

# The ECB's monetary policy and the sovereign debt crisis

**Frank Smets**

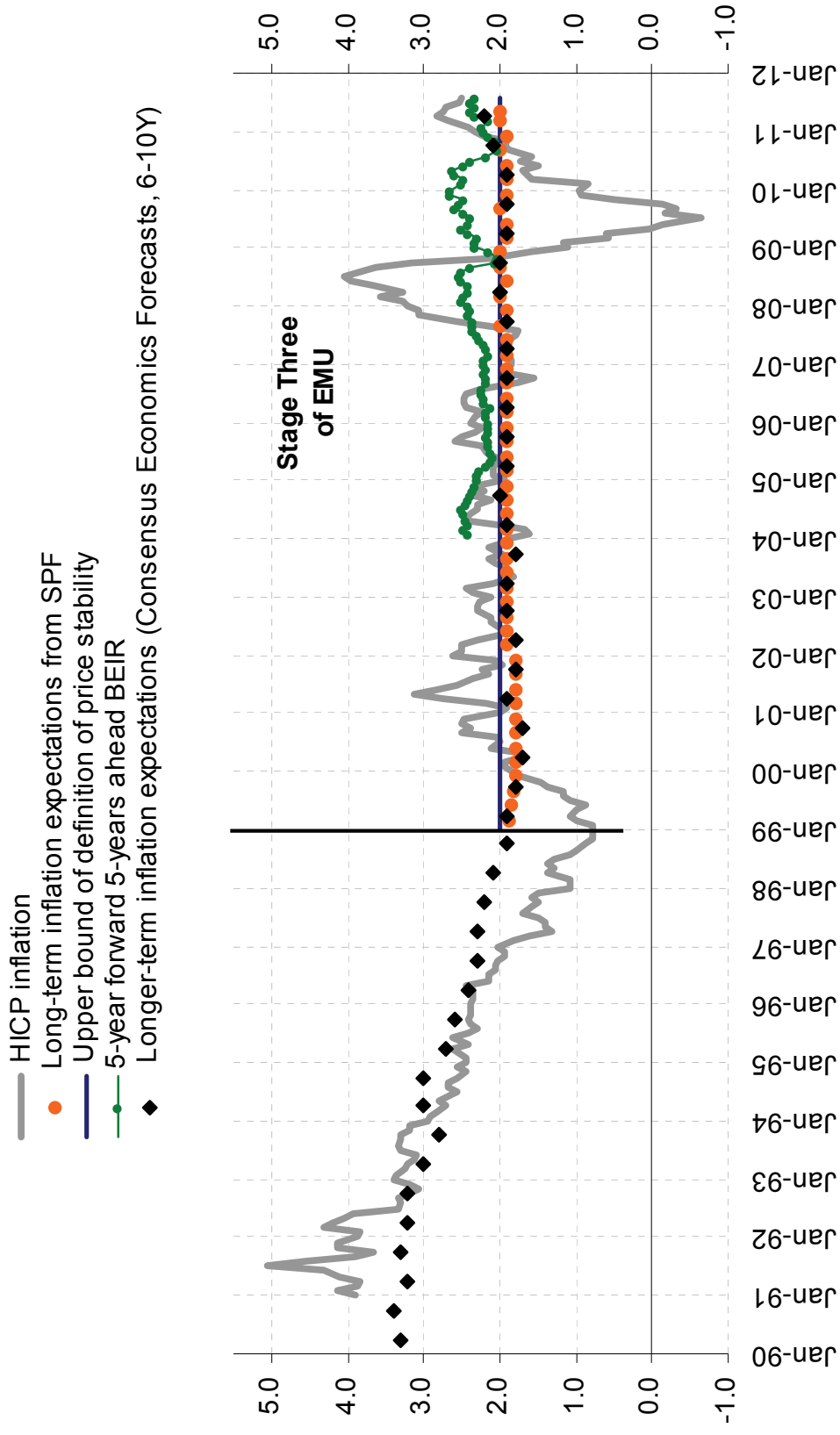
*Colloque Internationale*

*“La croissance de demain”*

*Paris, 12 Septembre 2011*

The views expressed are my own and not necessarily those of the ECB or its Governing Council. Thanks to many ECB colleagues for their input.

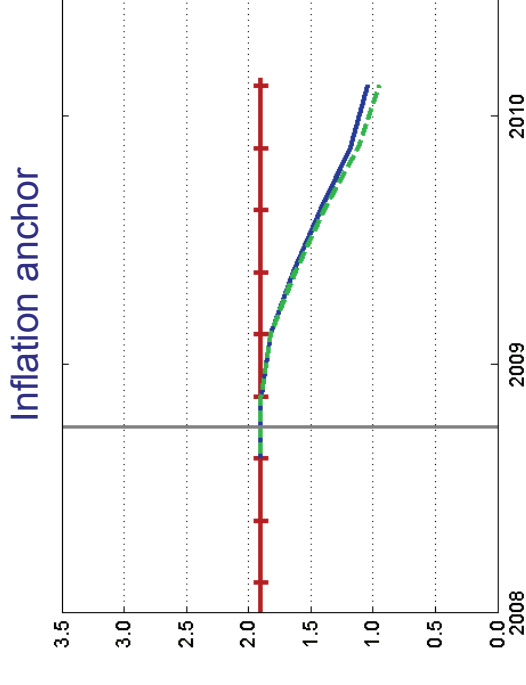
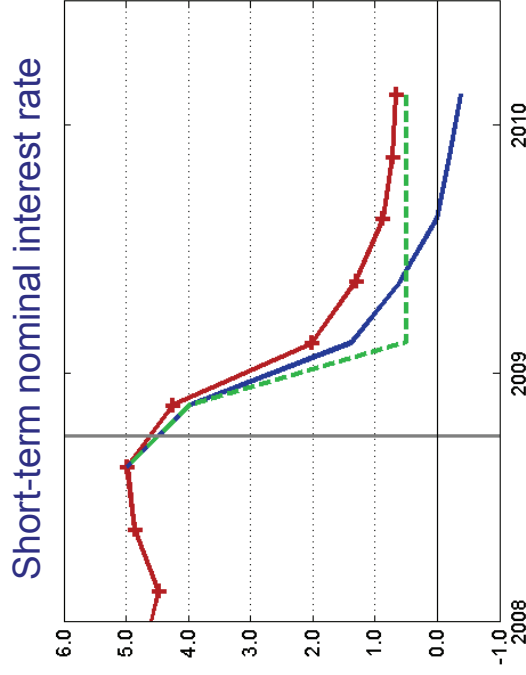
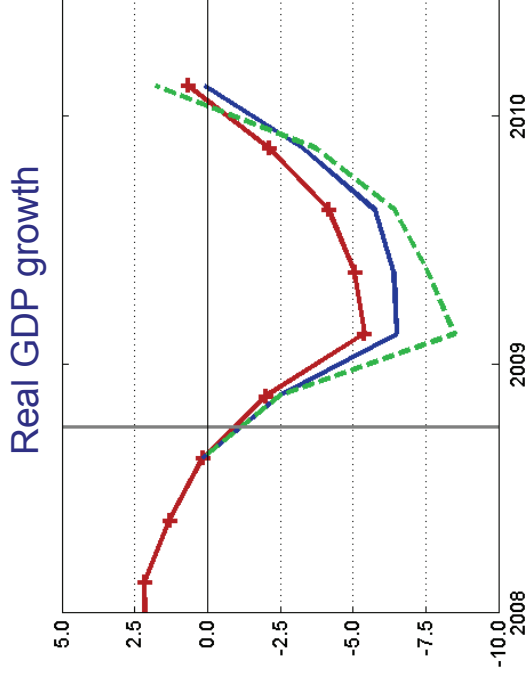
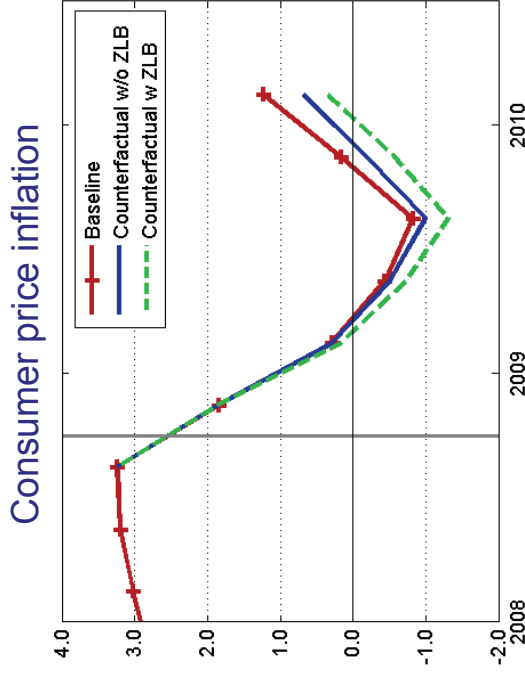
# Inflation and inflation expectations in the euro area



Sources: ECB, Eurostat and Consensus Economics

Forecast.

# The impact of a downward shift in the inflation anchor (%)



Note: Simulations with New Area Wide Model (NAWM). See Christoffel, Coenen and Warne (2008). In the baseline, the NAWM is used to replicate the actual euro area developments in HICP inflation, real GDP growth and the short-term euribor rate under the assumption of a constant inflation anchor. The counterfactuals assume that the inflation anchor responds to past inflation with and without a lower bound on the short-term interest rate.

# The ECB's response to the financial crisis

- Guided by a separation principle between:
  - Standard monetary policy:
    - Setting the policy-controlled interest rates with the purpose of maintaining price stability over the medium term.
  - Non-standard monetary policy measures:
    - Includes the FRFA policy, changes in the maturity structure, adjustments in collateral policy, the CBPP and the SMP.
    - Aimed at dysfunctioning financial markets with the goal of restoring a more appropriate transmission of monetary policy and/or avoiding systemic consequences that make monetary policy ineffective.
- Obvious complementarities, although the nature and relationship with standard monetary policy has changed in the three phases of the financial crisis.

# Chronology (2007-2011)

1. Financial “turmoil”  
2008 *August 2007 – mid-September*
  - *Tensions focused in money markets and ABS markets*
2. Financial “crisis”  
2010 *mid-September 2008 – May*
  - *Failure of Lehman*
  - *Seizing-up of money markets and significant disruption to other market segments*
3. Sovereign debt crisis  
– *May 2010*
  - *Seizing up of Greek sovereign debt market*

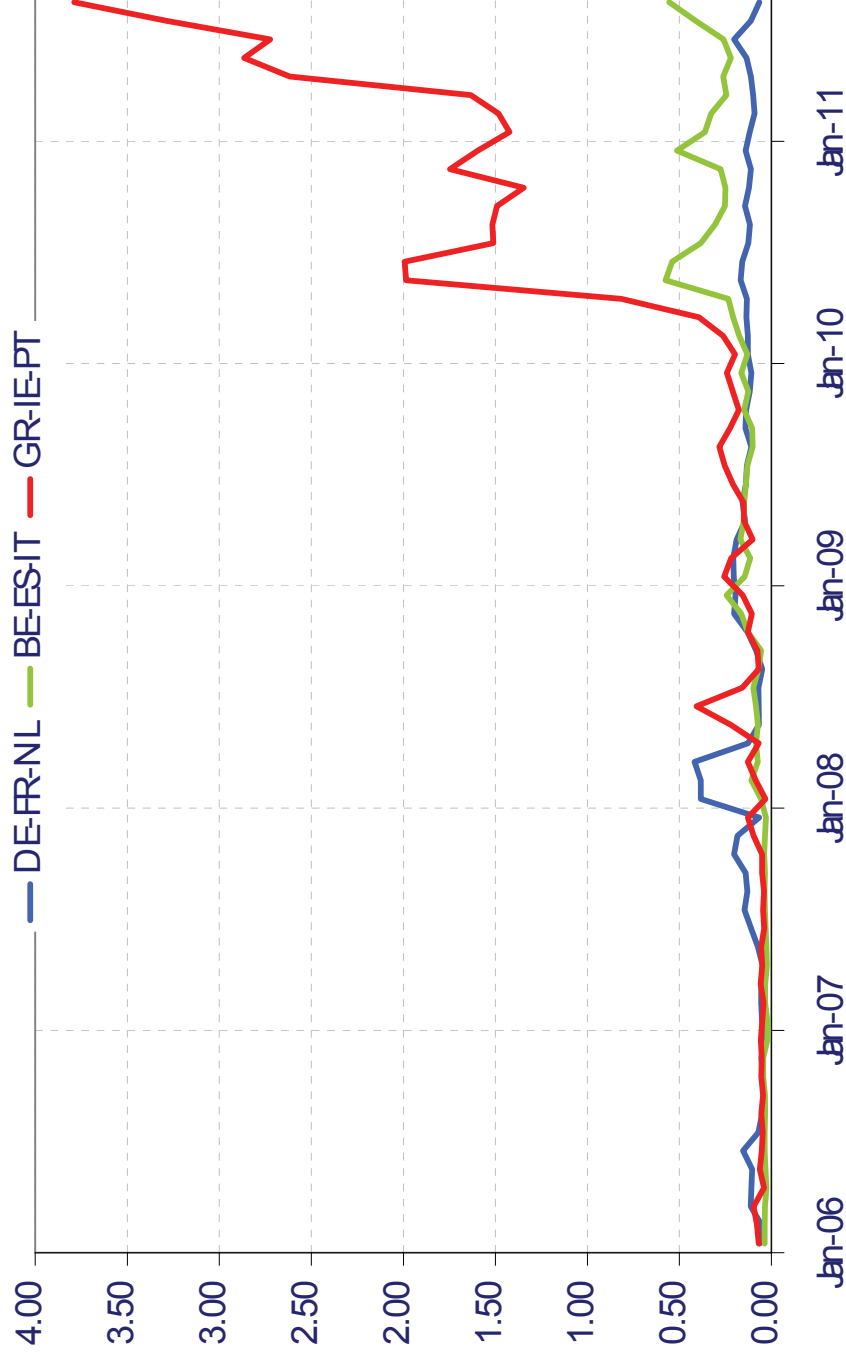
# The Securities Market Programme

- Targeted at dysfunctional bond markets
- Government bond markets play an important role for transmission:
  - Pricing and conditions of private-sector loans
  - Use of government bonds as collateral and in repo markets
  - Spill-overs on other financial markets

# The ECB's response to the financial crisis

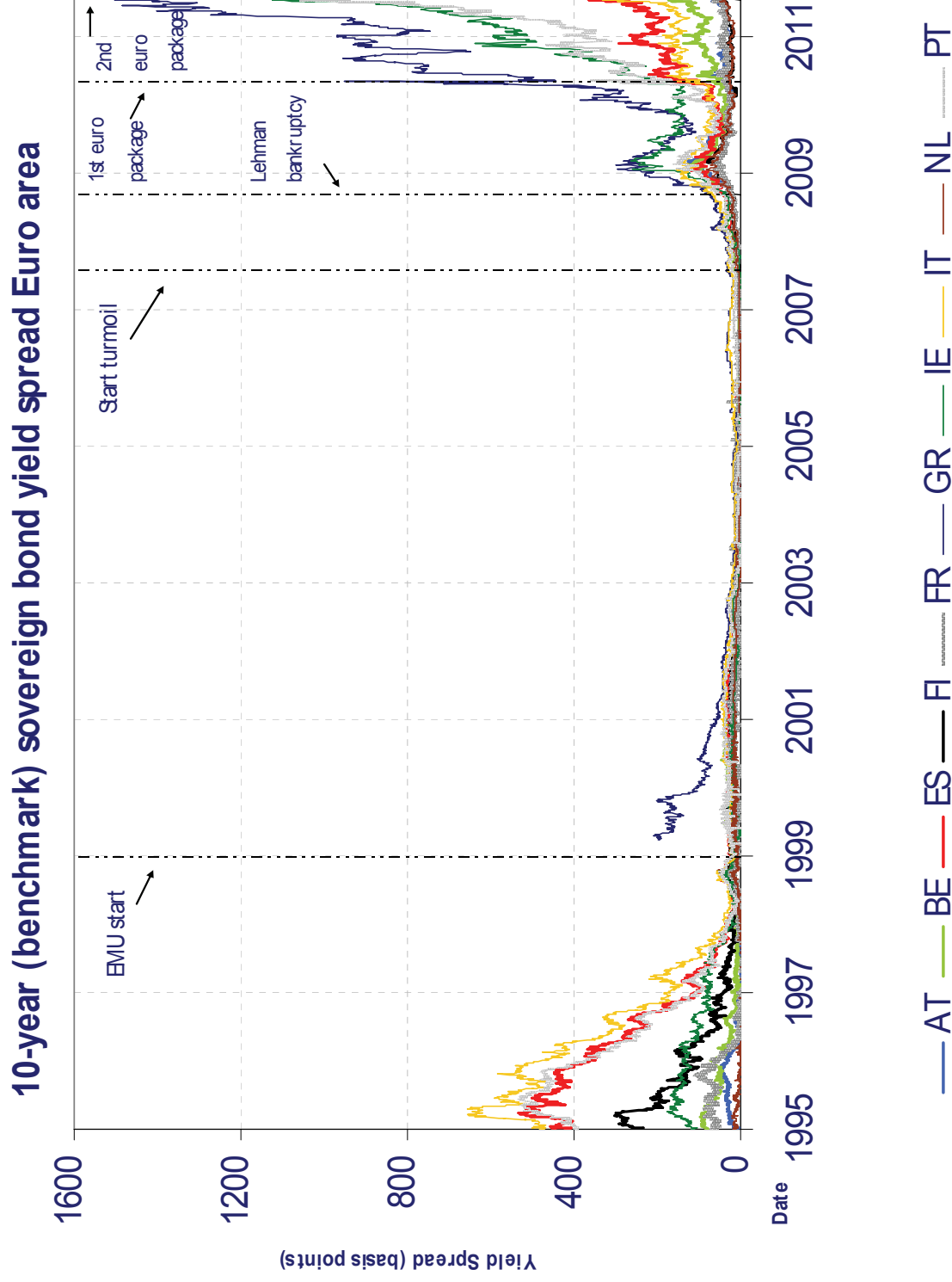
- By their nature, non-standard policies are temporary:
  - Exit will be conditioned by the state of the targeted financial market and the risk that it impairs the transmission of policy;
  - The temporary nature also serves at avoiding the risk that necessary balance sheet adjustments are delayed.

# One indicator of market malfunctioning: Bid/ask spreads





# Fundamentals or self-fulfilling speculative dynamics and contagion?



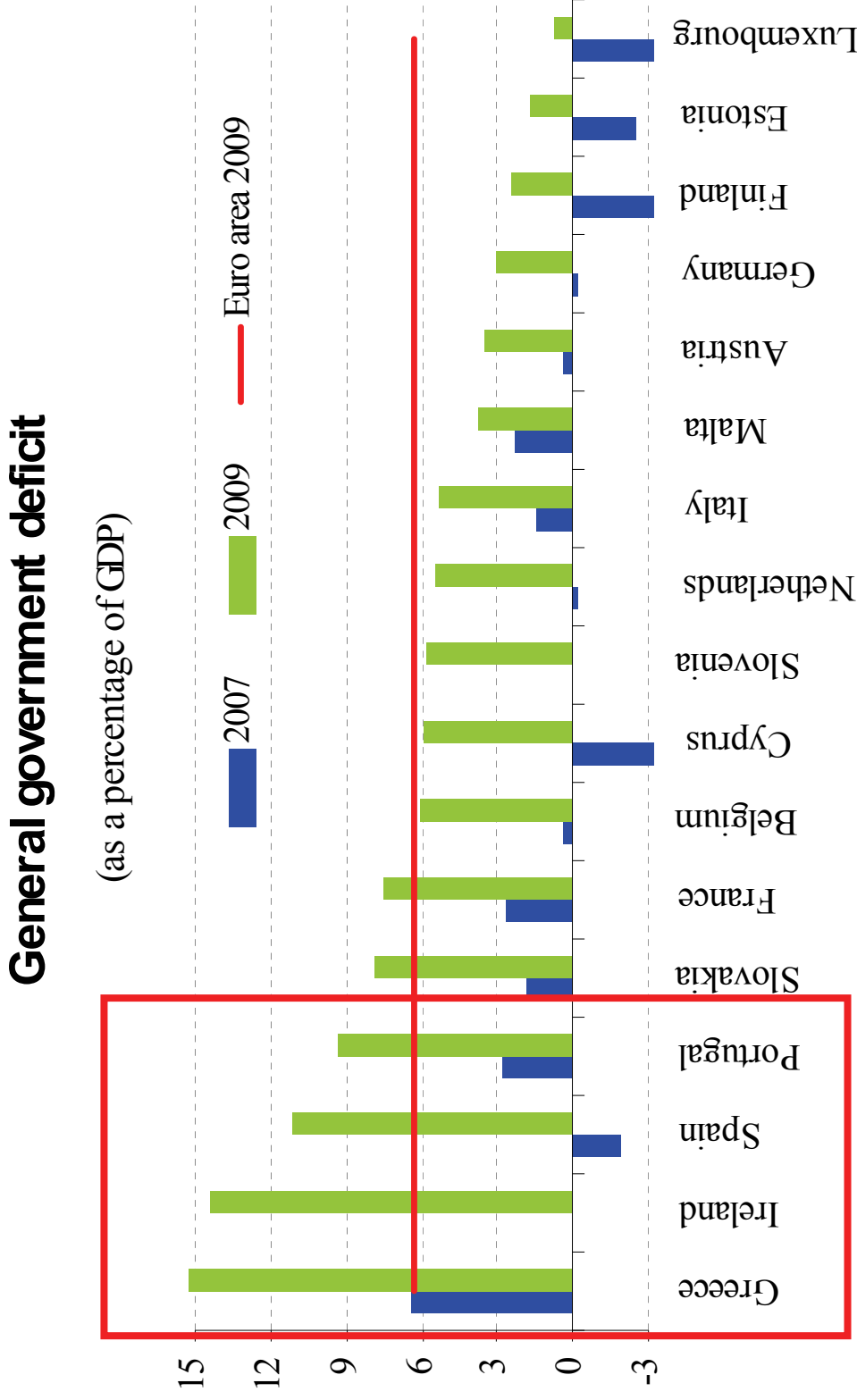
# Fundamentals or self-fulfilling speculative dynamics and contagion?

- Small literature in the 1990s (Italy) on speculative attacks on government debt:
  - Alesina, Prati and Tabellini (1992) and Giavazzi and Pagano (1992).
  - More recently: Arghyrou and Tsoukalas (2010) and De Grauwe (2011)
  - Akin to bank runs
- Likelihood of speculative attack depends on:
  - Initial debt and deficit levels
  - Interest and growth differential
  - Maturity structure of debt
  - State of the economy
- Alesina et al (1992) find evidence:
  - of a positive and significant correlation between spread and accumulation of debt, but only in countries with an unstable debt to GDP ratio;
  - that the premium is larger the shorter the maturity of the debt;
  - that the premium is positively correlated with the level of economic activity

# Large literature on euro area government spreads

- Pre-EMU:
  - Alesina et al (1992); Ehrmann et al (2004)
- Pre-crisis EMU:
  - Bernoth et al (2006), Codogno et al (2003), Faini (2006).
- Crisis EMU:
  - Haugh et al (2009), Sgherri et al (2009), Mody (2009), Schuknecht et al (2010), Manganelli and Wolswijk (2009), Attinasi et al (2009), Arghyrou and Kontinikas (2011), Lemke et al (2011)

# Government deficits in the euro area



Source: European Commission's economic forecast autumn 2010

# Arghyrou and Kontinikas (2011)

Table 4: Pre-crisis panel estimates, fixed effects

	(1)	(2)	(3)	(4)
$spread_{it-1}$	0.90 ***	0.89 ***	0.89 ***	0.86 ***
$q_{it}$	-0.08 **	-0.06	-0.06	-0.13 ***
$vin_t$	0.001	0.00	0.00	0.002
$liq_{it}$	-	0.21 *	0.21 *	0.36 **
$gind_{it}$	-	-	0.00	0.00
$bal_{it}$	-	-	-	-0.005 ***
$debt_{it}$	-	-	-	0.00
Test for FE	0.01	0.006	0.006	0.00
$Adj-R^2$	0.95	0.95	0.95	0.95

Note: Specification (1) corresponds to the baseline model during the pre-crisis period. Specification (2) augments the baseline model by the liquidity measure. Specifications (3) and (4) add output growth differentials and the expected fiscal position variables. The regression models are estimated over the time period 2001.01-2007.07. The panel members include Austria, Belgium, Finland, France, Greece, Ireland, Italy, Netherlands, Portugal and Spain. Fixed effects panel estimates with GLS cross-section weights in order to account for cross-sectional heteroskedasticity are shown. Test for Fixed Effects (FE) shows the  $p$ -value for the null hypothesis of redundant fixed effects. The asterisks \*\*\*, \*\*, \* indicate significance at the 1, 5, 10% level respectively.

# Arghyrou and Kontinikas (2011)

Table 6: Crisis panel estimates, fixed effects

	(1)	(2)	(3)	(4)
$spread_{it-1}$	0.73 ***	0.74 ***	0.74 ***	0.74 ***
$q_{it}$	0.76 **	0.80 **	0.92 **	0.95 **
$vin_t$	0.17 ***	0.16 ***	0.17 ***	0.15 ***
$liq_{it}$	-	-1.29	-1.30	-2.53 **
$gind_{it}$	-	-	0.00	-0.004
$bal_{it}$	-	-	-	-0.02 ***
$debt_{it}$	-	-	-	0.00
$spread_t^{GR}$	0.03 ***	0.04 ***	0.04 ***	0.04 ***
<b>Test for FE</b>	0.00	0.00	0.00	0.00
$Adj-R^2$	0.94	0.94	0.95	0.95

Note: Specification (1) corresponds to the baseline model during the crisis period. Specification (2) augments the baseline model by the liquidity measure. Specifications (3) and (4) further add output growth differentials and the expected fiscal position variables. The regression models (1) and (2) are estimated over the time period 2007.08-2010.02, while the end of the sample period is 2010.01 in (3) and (4). The panel members include Austria, Belgium, Finland, France, Ireland, Italy, Netherlands, Portugal and Spain. Fixed effects panel estimates with GLS cross-section weights in order to account for cross-sectional heteroskedasticity are shown. Test for Fixed Effects (FE) shows the  $p$ -value for the null hypothesis of redundant fixed effects. The asterisks \*\*\*, \*\*, \* indicate significance at the 1, 5, 10% level respectively.

# Ejsing, Lemke and Margaritov (2011)

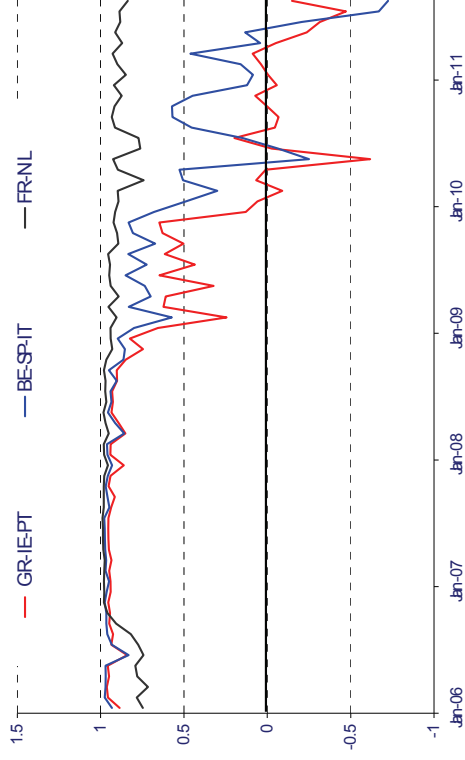
	BE		ES		GR		IE		IT		PT	
	ML estim.	t stat.	ML estim.	t stat.	ML estim.	t stat.	ML estim.	t stat.	ML estim.	t stat.	ML estim.	t stat.
$\phi$	0.91	8.78	0.92	7.17	0.64	4.74	0.90	10.29	0.88	3.76	0.79	6.31
$\sigma_b$	0.25	5.44	0.58	7.92	1.63	4.35	0.90	6.87	0.27	4.91	0.53	5.05
$\sigma_\mu$	0.46	6.47	0.72	6.75	0.80	6.33	1.03	6.84	0.33	5.49	0.47	6.89
$\sigma_a$	0.52	5.73	0.09	4.89	0.94	5.16	0.07	4.89	0.18	5.08	0.39	4.87
$\sigma_f$	0.10	4.79	0.15	5.54	0.29	6.15	0.17	4.39	0.28	6.91	0.20	6.50
$\gamma_0$	2.79	2.05	2.02	1.19	13.76	2.51	2.00	1.05	6.76	2.47	1.39	0.70
$\rho$	0.60	7.84	0.74	7.26	0.54	6.67	0.72	7.27	0.54	7.03	0.68	7.07
$\gamma_{1,Isq}$	0.28	4.68	0.20	4.66	0.55	5.69	0.19	3.36	0.37	6.16	0.25	4.71
$\gamma_{1,Risk}$	2.82	3.53	1.33	1.83	3.52	3.43	3.26	3.04	3.35	3.39	2.46	2.75
$\gamma_{1,GDP}$	-0.41	-0.51	-0.65	-0.95	-2.60	-1.88	-0.51	-1.09	-2.67	-2.73	0.00	0.00
$\gamma_2$	-1.40	-1.48	-0.44	-1.30	-0.40	-1.34	-0.25	-0.57	-1.47	-2.27	-0.34	-0.76
$\sigma_{z,0}$	3.25	14.14	2.91	14.83	3.63	11.73	4.12	15.00	3.35	14.48	3.90	15.05
$\sigma_{z,1}$	9.32	5.06	11.51	5.63	26.72	4.18	25.49	5.77	12.47	4.92	17.98	5.70
$\sigma_{z,2}$	28.44	3.54	65.19	3.93	283.50	3.69	117.05	3.78	46.36	3.54	103.36	3.76
$\gamma_2^*$	0.38	0.34	-0.28	-0.48	-8.44	-6.30	-3.12	-3.18	-1.95	-1.87	-2.48	-2.70
$\gamma_2 + \gamma_2^*$	-1.01	-1.37	-0.72	-1.42	-8.85	-6.53	-3.36	-3.48	-3.42	-2.76	-2.82	-3.40
$\gamma_2/(1-\rho)$	-3.48		-1.70		-0.88		-0.88		-3.21		-1.09	
$(\gamma_2 + \gamma_2^*)/(1-\rho)$	-2.52		-2.76		-19.35		-12.03		-7.47		-8.96	
likelihood	-470.48		-484.28		-515.36		-564.43		-484.77		-534.97	

Table 3: ML parameter estimates and corresponding t-statistics for specification with shift in deficit coefficient as of September 2008.

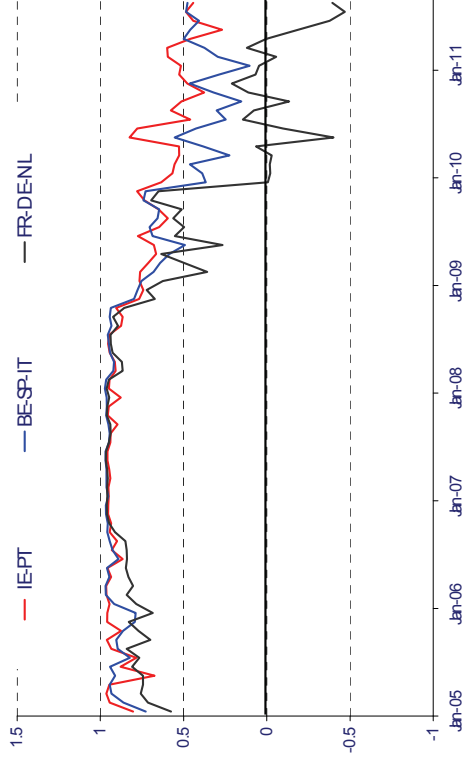
# Cross-country contagion

Dynamic Conditional Correlations (DCC): 10-Year Government Bond yields

With Germany



With Greece

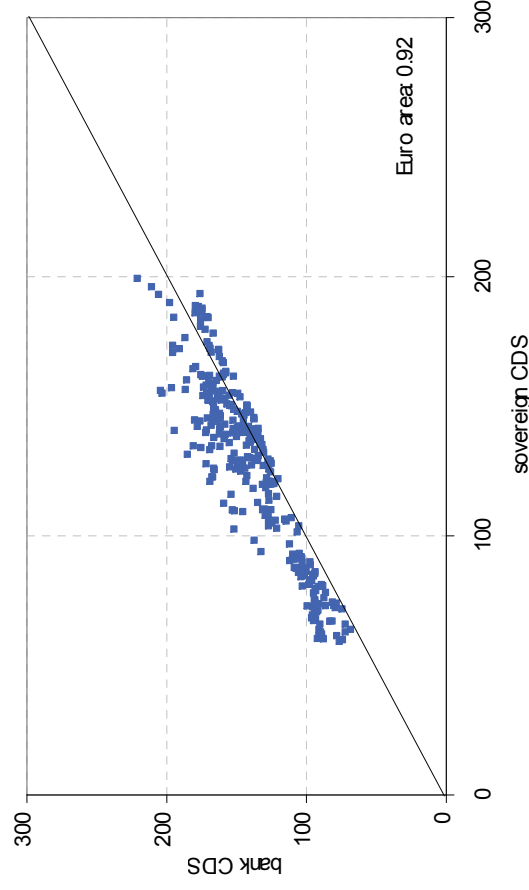


Source: Fabio Fornari; Bloomberg and ECB calculations

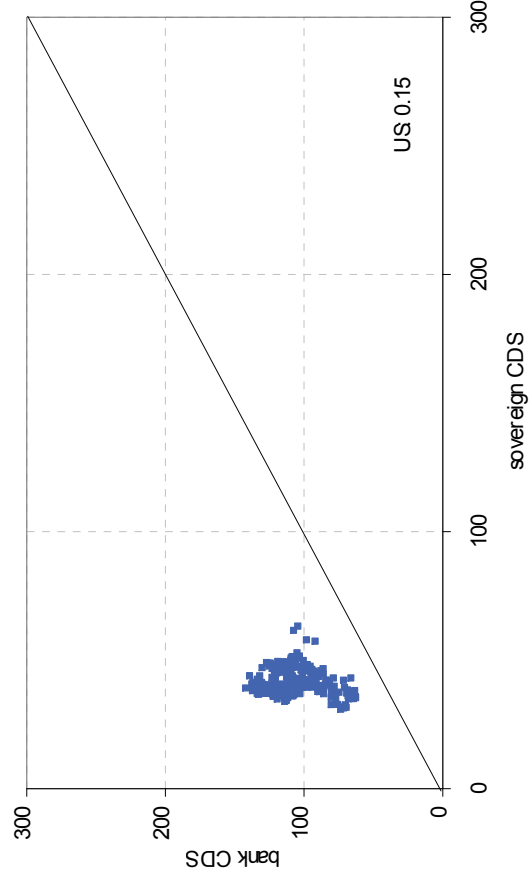


# Contagion from government to banking sector

Euro area



US



Source: Rodriguez-Palenzuela - Datastream and ECB calculations.  
Note: The chart presents sovereign CDS and median bank CDS for daily observations in the period 1.1.2010 – 18.03.2011, and the correlation coefficient.. Diagonal line at 45° .

# Conclusions

- The response of monetary policy to fiscal consolidation efforts needs to be conditioned on what these efforts imply for the inflation outlook over the medium term and the central bank's objective of maintaining price stability;
- By nature, non-standard monetary policy measures aiming at dysfunctioning financial markets are temporary; the temporary nature also serves at avoiding the risk that necessary balance sheet adjustments are delayed.
- Both fundamentals (unstable debt dynamics) and speculative dynamics and contagion are at play in the widening of the government bond spreads in the euro area. This implies that intervention needs to be conditioned on a credible implementation of consolidation programmes.

# Annex: General government deficit

(as a percentage of GDP)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Belgium	0.0	0.4	-0.1	-0.1	-0.3	-2.7	0.1	-0.3	-1.3	-5.9	-4.1	-3.7	-4.2
Germany	1.3	-2.8	-3.7	-4.0	-3.8	-3.3	-1.6	0.3	0.1	-3.0	-3.3	-2.0	-1.2
Estonia	-0.2	-0.1	0.3	1.7	1.6	1.6	2.4	2.5	-2.8	-1.7	0.1	-0.6	-2.4
Ireland	4.7	0.9	-0.4	0.4	1.4	1.6	2.9	0.1	-7.3	-14.3	-32.4	-10.5	-8.8
Greece	-3.7	-4.5	-4.8	-5.6	-7.5	-5.2	-5.7	-6.4	-9.8	-15.4	-10.5	-9.5	-9.3
Spain	-1.0	-0.6	-0.5	-0.2	-0.3	1.0	2.0	1.9	-4.2	-11.1	-9.2	-6.3	-5.3
France	-1.5	-1.5	-3.1	-4.1	-3.6	-2.9	-2.3	-2.7	-3.3	-7.5	-7.0	-5.8	-5.3
Italy	-0.8	-3.1	-2.9	-3.5	-3.5	-4.3	-3.4	-1.5	-2.7	-5.4	-4.6	-4.0	-3.2
Cyprus	-2.3	-2.2	-4.4	-6.5	-4.1	-2.4	-1.2	3.4	0.9	-6.0	-5.3	-5.1	-4.9
Luxembourg	6.0	6.1	2.1	0.5	-1.1	0.0	1.4	3.7	3.0	-0.9	-1.7	-1.0	-1.1
Malta	-6.2	-6.4	-5.5	-9.9	-4.7	-2.9	-2.8	-2.4	-4.5	-3.7	-3.6	-3.0	-3.0
Netherlands	2.0	-0.2	-2.1	-3.1	-1.7	-0.3	0.5	0.2	0.6	-5.5	-5.4	-3.7	-2.3
Austria	-1.7	0.0	-0.7	-1.5	-4.5	-1.7	-1.6	-0.9	-0.9	-4.1	-4.6	-3.7	-3.3
Portugal	-2.9	-4.3	-2.9	-3.0	-3.4	-5.9	-4.1	-3.1	-3.5	-10.1	-9.1	-5.9	-4.5
Slovenia	-3.7	-4.0	-2.5	-2.7	-2.3	-1.5	-1.4	-0.1	-1.8	-6.0	-5.6	-5.8	-5.0
Slovakia	-12.3	-6.5	-8.2	-2.8	-2.4	-2.8	-3.2	-1.8	-2.1	-8.0	-7.9	-5.1	-4.6
Finland	6.8	5.0	4.0	2.4	2.3	2.7	4.0	5.2	4.2	-2.6	-2.5	-1.0	-0.7
Euro area	0.0	-1.9	-2.6	-3.1	-2.9	-2.5	-1.4	-0.7	-2.0	-6.3	-6.0	-4.3	-3.5

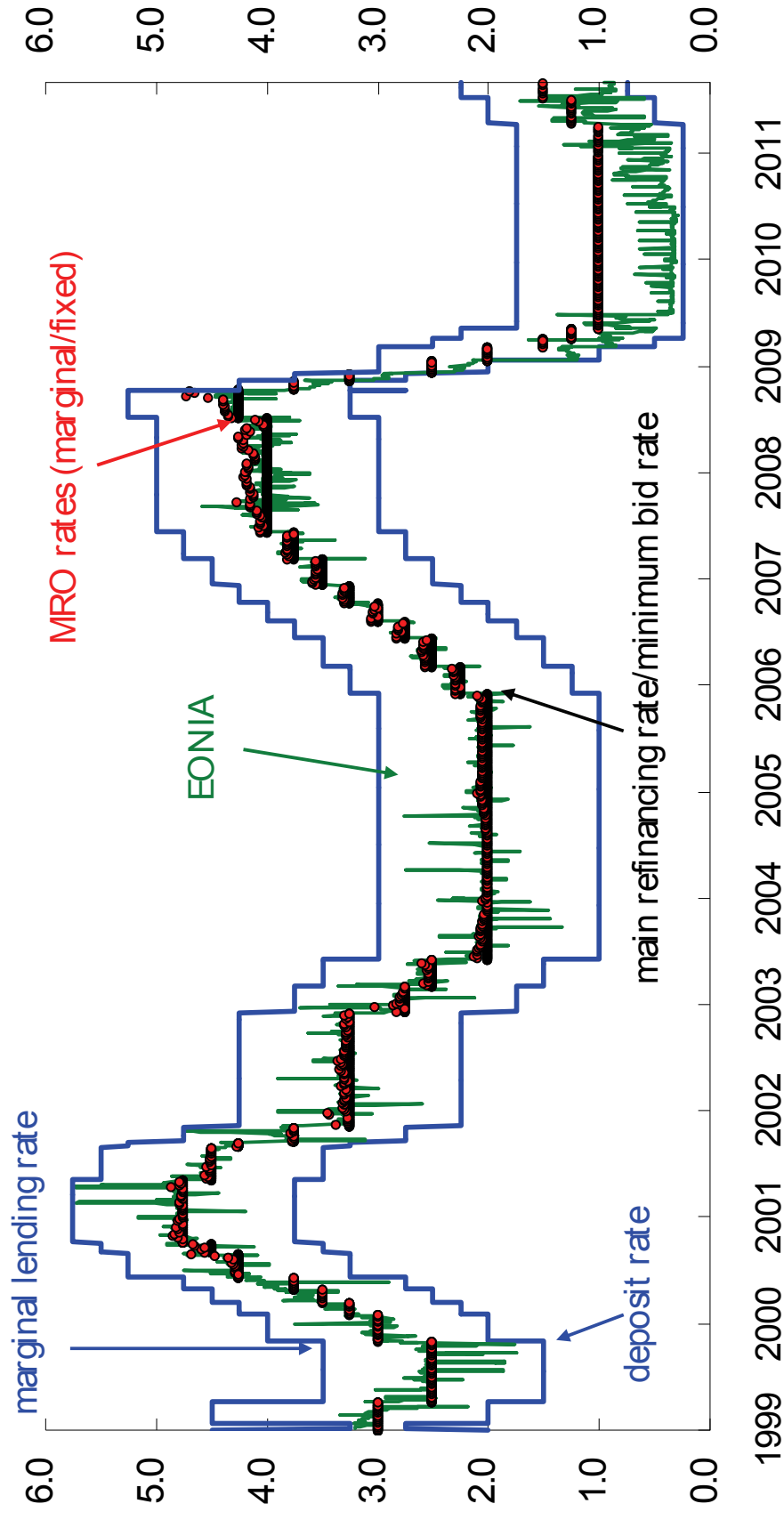
Sources: European Commission spring 2011 economic forecast.

# Annex: General government debt

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
(as a percentage of GDP)													
Belgium	107.9	106.6	103.5	98.5	94.2	92.1	88.1	84.2	89.6	96.2	96.8	97.0	97.5
Germany	59.7	58.8	60.4	63.9	65.8	68.0	67.6	64.9	66.3	73.5	83.2	82.4	81.1
Estonia	5.1	4.8	5.7	5.6	5.0	4.6	4.4	3.7	4.6	7.2	6.6	6.1	6.9
Ireland	37.8	35.5	32.1	30.9	29.6	27.4	24.8	25.0	44.4	65.6	96.2	112.0	117.9
Greece	103.4	103.7	101.7	97.4	98.9	100.3	106.1	105.4	110.7	127.1	142.8	157.7	166.1
Spain	59.3	55.5	52.5	48.7	46.2	43.0	39.6	36.1	39.8	53.3	60.1	68.1	71.0
France	57.3	56.9	58.8	62.9	64.9	66.4	63.7	63.9	67.7	78.3	81.7	84.7	86.8
Italy	109.2	108.8	105.7	104.4	103.9	105.9	106.6	103.6	106.3	116.1	119.0	120.3	119.8
Cyprus	48.7	52.1	64.6	68.9	70.2	69.1	64.6	58.3	48.3	58.0	60.8	62.3	64.3
Luxembourg	6.2	6.3	6.3	6.1	6.3	6.1	6.7	6.7	13.6	14.6	18.4	17.2	19.0
Malta	55.9	62.1	60.1	69.3	72.4	69.6	64.2	62.0	61.5	67.6	68.0	68.0	67.9
Netherlands	53.8	50.7	50.5	52.0	52.4	51.8	47.4	45.3	58.2	60.8	62.7	63.9	64.0
Austria	66.5	67.1	66.5	65.5	64.8	63.9	62.1	60.7	63.8	69.6	72.3	73.8	75.4
Portugal	48.5	51.2	53.8	55.9	57.6	62.8	63.9	68.3	71.6	83.0	93.0	101.7	107.4
Slovenia	26.4	26.7	27.9	27.3	27.4	26.7	26.4	23.1	21.9	35.2	38.0	42.8	46.0
Slovakia	50.3	48.9	43.4	42.4	41.5	34.2	30.5	29.6	27.8	35.4	41.0	44.8	46.8
Finland	43.8	42.5	41.5	44.5	44.4	41.7	39.7	35.2	34.1	43.8	48.4	50.6	52.2
Euro area	69.1	68.1	67.9	69.0	69.4	70.0	68.4	66.2	69.9	79.3	85.4	87.7	88.5

Sources: European Commission spring 2011 economic forecast.

# Short-term interest rates in the euro area



Sources: ECB. Note: Last observation refers to 31 August 2011.