

# THE EFFECTS OF MACROECONOMIC, FISCAL AND MONETARY POLICY ANNOUNCEMENTS ON SOVEREIGN BOND SPREADS: AN EVENT STUDY FROM THE EMU

**António Afonso**

ISEG/UL – School of Economics and Management, University of Lisbon

REM – Research in Economics and Mathematics

UECE – Research Unit on Complexity and Economics

**João Jalles**

REM – Research in Economics and Mathematics

UECE – Research Unit on Complexity and Economics

CFP - Portuguese Public Finance Council

**Mina Kazemi**

ISEG/UL – School of Economics and Management, University of Lisbon

UECE – Research Unit on Complexity and Economics

1. Introduction
2. Literature
3. Methodology
4. Data
5. Empirical results
6. Conclusion

- We construct a set of **fiscal events**, related to the EC announcements of fiscal forecasts (type 1) and excessive deficit procedures related decisions (type 2) in 10-Euro area countries.
- We also conduct an identification and analysis of conventional (type 1) and non-conventional (type 2) **monetary policy events**.
- We use 10-year sovereign bond yield spreads (relative to Germany) of 10 EMU countries during the period 01:1999-07:2016.
- **We find that:**
  - EC forecasts of higher debt and better budget balances, increase and decreases spreads, respectively.
  - Longer-term refinancing operations (LTROs) and the 1<sup>st</sup> covered bond purchase programme (CBPP1) reduce spreads.

Arru et al. (2012): for 6 EMU countries, in GARCH model, macroeconomic surprises on the Euro-area business cycle affect the volatility of the series for four of the six sample countries, when there are negative surprises (2005-2010).

Godl and Kleinert (2016): use EC's forecasts (17 EU countries), and found evidence that government bond yields react to negative economic forecasts (Q1:2001-Q3:2013).

Kalan et al. (2018): 28 EU countries, sovereign yield spreads of countries under an EDP are higher than countries not in EDP (1999-2016).

Afonso et al. (2018): unconventional monetary policy affects the pricing of sovereign risk directly, and indirectly through changes in banking risk in the euro area (01:1999-07:2016).

Ambler and Rumler (2019): report significant effects of monetary policy unconventional announcements on euro area real interest rates (01.07.2008-11.03.2016).

$$\text{spreads}_{it} = \alpha_i + \rho_t + \beta_i X_{it} + \varepsilon_{it}$$

$\text{spreads}_{it}$  - sovereign bond yield spread relative to Germany's.

$X_{it}$  - vector of determinants (industrial production, % change with respect to Germany; real effective exchange rate, international risk, VIX; bid-ask spread).

$\beta$  - degree of sensitivity of sovereign spreads to a given determinant.

$\alpha_i, \rho_t$  - country and time effects, respectively.

$\varepsilon_{it}$  - disturbance term satisfying assumptions of zero mean and constant variance.

- The event variables are constructed by flag procedure assuming two types of events, positive and negative, corresponding to a lower (higher) sovereign spread.
- Using monthly data, when there is a positive or a negative event on a given month we attribute the values -1 or 1 respectively and 0 for the non-event months.
- The monetary events are selected by collecting the ECB interest rate policy announcements during the sample period.
- Fiscal policy events are based on the EU fiscal surveillance mechanism, divided in two groups. One is composed by press releases resulting from the Commission assessment of the stability programs. The second group comprises press releases related with the EDP's that were implemented during the sample period.

	MP events	FP events
Type 1	<p>Interest rate announcements</p> <p>Deposit facility (DF), Marginal Lending Facility (MLF), Main Refinancing Operations (MROs).</p>	<p>EC fiscal forecasts</p> <p>Government debt, budget balance and current account balance.</p>
Type 2	<p>Unconventional Monetary policy</p> <p>Longer term refinancing operations (LTROs), securities market program (SMP) and the first corporate bond purchase program (CBPP1).</p>	<p>EDP related decisions</p> <p>Commission assessment of the stability programs; press releases related with the EDP's.</p>

## Type 2 Monetary events (Conventional and unconventional monetary policy)

Instruments	Monetary policy measures	Conventional instrument?	Announcement and implementation
Open market operations	Longer-term refinancing operations (LTRO)	Yes	-
	Targeted longer-term refinancing operations I (TLTRO I)	No	5 June 2014 June 2014 – May 2016
	Targeted longer-term refinancing operations II (TLTRO II)	No	10 March 2016 Since June 2016
Asset purchase programmes	Covered bond purchase programme (CBPP1)	No	7 May 2009 July 2009 – June 2010
	Securities Markets Programme (SMP)	No	10 May 2010 May 2010 - September 2012



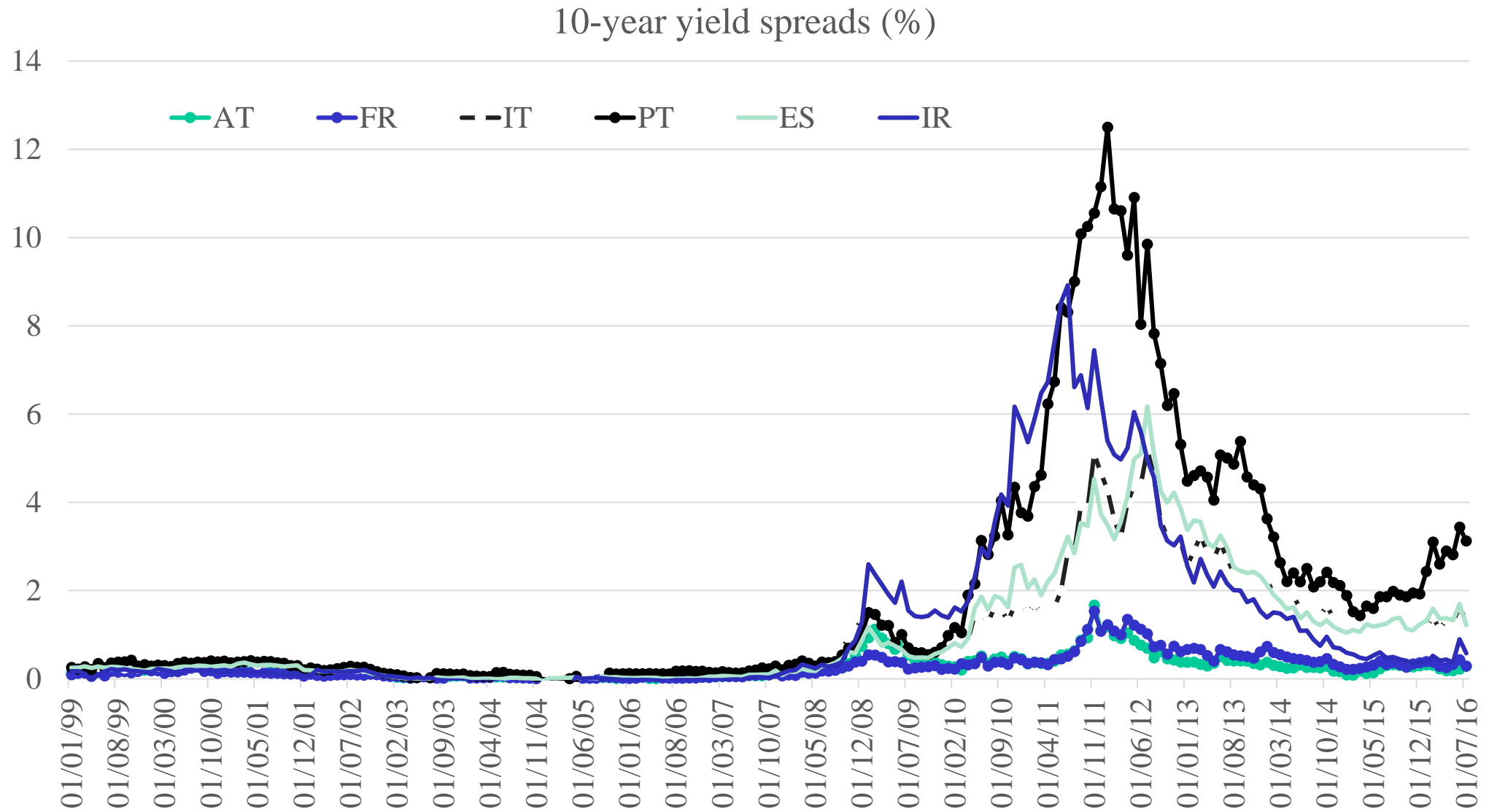
country	date	event	country	date	event
<b>Austria</b>	<b>02.12.2009</b>	<b>+1</b>	Ireland	27.04.2009	+1
	<b>20.06.2014</b>	-1		02.12.2009	+1
<b>Belgium</b>	02.12.2009	+1		07.12.2010	+1
	21.06.2013	+1		17.06.2016	-1
	20.06.2014	-1	Italy	05.07.2004	-1
<b>Finland</b>	13.07.2010	+1		28.07.2005	+1
	12.07.2011	-1		03.06.2008	-1
<b>France</b>	21.01.2003	+1		02.12.2009	+1
	03.06.2003	+1		21.06.2013	-1
	30.01.2007	-1	The Netherlands	02.06.2004	+1
	27.04.2009	+1		07.06.2005	-1
	02.12.2009	+1		02.12.2009	+1
	21.06.2013	+1		21.06.2013	+1
	27.02.2015	+1		20.06.2014	-1
	10.03.2015	+1	Portugal	12.02.2002	-1
<b>Greece</b>	05.07.2004	+1		20.09.2005	+1
	18.01.2005	+1		03.06.2008	-1
	17.02.2005	+1		02.12.2009	+1
	05.06.2007	-1		09.10.2010	+1
	27.04.2009	+1		21.06.2013	+1
	02.12.2009	+1		12.07.2016	+1
	16.02.2010	+1	Spain	27.04.2009	+1
	10.05.2010	+1		02.12.2009	+1
	07.09.2010	+1		10.07.2012	+1
	07.03.2011	+1		21.06.2013	+1
	12.07.2011	+1		12.07.2016	+1
	08.11.2011	+1			
	13.03.2012	+1			
	04.12.2012	+1			
	20.08.2015	+1			

## Type 1 Fiscal events (Excessive Deficit Procedures)

Events with negative impact are flagged by +1 (increasing the spreads) and events with positive impact are flagged by -1 (decreasing the spreads).

On **02.12.2009**, Council decision on the existence of an excessive deficit for Austria, which is considered as a negative effect, that increases the yield, spreads so it is flagged by +1.

On **20.06.2014**, Council decision abrogating the decision on the existence of an excessive deficit for Austria, flagged by -1 as it has a positive effect and decreases the yield spreads.



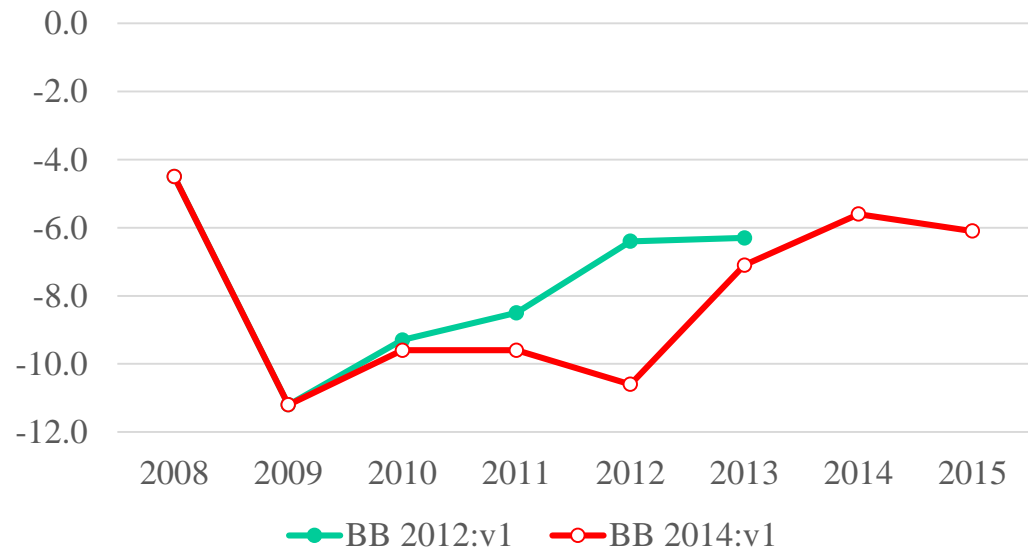
Source: ECB, own calculations.

# Baseline and Monetary Policy Events (type 1 and 2), fixed effects OLS

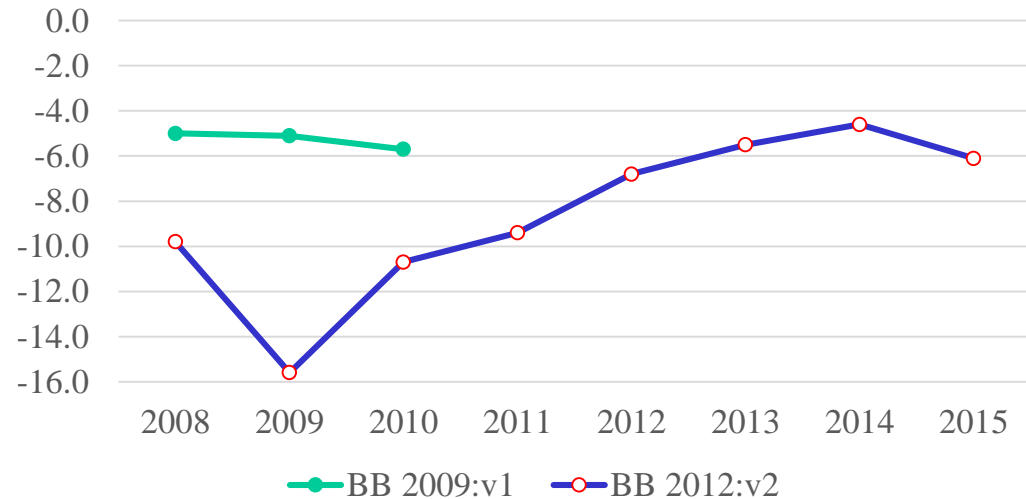
Results (1)

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Regressors	baseline	MP type 1				MP type 2				
IP_PCH_DEU	-0.0970** (0.034)	-0.1018** (0.036)	-0.0996** (0.035)	-0.1016** (0.036)	-0.1011** (0.036)	-0.1314** (0.043)	-0.0965** (0.034)	-0.0973** (0.035)	-0.0401 (0.089)	-0.0984** (0.038)
vix	0.0031 (0.006)	-0.0016 (0.007)	-0.0016 (0.008)	-0.0024 (0.008)	-0.0026 (0.008)	0.0234*** (0.005)	0.0041 (0.005)	0.0046 (0.005)	0.0200 (0.017)	0.0435*** (0.012)
reer	-0.0324 (0.030)	-0.0327 (0.030)	-0.0326 (0.029)	-0.0327 (0.029)	-0.0327 (0.029)	-0.0706 (0.041)	-0.0318 (0.029)	-0.0315 (0.029)	0.0820** (0.028)	0.0099 (0.013)
bid_ask	6.1898*** (0.792)	6.1767*** (0.793)	6.1818*** (0.793)	6.1768*** (0.793)	6.1775*** (0.793)	5.7623*** (0.768)	6.2332*** (0.768)	6.2418*** (0.765)	3.7152*** (0.554)	4.1265*** (0.579)
D.DF		-0.6644** (0.212)		-0.4758*** (0.116)						
D.MLF			-0.5707** (0.237)	-0.2609 (0.203)						
D.MRO					-0.7382** (0.264)					
D.CMRO						-0.0000* (0.000)				
D.LTRO							-0.0015 (0.001)			
D.Net_LTRO								-0.0018 (0.002)		
D.SMP_p									0.0078 (0.011)	
D.CBPP1_p										-0.2572** (0.104)
Observations	1,940	1,940	1,940	1,940	1,940	1,304	1,940	1,940	704	804
R-squared	0.5989	0.6003	0.6000	0.6004	0.6004	0.6342	0.6000	0.6004	0.8287	0.8023

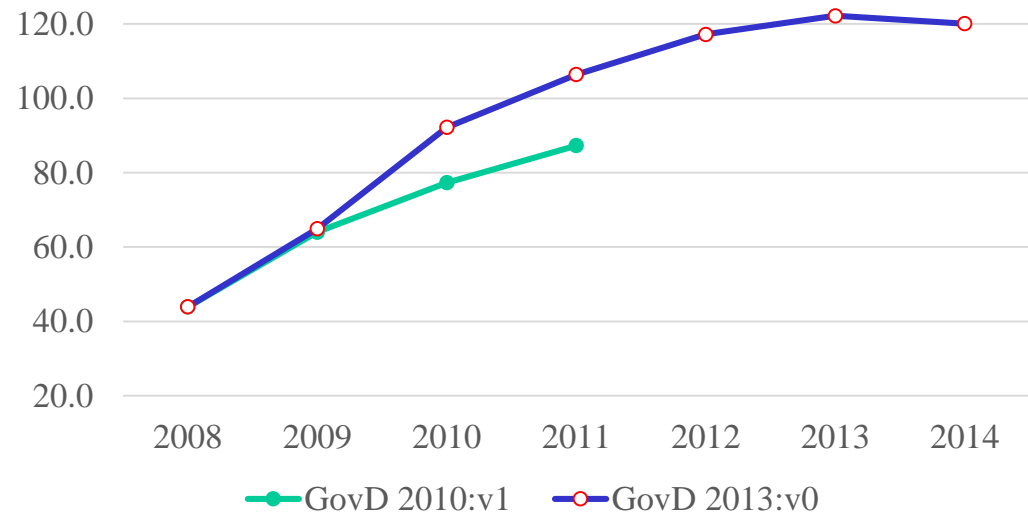
Budget balance, % of GDP, EC forecasts (Spain)



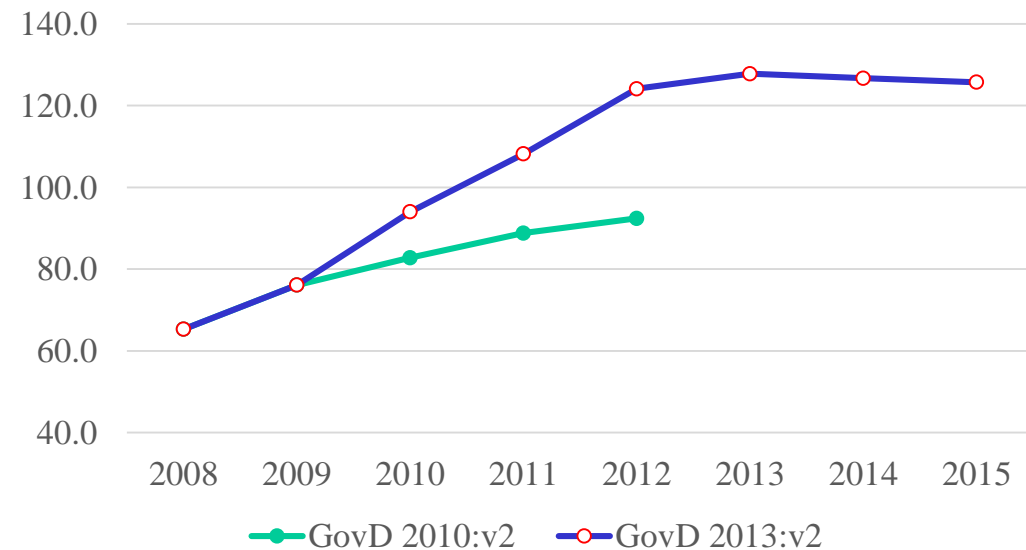
Budget balance, % of GDP, EC forecasts (Greece)



Debt ratio, EC forecasts (Ireland)



Debt ratio, EC forecasts (Portugal)



# Baseline and Fiscal Policy Events (type 1 and 2), fixed effects OLS

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Regressors	FP type 2					FP type 1				
IP_PCH_DEU	-0.0976** (0.034)	-0.0896*** (0.024)	-0.0491** (0.019)	-0.1113** (0.036)	-0.0794*** (0.022)	-0.0663** (0.021)	-0.1112** (0.036)	-0.0751*** (0.019)	-0.0274 (0.027)	-0.0590** (0.020)
vix	0.0029 (0.006)	0.0359*** (0.009)	0.0009 (0.006)	0.0099 (0.006)	0.0312*** (0.007)	-0.0002 (0.007)	0.0116* (0.005)	0.0286*** (0.006)	0.0040 (0.007)	0.0041 (0.007)
reer	-0.0325 (0.030)	0.0348*** (0.011)	-0.0253 (0.028)	-0.0199 (0.030)	0.0285** (0.011)	-0.0301 (0.029)	-0.0162 (0.028)	0.0246* (0.012)	-0.0172 (0.028)	-0.0233 (0.030)
bid_ask	6.1617*** (0.797)	4.6529*** (0.944)	5.9212*** (0.799)	6.1769*** (0.755)	4.6468*** (0.947)	5.9777*** (0.841)	6.1260*** (0.728)	4.6702*** (0.933)	5.8841*** (0.724)	5.6646*** (0.800)
EDP	0.5954** (0.234)									
f1_debt		0.0594*** (0.017)						-0.0268 (0.024)		
f1_OB			-0.2059*** (0.060)						-0.5762* (0.283)	
f1_CAB				0.0994* (0.048)						-1.3492 (0.775)
f2_debt					0.0570*** (0.017)			0.0818* (0.038)		
f2_OB						-0.1750** (0.060)			0.3680 (0.280)	
f2_CAB							0.1281** (0.048)			1.4066* (0.752)
Observations	1,940	1,940	1,940	1,940	1,940	1,940	1,940	1,940	1,940	1,940
R-squared	0.6003	0.7467	0.6392	0.6083	0.7543	0.6300	0.6158	0.7551	0.6463	0.6572

“f1” and “f2” denote one or two years-ahead forecasts of a given variable, respectively.

# Robustness: Monetary Policy Events (type 1 and 2), fixed effects IV

Results (3)

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Regressors	baseline	MP type 1				MP type 2				
IP_PCH_DEU	-0.0205*** (0.004)	-0.0207*** (0.004)	-0.0199*** (0.004)	-0.0207*** (0.004)	-0.0201*** (0.004)	-0.0268*** (0.005)	-0.0203*** (0.004)	-0.0207*** (0.004)	-0.0125 (0.010)	-0.0274*** (0.008)
vix	0.0052*** (0.001)	0.0050*** (0.001)	0.0062*** (0.001)	0.0058*** (0.001)	0.0057*** (0.001)	0.0085*** (0.002)	0.0057*** (0.001)	0.0058*** (0.001)	0.0160** (0.007)	0.0153*** (0.004)
reer	-0.0008 (0.001)	-0.0008 (0.001)	-0.0007 (0.001)	-0.0008 (0.001)	-0.0007 (0.001)	-0.0046** (0.002)	-0.0005 (0.001)	-0.0004 (0.001)	0.0273*** (0.008)	0.0097* (0.006)
bid_ask	0.7490*** (0.051)	0.7491*** (0.051)	0.7469*** (0.051)	0.7453*** (0.051)	0.7483*** (0.051)	0.7775*** (0.062)	0.7751*** (0.051)	0.7780*** (0.051)	0.9084*** (0.084)	0.8983*** (0.080)
D.DF		-0.0239 (0.068)		-0.1928** (0.091)						
D.MLF			0.1158* (0.064)	0.2392*** (0.087)						
D.MRO					0.0595 (0.072)					
D.CMRO						-0.0000*** (0.000)				
D.LTRO							-0.0008*** (0.000)			
D.Net_LTRO								-0.0008*** (0.000)		
D.SMP_p									-0.0015 (0.004)	
D.CBPP1_p										-0.0402*** (0.014)
Observations	1,511	1,511	1,511	1,511	1,511	1,511	1,511	1,136	558	655
Kleibergen-Paap statistic (p-value)	0.004	0.002	0.003	0.009	0.003	0.040	0.003	0.003	0.005	0.003
Hansen statistic (p- value)	0.200	0.489	0.227	0.181	0.488	0.685	0.726	0.893	0.996	0.787

# Robustness: Fiscal Policy Events (type 1 and 2), fixed effects IV

Results (4)

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Regressors	FP type 2	FP type 1								
IP_PCH_DEU	-0.1331*** (0.016)	-0.0223*** (0.004)	-0.0170*** (0.004)	-0.0210*** (0.004)	-0.0217*** (0.004)	-0.0182*** (0.004)	-0.0213*** (0.004)	-0.0205*** (0.004)	-0.0164*** (0.004)	-0.0176*** (0.004)
vix	0.0327*** (0.004)	0.0075*** (0.001)	0.0049*** (0.001)	0.0054*** (0.001)	0.0073*** (0.001)	0.0048*** (0.001)	0.0056*** (0.001)	0.0066*** (0.001)	0.0050*** (0.001)	0.0049*** (0.001)
reer	-0.0081* (0.004)	0.0032** (0.001)	-0.0005 (0.001)	-0.0004 (0.001)	0.0030** (0.001)	-0.0008 (0.001)	-0.0001 (0.001)	0.0019 (0.001)	-0.0003 (0.001)	-0.0009 (0.001)
bid_ask	4.7698*** (0.141)	0.7911*** (0.051)	0.7716*** (0.051)	0.7532*** (0.052)	0.8010*** (0.051)	0.7659*** (0.051)	0.7571*** (0.052)	0.8085*** (0.052)	0.7737*** (0.051)	0.7662*** (0.051)
EDP	0.3523* (0.199)									
f1_debt		0.0044*** (0.001)						-0.0071** (0.003)		
f1_OB			-0.0177*** (0.004)						-0.0294* (0.017)	
f1_CAB				0.0033 (0.004)						-0.1177*** (0.025)
f2_debt					0.0045*** (0.001)			0.0111*** (0.003)		
f2_OB						-0.0158*** (0.004)			0.0115 (0.016)	
f2_CAB							0.0058 (0.004)			0.1185*** (0.025)
Observations	1,511	1,511	1,511	1,511	1,511	1,511	1,511	1,136	558	655
Kleibergen-Paap statistic (p-value)	0.066	0.074	0.065	0.097	0.065	0.091	0.065	0.065	0.069	0.056
Hansen statistic (p- value)	0.113	0.399	0.989	0.988	0.292	0.834	0.323	0.872	0.696	0.301

“f1” and “f2” denote one or two years-ahead forecasts of a given variable, respectively.

## Summary of effects on yield spreads

	MP events				FP events		
	OLS	fixed OLS	IV		OLS	fixed OLS	IV
IP_PCH_DEU	-	-	-	IP_PCH_DEU	-	-	-
vix			+	vix			+
reer			-	reer			-
bid_ask	+	+	+	bid_ask	+	+	+
SMP	+			f debt	+	+	+
MRO	-	-		f OB	-	-	-
MLF	-	-	+	EDP	+	+	+
LTRO			-				
CBPP1		-	-				
DF	-	-	-				

Note: only statistically significant effects.



- We assessed the impact of fiscal and monetary announcements on 10-year sovereign bond yield spreads (relative to Germany) of 10 EMU countries during the period 01:1999-07:2016.
- We built a set of **fiscal events** (EC forecasts (type 1) and EDP related decisions (type 2)) and **monetary policy events** (conventional (type 1) and non-conventional (type 2)).
- We use pooled, country-fixed effects OLS, and IV regressions, and **find that:**
  - European Commission's (EC) releases of the excessive deficit procedure significantly affect yield spreads;
  - announcements of the ECB's key interest rates together with the longer-term refinancing operations (LTROs) and the first covered bond purchase programme (CBPP1) negatively affect sovereign yield spreads.

# Baseline and Monetary Policy Events (type 1 and 2), Pooled OLS

Results (6)

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Regressors	baseline	MP type 1				MP type 2				
IP_PCH_DEU	-0.0886*	-0.0922*	-0.0906*	-0.0921*	-0.0917*	-0.1195*	-0.0887*	-0.0900*	-0.2683**	-0.2323**
	(0.047)	(0.049)	(0.048)	(0.049)	(0.049)	(0.058)	(0.047)	(0.047)	(0.103)	(0.092)
vix	0.0029	-0.0015	-0.0016	-0.0023	-0.0025	0.0223***	0.0042	0.0048	0.0078	0.0341*
	(0.005)	(0.007)	(0.007)	(0.007)	(0.007)	(0.004)	(0.005)	(0.004)	(0.026)	(0.016)
reer	-0.0288	-0.0288	-0.0288	-0.0288	-0.0288	-0.0591	-0.0284	-0.0281	-0.2344**	-0.2087**
	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)	(0.043)	(0.025)	(0.024)	(0.083)	(0.090)
bid_ask	6.9975***	6.9868***	6.9909***	6.9869***	6.9873***	6.6256***	7.0502***	7.0584***	5.7849***	5.8879***
	(0.886)	(0.888)	(0.888)	(0.888)	(0.888)	(0.912)	(0.857)	(0.854)	(0.931)	(0.965)
D.DF		-0.6073**		-0.4197***						
		(0.244)		(0.128)						
D.MLF			-0.5333*	-0.2596						
			(0.254)	(0.187)						
D.MRO					-0.6822**					
					(0.293)					
D.CMRO						-0.0000				
						(0.000)				
D.LTRO							-0.0020			
							(0.002)			
D.Net_LTRO								-0.0023		
								(0.002)		
D.SMP_p									0.0182*	
									(0.010)	
D.CBPP1_p										-0.0296
										(0.074)
Observations	1,940	1,940	1,940	1,940	1,940	1,304	1,940	1,940	704	804
R-squared	0.5132	0.5143	0.5142	0.5144	0.5145	0.5429	0.5151	0.5157	0.6127	0.6088

## Baseline and **Fiscal Policy Events** (type 1 and 2), Pooled OLS

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Regressors	FP type 2	FP type 1								
IP_PCH_DEU	-0.0889*	-0.0799**	-0.0444*	-0.0621	-0.0713**	-0.0567*	-0.0701	-0.0521**	-0.0319	-0.0110
	(0.045)	(0.033)	(0.022)	(0.036)	(0.031)	(0.026)	(0.039)	(0.022)	(0.025)	(0.027)
vix	0.0025	0.0236***	0.0007	-0.0026	0.0218***	-0.0008	-0.0012	0.0150***	0.0038	-0.0063
	(0.006)	(0.006)	(0.007)	(0.008)	(0.005)	(0.007)	(0.008)	(0.004)	(0.007)	(0.008)
reer	-0.0288	0.0254**	-0.0230	-0.0294	0.0246*	-0.0258	-0.0293	0.0164	-0.0193	-0.0302
	(0.025)	(0.011)	(0.025)	(0.024)	(0.012)	(0.026)	(0.025)	(0.014)	(0.025)	(0.023)
bid_ask	6.9435***	5.5434***	6.6297***	6.8450***	5.4678***	6.6967***	6.9069***	5.4579***	6.5880***	5.9953***
	(0.906)	(1.140)	(0.868)	(0.940)	(1.137)	(0.915)	(0.926)	(1.119)	(0.795)	(0.984)
EDP	0.8895*									
	(0.407)									
f1_debt		0.0377**						-0.0934**		
		(0.013)						(0.037)		
f1_OB			-0.2147***						-0.5536*	
			(0.063)						(0.258)	
f1_CAB				-0.0680						-1.8309*
				(0.042)						(0.838)
f2_debt					0.0388**			0.1303**		
					(0.013)			(0.045)		
f2_OB						-0.1901**			0.3405	
						(0.060)			(0.254)	
f2_CAB							-0.0514			1.7607*
							(0.038)			(0.822)
Observations	1,940	1,940	1,940	1,940	1,940	1,940	1,940	1,940	1,940	1,940
R-squared	0.5164	0.6608	0.5682	0.5273	0.6734	0.5579	0.5213	0.6860	0.5748	0.6132

“f1” and “f2” denote one or two years-ahead forecasts of a given variable, respectively.