The Financial and Macroeconomic Effects of the OMT Announcements

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Outright monetary transactions - OMTs

1. **July 26, 2012**, during a conference in London, President Draghi said that the ECB was ready to do "whatever it takes" to preserve the euro within the limits of its mandate.

2. **August 2, 2012**, during the press conference after the Governing Council meeting, President Draghi announced that "ECB may undertake outright open market operations".

3. **September 6, 2012**, the ECB's Governing Council announced technical features.

Key features

➢ **Conditionality**: only sovereign bonds of countries that have entered an agreement with the EA rescue vehicles (EFSF and ESM).

➢ **No targets for the yields are set**

➢ The ECB's holdings do **not have seniority** over private creditors.

➢ Maturity of **up to 3 years**

This paper: quantitative impact of OMTs announcements

Scenario Analysis used to assess the impact of the OMT Announcements

1. Assess the high-frequency impact of OMT on sovereign bond yields of the Big4

    –   **Event-study**

    –   **Possible caveats**

2. Measuring the macro Impact of OMT multi-country BVAR model as difference between a **Policy** and a **No-policy** scenario

    –   **No-Policy scenario**: Unconditional Forecast of the entire model (baseline)

    –   **Policy Scenario**: imposing the estimated high-frequency impact

Literature

U.S.

Modigliani and Sutch (1966, 1967)	OT
Gagnon et al. (2011)	QE
Swanson (2011)	QE
Krishnamurthy and Vissing-Jorgensen (2011)	QE
D'Amico and King (2013)	QE
Chen, Curdia, and Ferrero (2012)	Macro impact
Chung, Laforte, Reifschneider, and Williams (2012)	Macro impact
Baumeister and Benati (2013)	Macro impact

Euro Area

Eser and Schwaab, 2012;	SMP
Ghysels, Idier, Manganelli, and Vergote, 2012;	SMP
Rivolta, 2012;	SMP
Szczerbowicz, 2012	SMP
Krishnamurthy and Vissing-Jorgensen (2013)	SMP, LTRO, OMT
Lenza, Pill, and Reichlin (2010)	Macro Impact

Outline

1	The impact of the OMTs on the yield curve
2	Macroeconomic Effects
3	Conclusions

Event study Analysis

$$\Delta y_t = \sum_{i=1}^{n} \beta_i D_{i,t} + \varepsilon_t$$

	SMP		LTRO		OMT		FG	
	1-day	2-day	1-day	2-day	1-day	2-day	1-day	2-day
10-year								
Germany	12	11	1	7	4	23	1	5
France	6	11	-2	7	-8	-9	-1	0
Italy	-110	-125	4	5	-27	-82	-11	-9
Spain	-132	-145	-5	-15	-53	-115	-7	-12
2-year								
Germany	-1	-6	0	-4	1	8	-2	-5
France	-4	-2	-9	-19	-1	-4	-5	-8
Italy	-160	-162	-5	-23	-103	-199	-18	-24
Spain	-186	-193	-14	-57	-94	-234	-10	-24
5-year CDS								
Germany	-3	-2	3	-6	-5	-16	-1	-1
France	4	4	10	6	-9	-35	-1	-2
Italy	-118	-130	36	33	-41	-154	-9	-10
Spain	-133	-149	26	5	-40	-156	-8	-9

Event study Analysis

Some Shortcomings:

- ➢ Hp: policy changes are immediately incorporated in prices and their effects are persistent.

- ➢ Distorted if other events influenced the target variable on announcement days (events should be dominant events for the identified event day. If other significant economic news arrives during the period and potentially creates measurement error problems for the event study.)

- ➢ Inability of capturing possible lagged effects and reversals

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Narrative Evidence: 151 variables

Euro Area	France	Germany	Italy	Spain
Business Climate Ind.	Bank of France Bus. Sentiment	Budget (% of GDP)	Budget Balance (Year to date)	Adj. Real Ret. Sales YoY
ECB Interest Rates	Business Confidence Indicator	Capital Investment	Business Confidence	CPI (MoM)
Current Account SA	Central Govt. Balance (Euros)	Construction Investment	Consumer Conf. Ind. sa	CPI (YoY)
Consumer Conf.	Consumer Confidence Indicator	CPI (MoM)	CPI (NIC incl. tobacco, MoM)	CPI (Core Index) (MoM)
CPI -Core (YoY)	CPI (MoM)	CPI (YoY)	CPI (NIC incl. tobacco, YoY)	CPI (Core Index) (YoY)
CPI Estimate (YoY)	CPI (YoY)	Current Account (EURO)	Deficit to GDP	CPI (EU Harm.) (MoM)
Current Account nsa	Consumer Spending (MoM)	Domestic Demand	Government Spending	CPI (EU Harm.) (YoY)
Economic Conf.	Consumer Spending (YoY)	Exports	Hourly Wages (MoM)	GDP (Constant SA) (QoQ)
GDP s.a. (QoQ)	CPI	Exports SA (MoM)	Hourly Wages (YoY)	GDP (Constant SA) (YoY)
GDP s.a. (YoY)	CPI	Factory Orders MoM (sa)	Imports	House Price Index QoQ
Govt Debt/GDP Ratio	CPI Ex Tobacco Index	Factory Orders YoY (nsa)	Industrial Orders n.s.a. (YoY)	House Price Index YoY
Govt Expend (QoQ)	France Retail PMI	GDP nsa (YoY)	Industrial Orders s.a. (MoM)	Ind. Output WDA (YoY)
Gross Fix Cap (QoQ)	GDP (QoQ)	GDP s.a. (QOQ)	Ind. Prod. nsa(YoY)	PPI (MoM)
Household Cons (QoQ)	GDP (YoY)	GDP wda (YoY)	Ind. Prod. sa (MoM)	PPI (YoY)
Ind. Prod. sa (MoM)	Housing Perm. 3M YoY% Chg.	GfK Cons. Conf. Survey	Ind. Prod. wda(YoY)	Real Ret. Sales (YoY)
Ind. Prod. wda (YoY)	Housing Starts 3M YOY% Chg.	Government Spending	Ind. Sales n.s.a. (YoY)	Cons. Confidence
Indust. Conf.	ILO Mainland Unempl. Rate	IFO -Business Climate	Ind. Sales s.a. (MoM)	Trade Balance (Mln Euros)
Labour Costs (YoY)	ILO Unemployment Rate	Import Price Index (MoM)	PMI Manufacturing	Unempl. MoM Net ('000s)
M3 s.a. (YoY)	Imports (QoQ)	Import Price Index (YoY)	PMI Services	Unempl. Rate (Survey)
M3 s.a. 3 mth ave.	Ind. Prod. (MoM)	Imports	PPI (MoM)	
PPI (MoM)	Ind. Prod. (YoY)	Imports SA (MoM)	PPI (YoY)	
PPI (YoY)	Mainland Unemp. Chg. (000s)	Ind. Prod. YoY (nsa wda)	Private Consumption	
Ret. Sales (MoM)	Manuf. Prod. (MoM)	Ind. Prod. (YoY)	Retail Sales (YoY)	
Ret. Sales (YoY)	Manuf. Prod. (YoY)	Ind. Prod. MoM (sa)	Retail Sales s.a. (MoM)	
Services Conf.	Non-Farm Payrolls (QoQ)	PMI Manufacturing	Retailers' Confid. General	
Trade Balance	Own-Company Prod. Outlook	PMI Services	Total investments	
Trade Balance sa	PMI Manufacturing	Private Consumption	Trade Balance (Total) (Euros)	
Unempl. Rate	PMI Services	Producer Prices (MoM)	Trade Balance Eu (Euros)	
Ind. New Ord. NSA (YoY)	PPI (MoM)	Producer Prices (YoY)	Trade Balance Non-Eu (Euros)	
Ind. New Ord. SA (MoM)	PPI (YoY)	Retail Sales (MoM)	Unempl. Rate	
PMI Composite	Production Outlook Indicator	Retail Sales (YoY)	Unempl. Rate (s.a)	
PMI Manuf.	Total Jobseekers	Trade Balance	Unempl. Rate (SA)	
PMI Services	Trade Balance (Euros)	Unempl. Chg. (000's)		
ZEW Survey (Econ. Sent.)	Wages (QoQ)	Unempl. Rate (s.a)		

Narrative Evidence

Events:

Outright Monetary Transactions	
Draghi's speech	26-Jul-12
Announcement	02-Aug-12
Technical feautures	06-Sep-12

Classical:

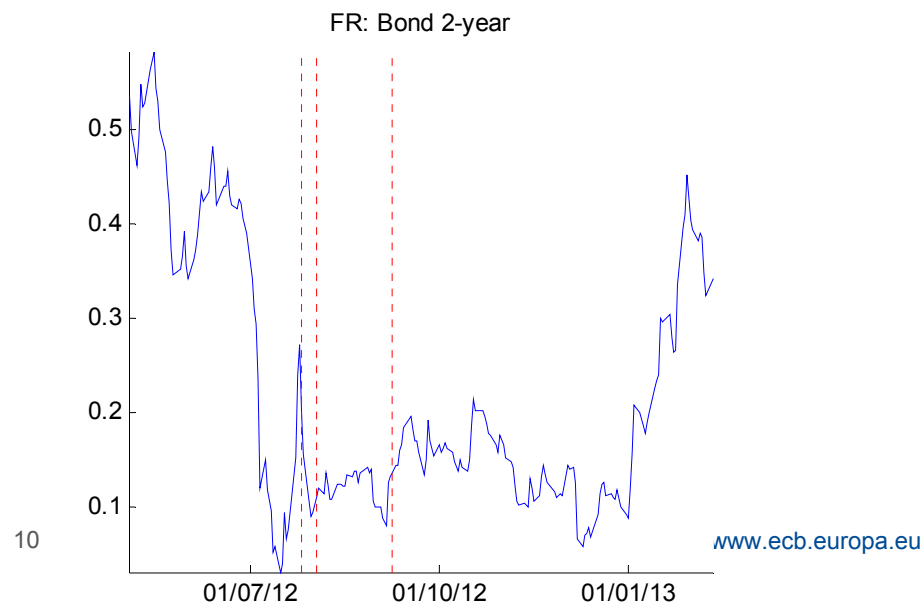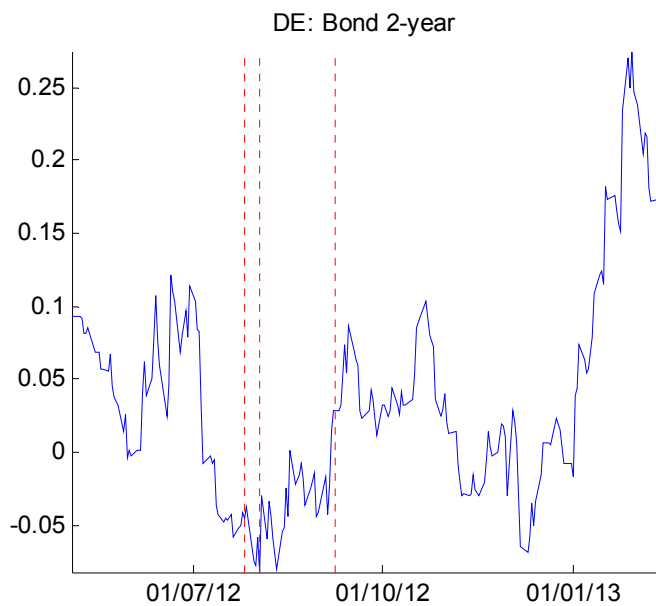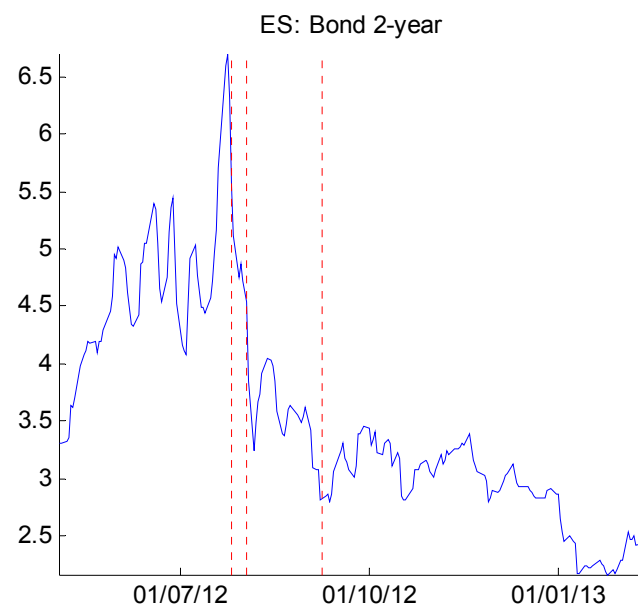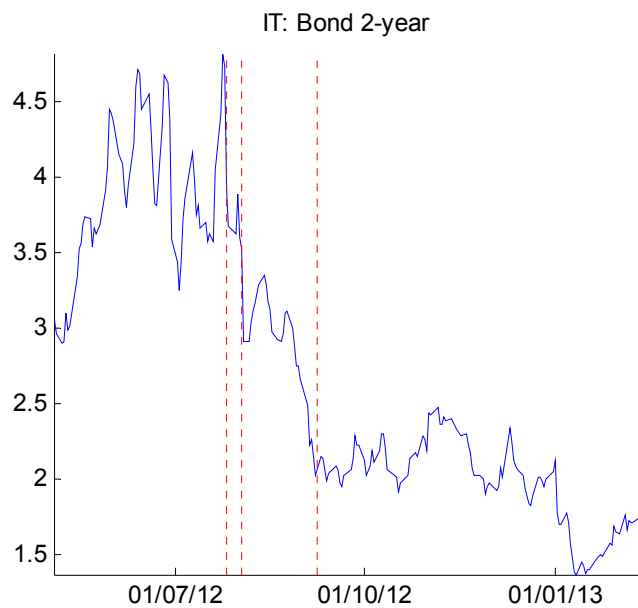$$\Delta y_t = \sum_{i=1}^{n} \beta_i D_{i,t} + \varepsilon_t$$

Controlled

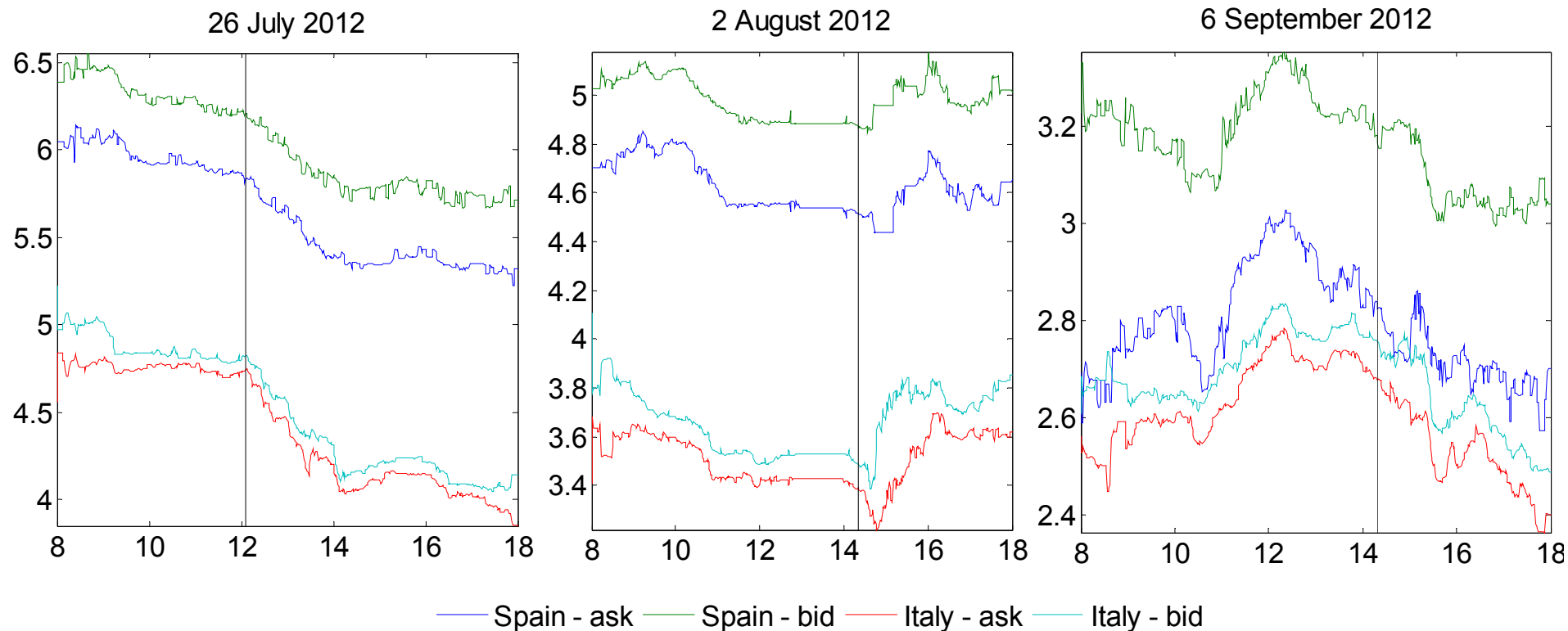$$\Delta y_t = \sum_{i=1}^{n} \beta_i D_{i,t} + \Phi News_{i,t} + \varepsilon_t$$

Daily Variables		2-day Event Window	
Country	Variable	Classical	Controlled
DE	Bond 2-year	0.08	0.10
FR	Bond 2-year	-0.04	-0.01
IT	Bond 2-year	-1.99 ***	-1.75 ***
ES	Bond 2-year	-2.34 ***	-2.09 ***
DE	Bond 10-year	0.23 *	0.29 *
FR	Bond 10-year	-0.09	0.04
IT	Bond 10-year	-0.82 ***	-0.63 ***
ES	Bond 10-year	-1.15 ***	-0.96 ***

n= number of events
Sample: 2-Jan-2008 - 10-Feb-2014

Lagged effects?

IT: Bond 2-year

ES: Bond 2-year

DE: Bond 2-year

FR: Bond 2-year

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Event study Analysis: size of the window

26 July 2012 — 2 August 2012 — 6 September 2012

Spain - ask — Spain - bid — Italy - ask — Italy - bid

Outline

Multi-country BVAR

Countries :

- Italy
- Spain
- Germany
- France

$$y_t = C + B_1 y_{t-1} + \ldots + B_p y_{t-p} + \varepsilon_t$$

$$\varepsilon_t \sim N(0, \Sigma)$$

Variables:

Country variables

- Real GDP
- GDP Deflator
- M3
- Loans to Private sector (NFCs+HHs)
- Interest rate on 2-year Govt. Bonds
- Interest rate on 10-year Govt. Bonds

Euro area variables

- EONIA rate
- Future Implied bond market volatility

Real GDP			
IT	ES	DE	FR
17,3%	10,9%	28,2%	21,0%

% of EMU   **77,3%**

Estimation uncertainty may make the model unstable/unreliable. Curse of dimensionality?

→ Need to limit variability owing to estimation error: bayesian shrinkage (De Mol et al. 2008, Banbura et al. 2010)

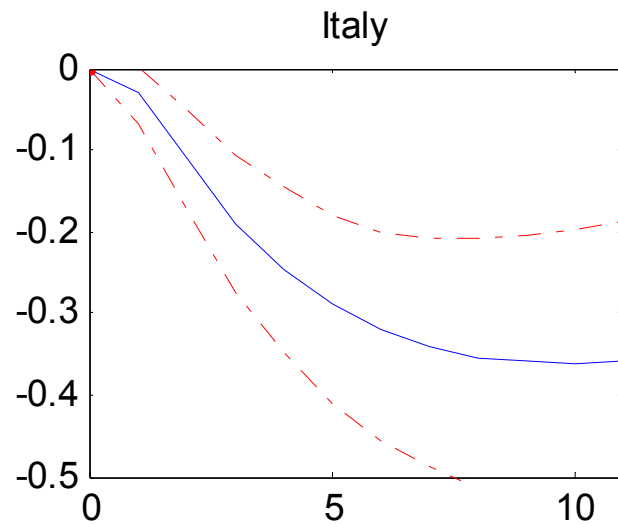→ Hyerarchical approach to set the degree of shrinkage (Giannone et al. 2012)

Elasticity to a change in the policy rate: monetary policy shock

We identify the monetary policy shock by means of a recursive scheme which generalizes, in a cross-country framework, the scheme of Christiano et al. (1999)
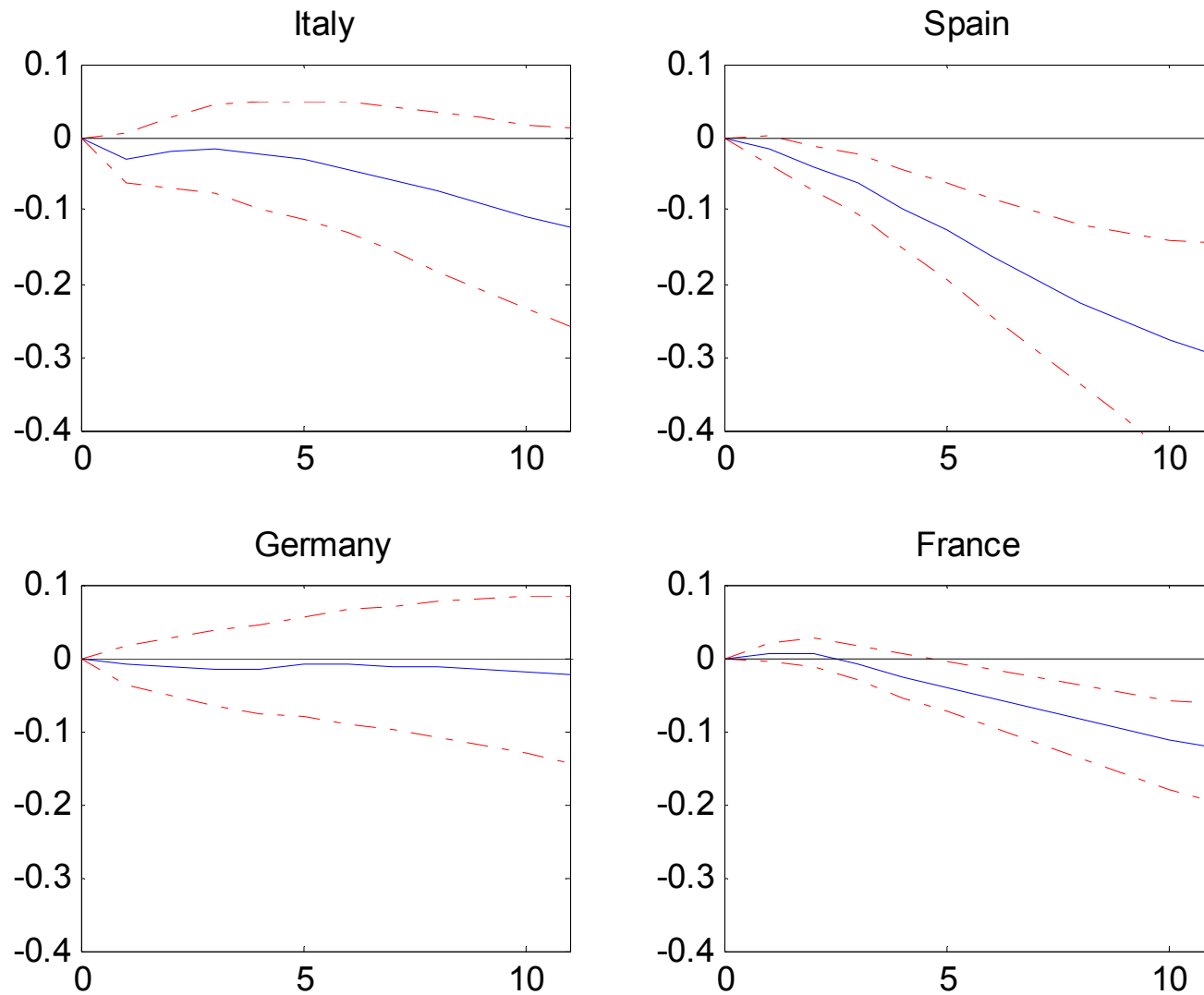
Identification restrictions:

- Policy variable is the euro area short-term interest rate

- The macro block (GDP and GDP deflator, for each country) is not allowed to react to the change in the policy rate in the quarter in which the change happens

- The "financial block" (bond rates, money and credit aggregates, for each country) is allowed to react to the change in the policy rate in the quarter of the shock

  ➢ The policy rate is only a function of GDP and GDP deflator at time t and the lags of all the variables (a sort of generalized Taylor rule) .

Transmission Mechanism: Real GDP

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Notes: Solid line indicates the median response, the dotted lines refer to the 16th and 84th percentile of the posterior distribution of the IRFs.
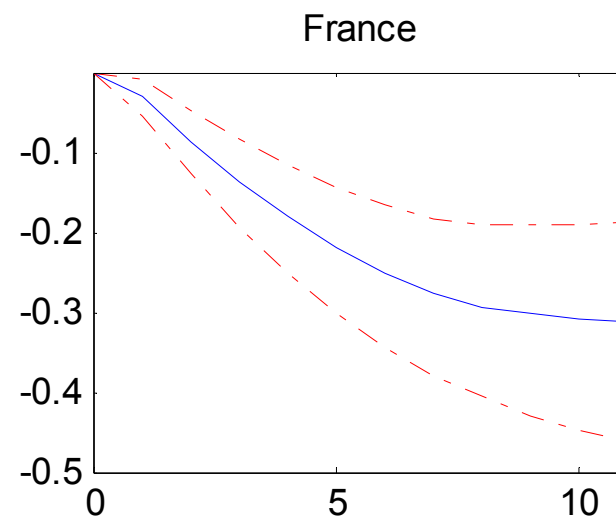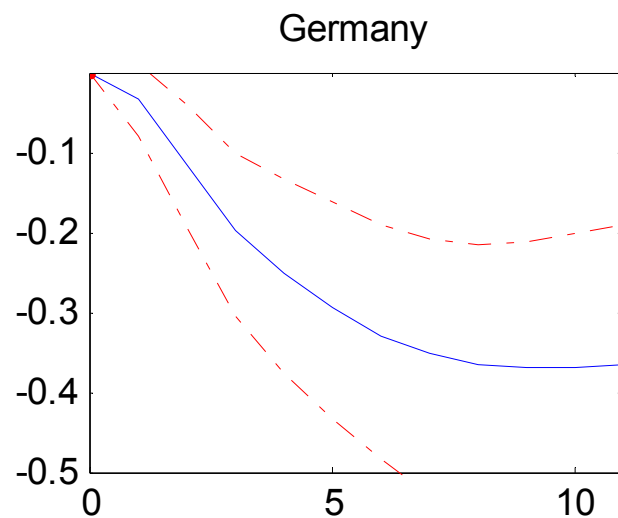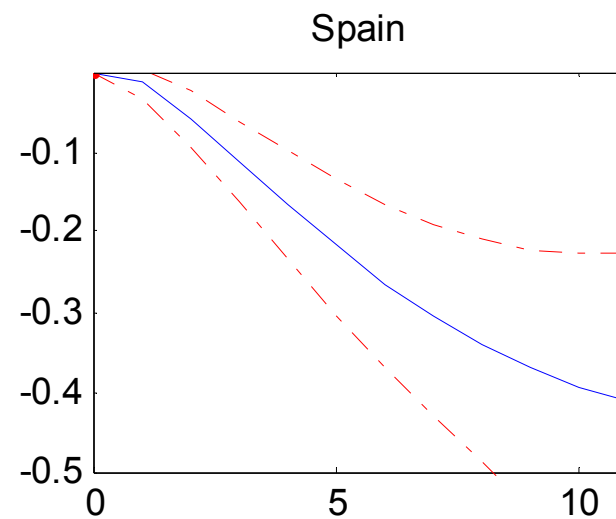
Transmission Mechanism: Consumer prices

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Scenario Analysis

Scenario analysis is designed to address the following question:

Given the knowledge of the economy at time t   **(Ω_t)**
what is the predicted path of future time series   **(X_{t+h})**
conditional on the future policy change?   **(z^*)**

To answer this question we compute the conditional expectation (see Banbura et al. 2014 for the algorithm):

$$X_{t+h|t} = E\left(X_{t+h}\middle| z^*, \Omega_t\right)$$

No-policy (unconditional, baseline) forecasts:

$$X_{t+h|t} = E\left(X_{t+h}\middle| \Omega_t\right)$$

Measuring the impact

The difference in two conditional expectations that differs for the information set.

$$Y^{OMT}_{t+h|t} = E\left(X_{t+h}\middle| z^*, \Omega_t\right) - E\left(X_{t+h}\middle| \Omega_t\right)$$

Note that the variable z could in principle be constrained for different time periods depending on the policy path.

IMPORTANT REMARKS:
- The algorithm extracts the most likely combination of shocks that, given past regularities, could have generated the scenario paths (an alternative would be to pick specific identified shocks)

- All the scenarios assume that the structure of the economy (reflected in the estimated coefficients) and the nature and the relative importance of different shocks (reflected in the estimated covariance matrix of the shocks) remain the same as in the past .

From Narrative Evidence to Macro-Impact

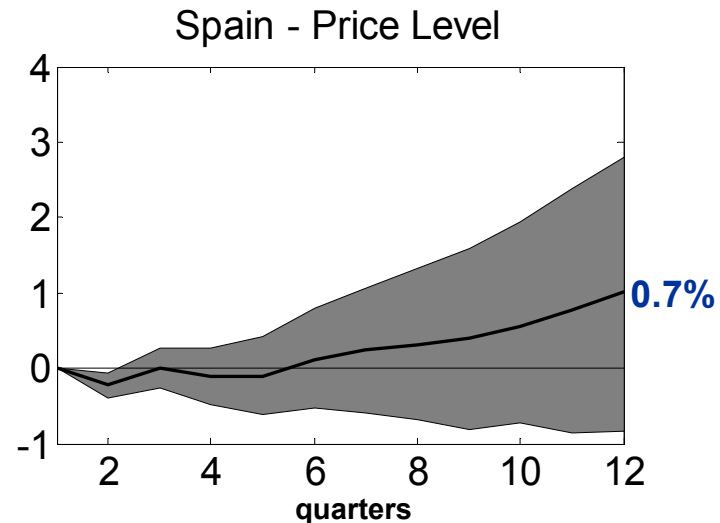| The OMT scenario				
Impact:	IT,ES,DE,FR GDP 0			IT,ES,DE,FR Price 0	
Path:	IT - 2y	ES - 2y	DE - 2y	FR - 2y	EA policy rate
	-1.75	-2.09	0	0	0

Projection horizon: 3 years

The impact of OMT Announcements

	Variables	Effect (ppt)	Probability of Positive Effect
Germany	GDP	0,34	0,60
	Price	0,28	0,67
	Loans	1,08	0,90
France	GDP	0,46	0,64
	Price	0,28	0,68
	Loans	1.38	0,22
Italy	GDP	1,50	0,81
	Price	1,21	0,86
	Loans	3,58	0,82
Spain	GDP	2,01	0,80
	Price	0,74	0,75
	Loans	2,31	0,90

The impact of OMT Announcements

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Spain	GDP	2,01	0,80
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	Loans	2,31	0,90

Impact on GDP and HICP for IT and ES over 3 years
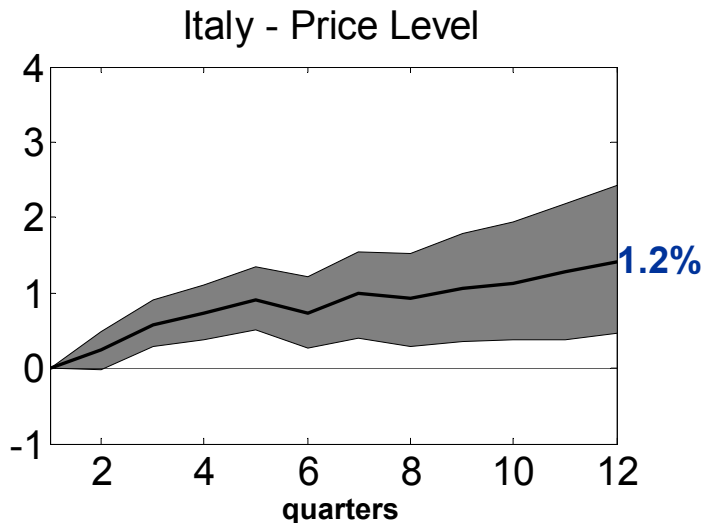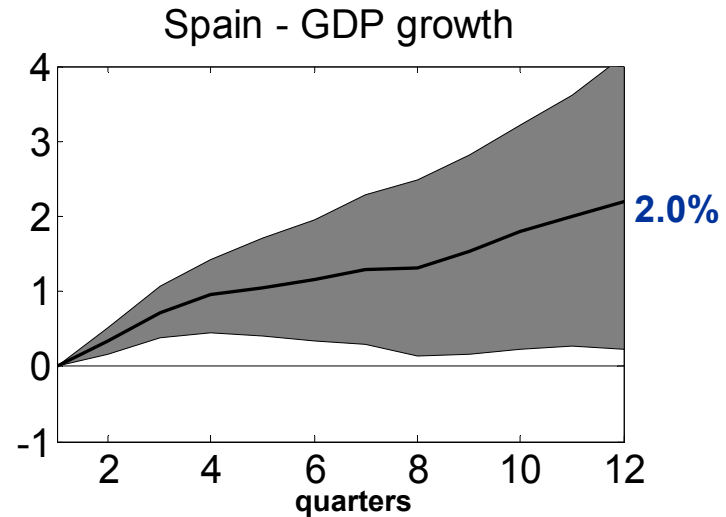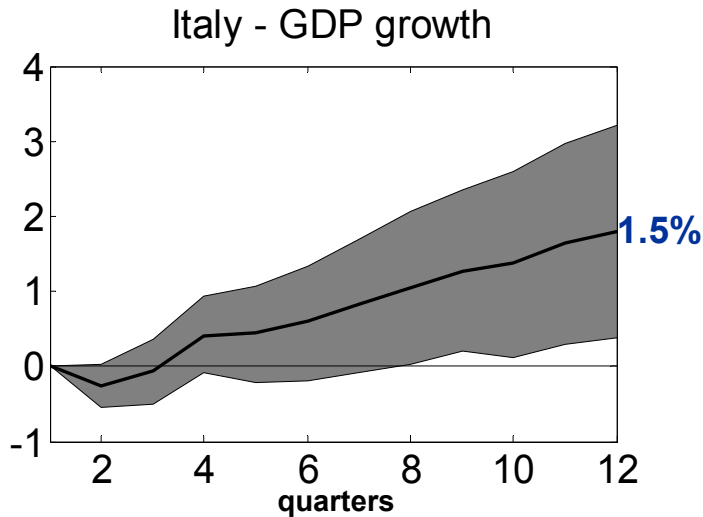
Italy - GDP growth — 1.5%

Spain - GDP growth — 2.0%

Italy - Price Level — 1.2%

Spain - Price Level — 0.7%

OMT announcement identification

➤ No impact effect on GDP and prices

➤ No long-term effect on EONIA, German and French 2y bond yields

➤ Effect on Italian and Spanish yields: -1.75% for IT, -2.09% for ES
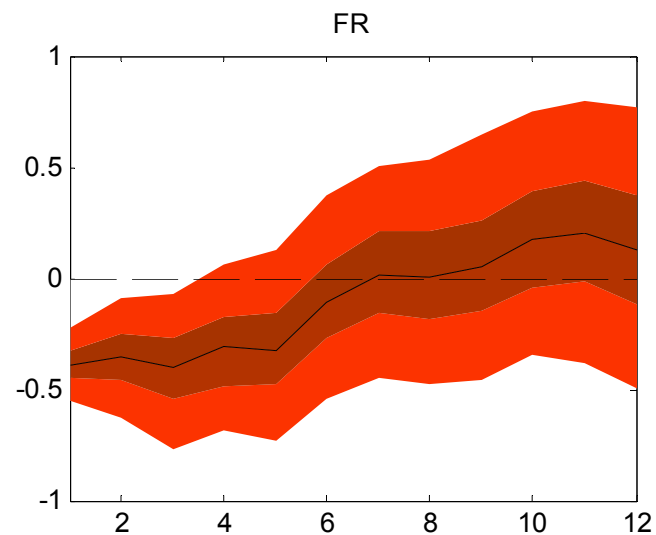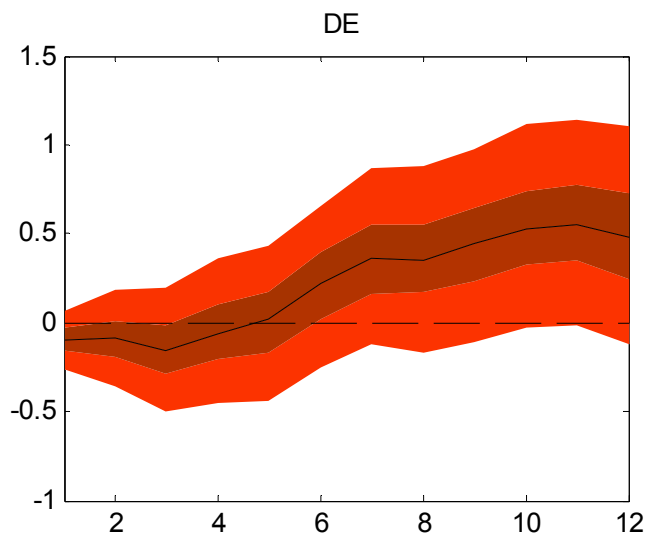
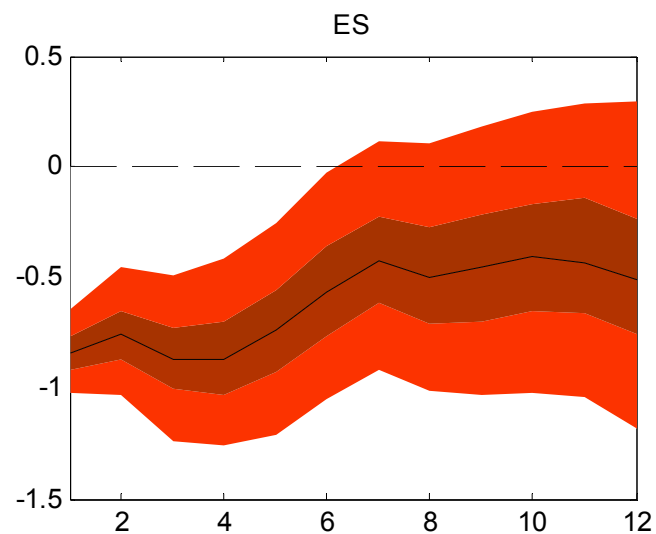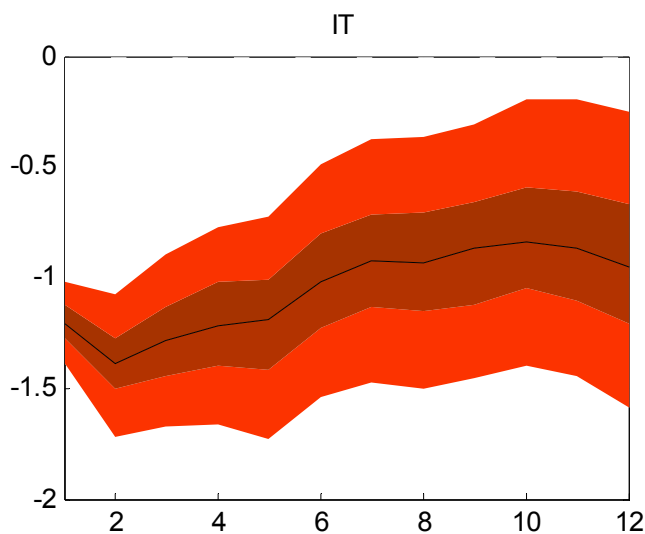# GDP for IT and ES

Italy
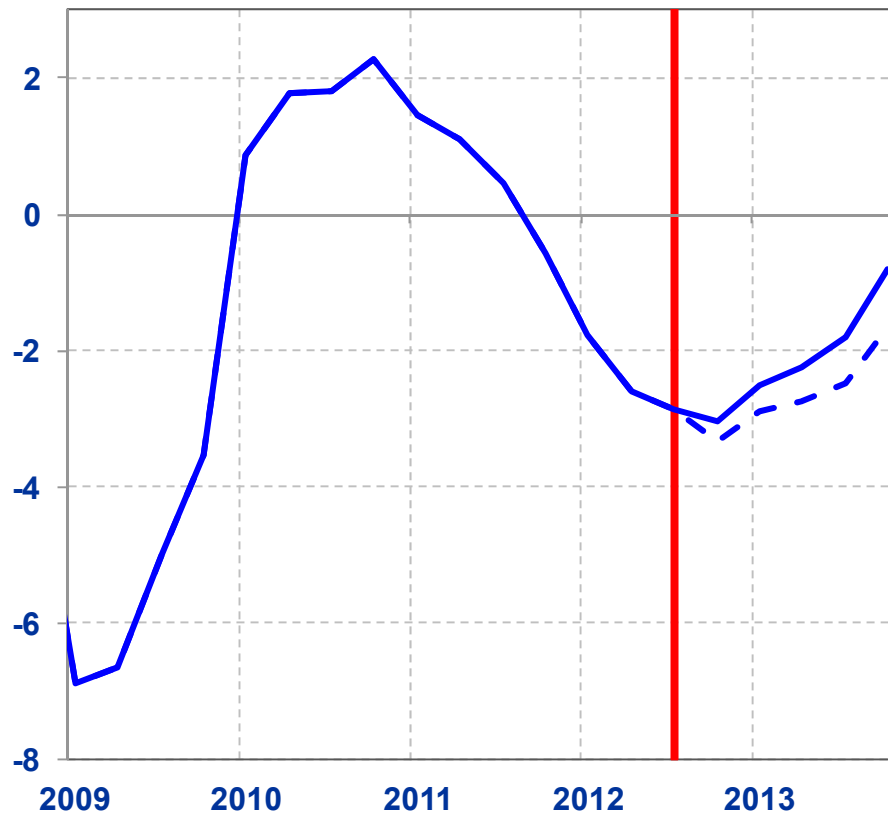
Spain
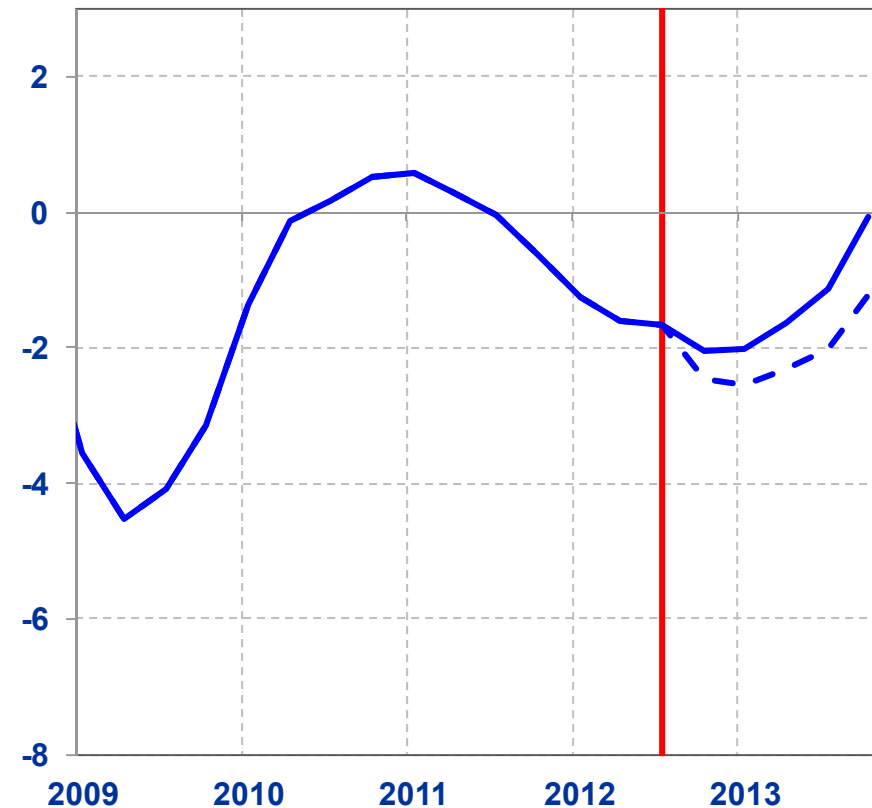
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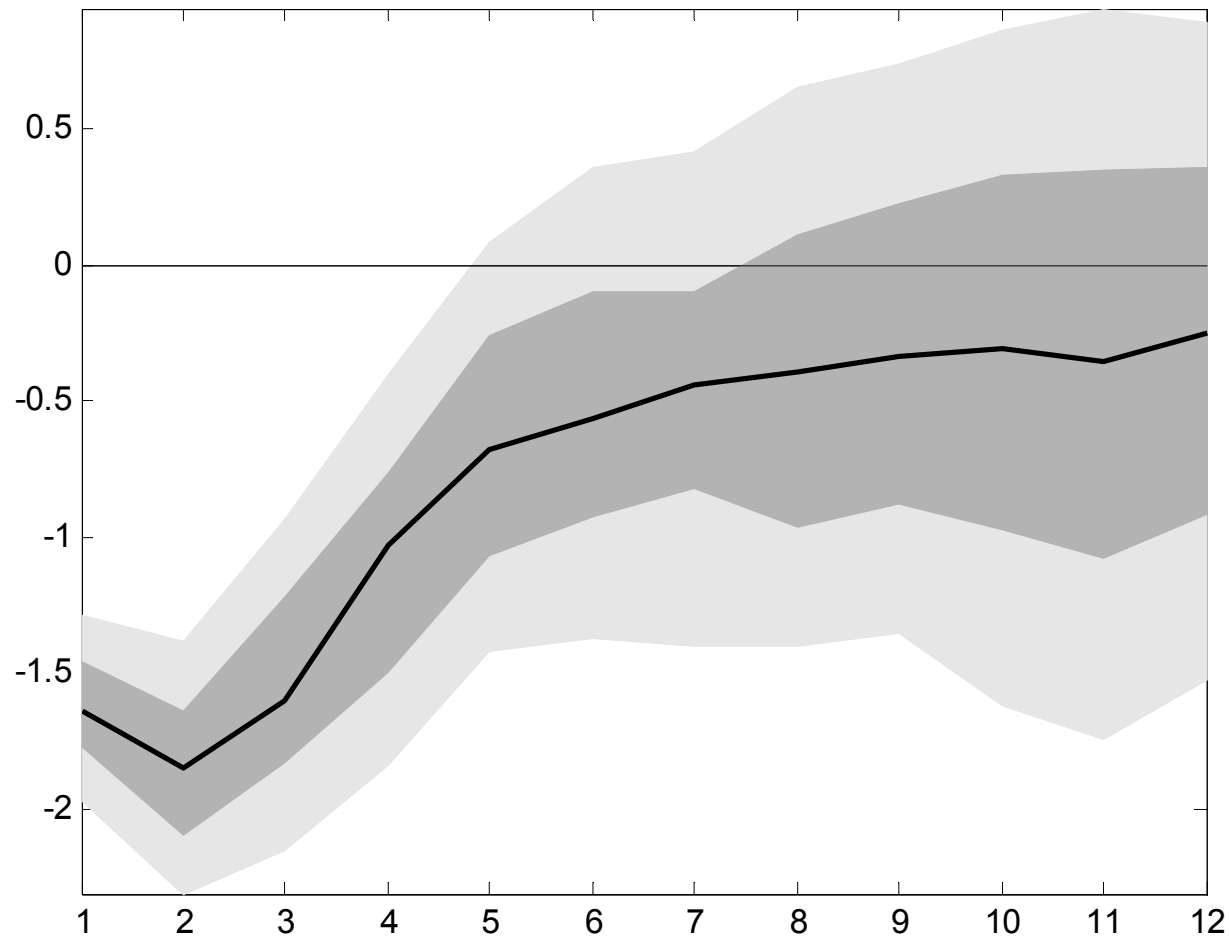➢ **Effect on Italian and Spanish yields: -1.75% for IT, -2.09% for ES**

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The impact of OMT announcements: 10-year bond rates

Notes: Black line = Median; Shaded area refer to the 25th - 75th and 16th – 84th percentile of the posterior distribution of the IRFs.

The impact of OMT announcements: bond volatility

Notes: Black line = Median; Shaded area refer to the 25th - 75th and 16th – 84th percentile of the posterior distribution of the IRFs.

Conclusions

OMT announcements associated with a positive and statistically significant economic effect

➢ Increase in economic activity (about 2% higher GDP) and inflation

➢ Relatively robust increase in Credit, up to 3%

➢ Transmission over the entire yield curve (10-year Bond rates fall about 1%)

➢ Significant decrease in bond market volatility