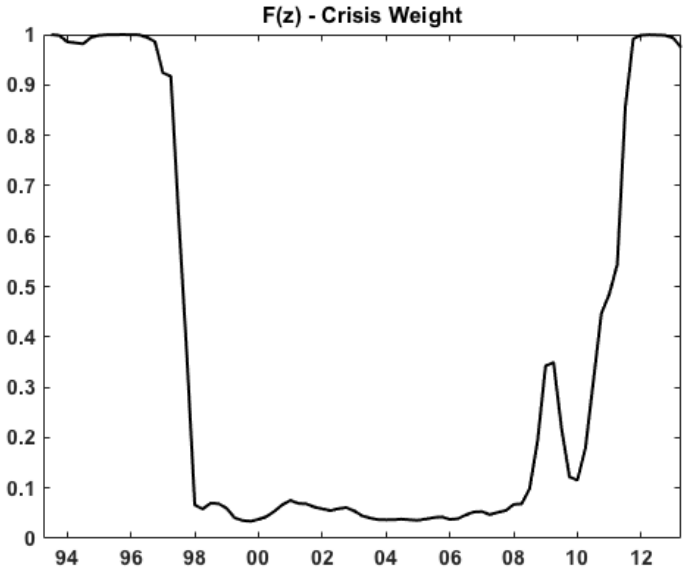

Figure 2: F_z - Weight on the crisis regime

values are bounded between 0 and 1. Thus, the weighted sum spans a continuum of states between the calm state and the crisis state as extremes with the function values $F(z_t) \approx 0$ and $F(z_t) \approx 1$, respectively. The state variable, z_t is demeaned and its variance is normalized to 1. Figure (2) shows the crisis weights in the sample period. Auerbach and Gorodnichenko (2012) point out that, although, in principle, it is possible to estimate $\{\gamma, A_{CA}(L), A_{CR}(L), \Omega_{CA}, \Omega_{CR}\}$ simultaneously, such an identification of γ is not reliable as the value of the parameter depends on non-linear moments and may hence be sensitive to few observations.[9] This is particularly relevant for this study, as the sample period is quite short. Accordingly, I search a grid of different fixed values for γ, and estimate $\{A_{CA}(L), A_{CR}(L), \Omega_{CA}, \Omega_{CR}\}$ conditional on γ. The larger the value of γ, the more pronounced the weight differences between calm and crisis times. For values above 3, the dynamics are stationary, and the median responses to shocks are robust to changes in the parameter value.[10] In the baseline calibration I use $\gamma = 4$.
The maximum likelihood estimation uses the MCMC approach by Chernozhukov and Hong (2003) for estimation and inference. Since the chains converge only slowly to stationary distributions, I use 500,000 draws for the estimation of the baseline specification and the robustness estimates and discard the first third of the chain. Further details of the estimation method are provided in Auerbach and Gorodnichenko (2012)

[9] In several trial runs, I found that the mean estimate for γ is sensitive to the initial condition of the parameters and does not converge even in very long chains.
[10] Additional results for are available upon request.

and Chernozhukov and Hong (2003). Confidence intervals for the impulse response functions are bootstrapped as in Caggiono, Castelnuovo, and Groshenny (2014).
In the identification of the government spending shocks in each regime, I follow Blanchard and Perotti (2002), and exploit the fact that the fiscal authorities react to changes in economic conditions such as interest rates and output with a delay. Fiscal policy measures need to be prepared by the executive branch of the government, discussed within the government, the ruling parties, and finally in the parliament. When they are passed by the legislative, it takes additional time to implement these policies. Thus, it is reasonable to assume that any discrete policy measures that are undertaken in response to shocks to the sovereign risk premium or output shocks are not yet effective in the quarter in which the shock hits. Hence, I use the recursive identification with government spending ordered first.

4 Results

Figure (3) shows the impulse responses to a contractionary government spending shock. The shock has the magnitude of 1 percentage point. The median responses are plotted as solid lines, and the dashed lines show the 95% confidence intervals for the horizon of 20 quarters after the shocks. Note, that while the crisis weights for the Italian economy vary over the sample period, impulse response functions are simulated for the illustrative extreme cases of the crisis regime $F(z_t) = 1$ and the calm regime $F(z_t) = 0$. Responses are plotted in blue for the calm regime and in red for the crisis regime.

The second row of figure (3) shows the responses of median output. Output reacts stronger to the government spending shock in the calm regime than in the crisis regime. The impact response in the calm regime is slightly stronger than in the crisis regime. In the calm regime, output returns briefly to its initial level before falling again more persistently in the third quarter. The maximum drop of median output is reached after two years at -0.19%. The response in the crisis regime is markedly different. Here median output also falls after the fiscal contraction, but the drop reaches its maximum at -0,18% already after 4 quarters before the recessionary impact of the shock fades out.
The persistence of the reaction of government spending to the shock is roughly similar. As a consequence, in the crisis regime, the median cumulative multiplier is smaller than in the calm regime for time horizons longer than 7 quarters. This difference becomes significant after two and a half years after the shock.

Table (1) shows the government spending impact multipliers and the cumulative multipliers for the horizon of one, two and three years, measured as change in output

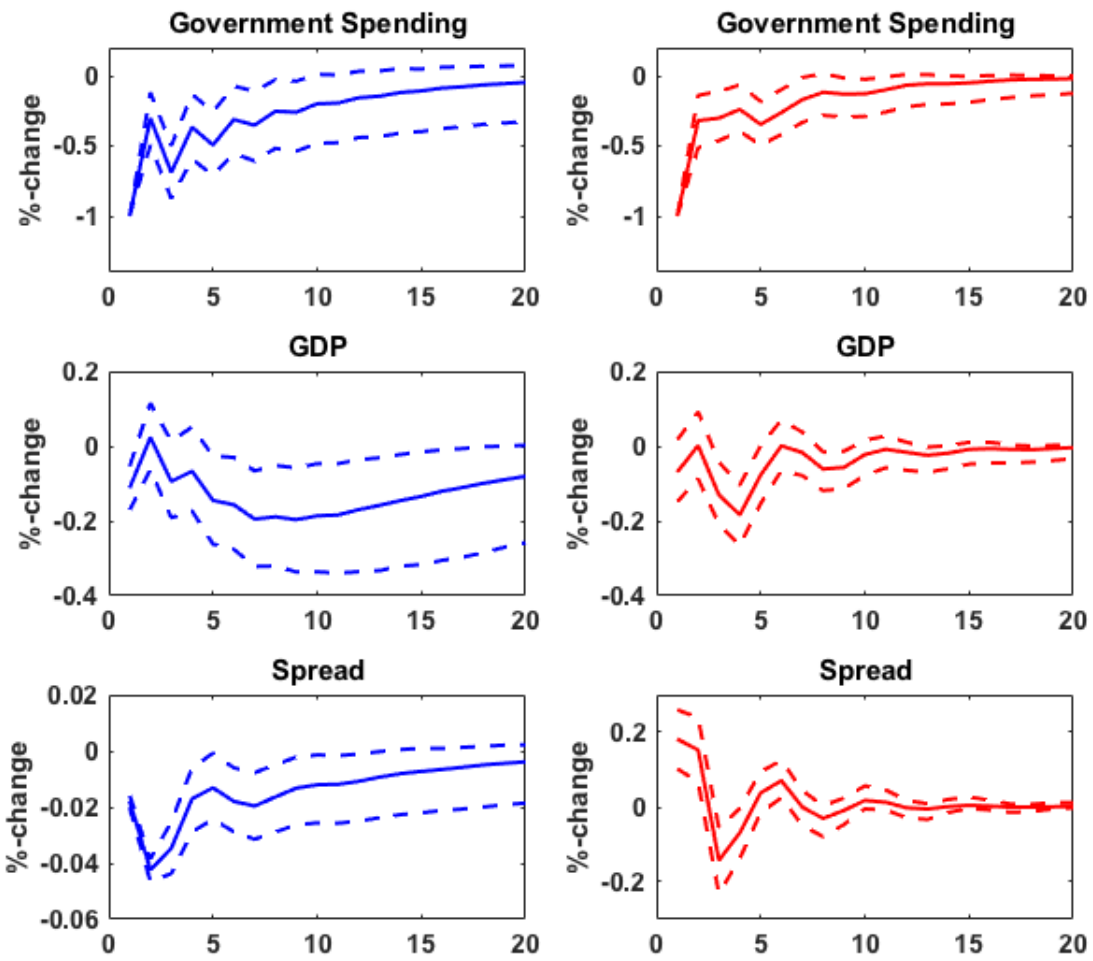

Figure 3: Impulse response of government spending, real GDP, and the sovereign risk spread to a 1 percentage point increase in government spending. The dashed lines show the 95% confidence intervals that are bootstrapped as in Caggiono et al. (2014).

Table 1: Cumulative Government Spending Multipliers

$\Sigma_h Y_h / \Sigma_h G_h$*	Crisis Regime			Calm Regime		
Horizon	5th %ile	median	95th %ile	5th %ile	median	95th %ile
1 quarter	-0.085	0.359	0.770	0.279	0.580	0.887
1 year	0.393	1.050	1.685	-0.174	0.542	1.288
2 years	0.353	1.003	1.594	0.276	1.256	2.500
3 years	0.347	1.039	1.641	0.586	1.863	3.620

*Accumulated change in GDP (in Euro) per accumulated change in government spending (in Euro)

in Euro per change in government spending in Euro. The median impact multipliers are with 0.359 (crisis regime) and 0.580 (calm regime) relatively small for both regimes. After the first year the cumulative multiplier in the crisis regime is even larger than in the calm regime, however, the differences are not significant at the 5%-level. Reflecting the longer recession in the calm regime, for a time horizon of two years the cumulative multiplier in the calm regime (1.256) is larger than in the crisis regime (1.003). The longer the time horizon, the more pronounced the difference becomes. At the horizon of three years, the difference between the cumulative multipliers is substantial (1.863 and 1.039) and statistically significant.

The smaller cumulative multipliers in the crisis regime show that the presence of sovereign risk attenuates the effects of fiscal consolidations on output. This result can be taken as supportive evidence for theoretical arguments that make the case that fiscal retrenchment is less harmful, when the fiscal sustainability is in doubt. While I do not find support for negative multipliers, as claimed by the EFC, my results are consistent with the attenuated output response in the models by Corsetti et al. (2013) and van der Kwaak and van Wijnbergen (2014).

The weaker output response in the crisis regime in Italy is at odds with the findings by Born et al. (2015), who find positive multipliers in the crisis regime and negative multipliers in the calm regime for a panel of countries. A potential explanation for the difference between their finding and mine is that the correlation between output growth and sovereign risk in Italy is relatively weak compared to the average correlation within their sample. This makes my results less likely to be affected by recessionary periods that often come with typically come along periods of high sovereign risk spreads, and tend to increase government spending multipliers.

Empirical studies, which assess the influence of high public debt on the effect of fiscal shocks in panels of countries, find strong differences for low-debt and high-debt

countries. For instance, in their panel SVAR, Ilzetzki et al. (2013) find that for the high-debt countries in their sample, the long-run fiscal multiplier is roughly minus three, while for low-debt countries it is minus 0.36. Perotti (1999) finds that higher debt lowers the impact multiplier by 1.61. Although the difference between the cumulative multipliers that I find across regimes is smaller than in these studies, it is qualitatively consistent with their results.

Notably, in the crisis regime the risk spread increases, in direct response to a fiscal contraction. This is at odds with the common assumption in the theoretical literature that the risk spread on government bonds decreases with the decline in debt, which should come along with fiscal retrenchment. However, the higher spread in response to a persistent negative government spending shock is in line with the corresponding result by Born et al. (2015). A possible explanation is that the fiscal contractions undertaken by the Italian government in crisis periods were not judged to be sufficient to restore investors' confidence in the sustainability of public finances. Also, the increase in the spread could potentially capture an increase in political instability in consequence of the contractionary shock, as austerity typically weakens the popularity of the government and is associated with a higher instability of coalitions in the parliament.[11]. While the design of this study is unable to provide a conclusive explanation of the rise in the risk spread, this finding contradicts explanations of the attenuated output response to the fiscal contraction that hinge on a decline on risk premia in the economy (see, e.g. Alesina and Perotti, 1997; Corsetti et al., 2013).

5 Conclusion

The main goal of this paper is to characterize the dynamic effects of a contractionary government spending shock during and outside a sovereign risk crisis. This study presents empirical evidence, which should serve as a stepping stone for understanding the working of fiscal policy in a sovereign risk crisis. From the econometric analysis I draw the following main conclusions.
The contractionary impact on output of fiscal retrenchment in the form of a negative shock to government spending is weaker in crisis times than outside sovereign risk crises. I find that while impact multipliers are close to zero and insignificant for both regimes, for a time horizon longer than seven quarters, the median cumulative multipliers are lower in the crisis regime.

With regard to the current Eurozone crisis, my results give a different picture of government spending multipliers in crisis than studies that focus on the influence

[11] As mentioned, Italy saw three different government coalitions in the crisis year of 1994.

of underlying output dynamics, instead on variations in sovereign risk. When assessing the effects of fiscal retrenchment, it is recommended to keep both empirical results in mind. The results of this paper serve to emphasize the role of sovereign risk, as an additional determinant for the effectiveness of fiscal policy.
Secondly, I find that the risk spread rises in response to a fiscal contraction in the crisis regime, challenges the argument, that in times of fiscal distress, fiscal contractions may stabilize the economy through a decline in the risk premia.
Caveats of this study are the short sample and that I focus exclusively on Italian data. Ilzetzki et al. (2013) and Baum et al. (2012) find vastly different fiscal multipliers for different countries. It is likely that the same heterogeneity across countries applies for fiscal multipliers in sovereign risk periods. However, the focus on sovereign risk makes an analysis of other countries difficult, as Italy presents the rare case of a country with a prolonged history of sovereign risk, no default, and available data for this time. While, my results are thus not one-to-one transferrable to other countries, they can serve as supportive evidence for theoretical arguments that link the presence of sovereign risk to lower fiscal multipliers. With the growing availability of longer time-series of macroeconomic and fiscal data for a larger group of countries, it will be fruitful to investigate further into the relation between sovereign risk and the size of fiscal multipliers, and to compare the results for different countries and different fiscal instruments.

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