BANK FOR INTERNATIONAL SETTLEMENTS

Monetary policy in the proximity of the euro area: What changes with negative euro area rates?

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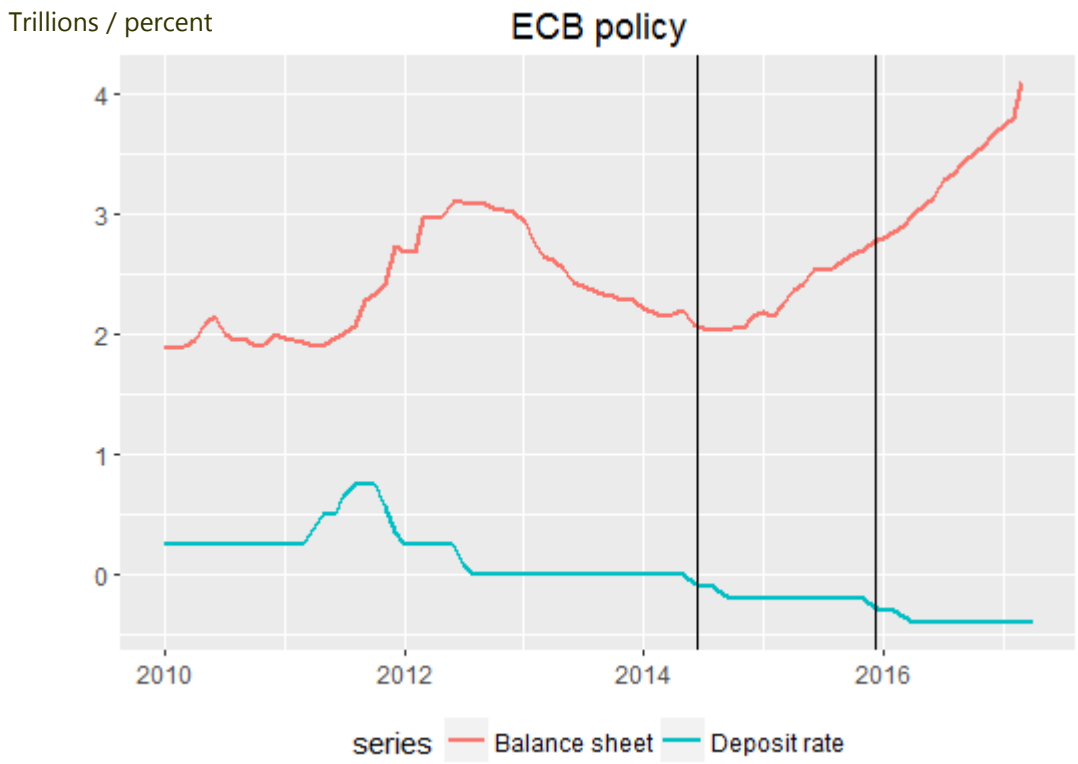
IMF-BoA conference on negative euro area rates

5 May 2017

What changes with negative rates?

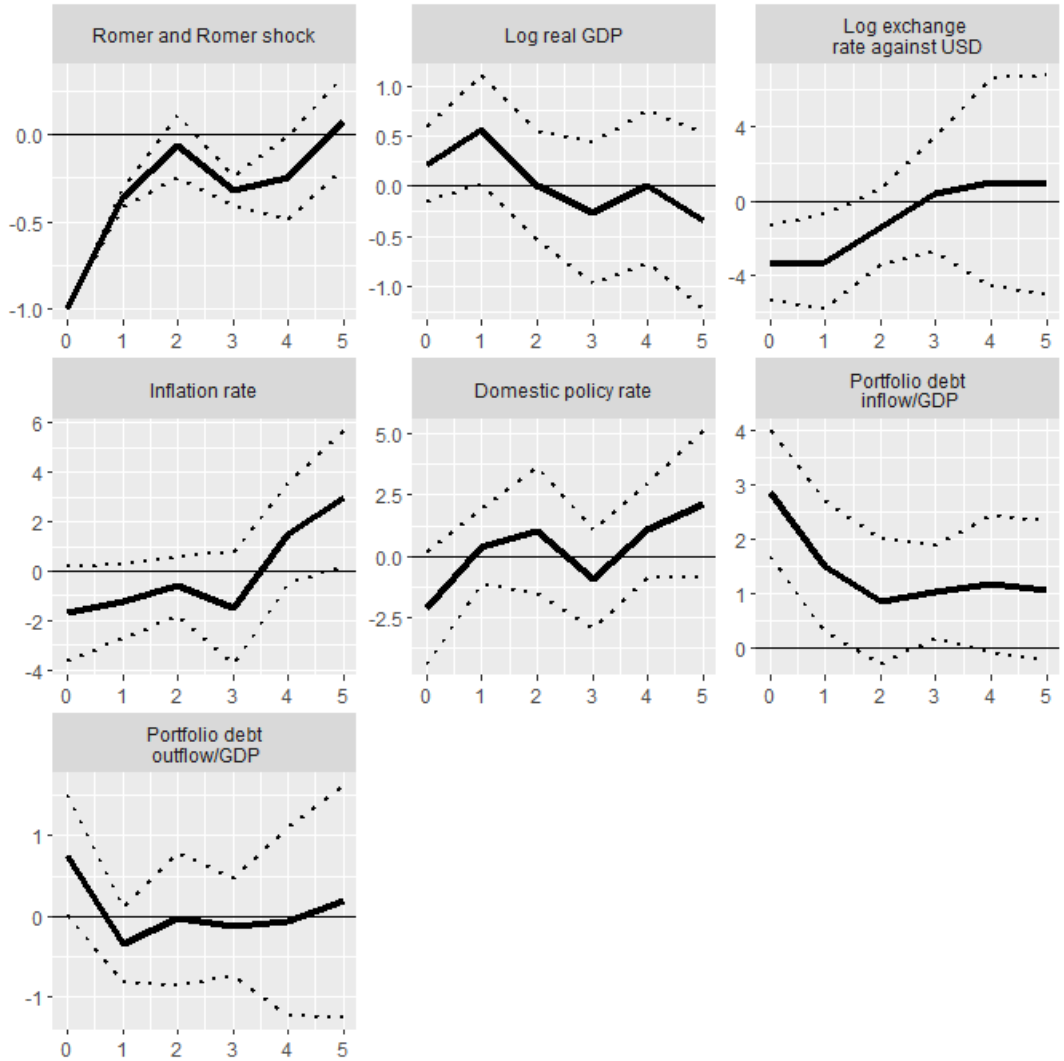
- Theory: Need to argue why transmission of spillovers change with policy rates at zero
- Empirics: Hard to isolate pure effect of negative rates from ECB balance sheet expansion



Monetary spillovers from core to emerging economies

- Banerjee, Devereux and Lombardo (2016)
  - "Self-oriented monetary policy, global financial markets and excess volatility of international capital flows"
- Spillover from US monetary policy to emerging economies (Asia and Latin America)
- Financial frictions magnify spillovers
  - "Double banking friction"
  - Foreign currency debt
- Little advantage of an inflation targeting rule over fixed exchange rate

What are "normal" spillovers from monetary policy

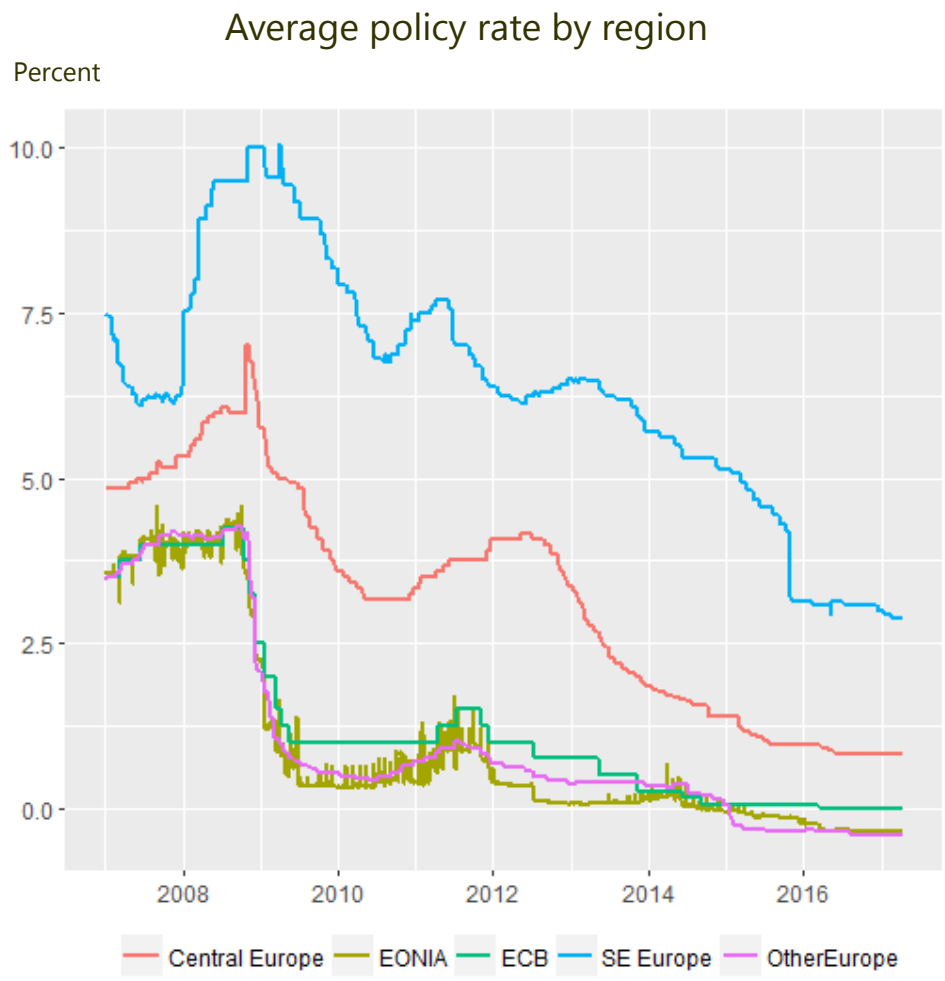


- Cut in US policy rates
- GDP ↑
- Exchange rate ↑
- Inflation↑
- Policy rates ↓
  - "Follow the centre country policy"
- Gross capital inflows ↑
- Gross capital outflows ↑
  - Banking sector interaction is important

What changes with negative rates?

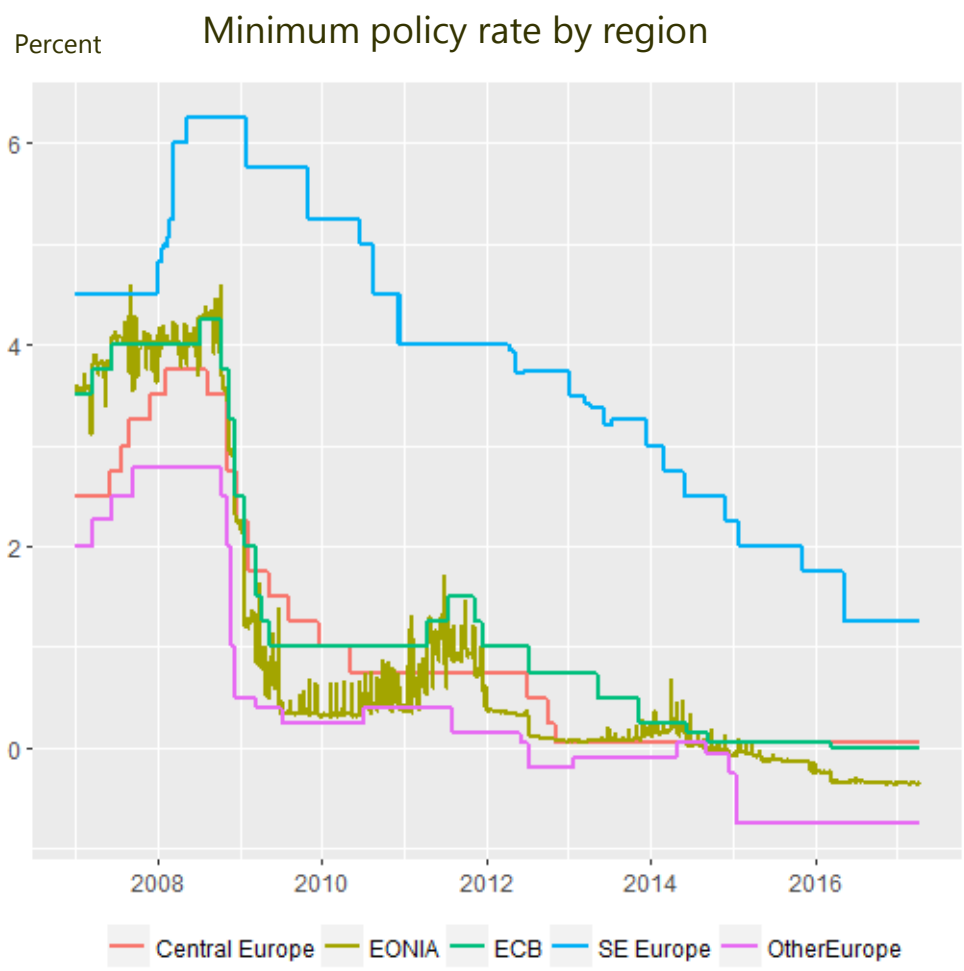
1. Zero / effective lower bound
2. Compression of banking sector profitability
   - Consequences for cross-border intermediation

Negative EA rates and the effective lower bound (1)



- Desire to follow ECB rate cuts forces some countries to hit the effective lower bound
- Average interest rates spreads of country groups broadly similar to 2007
  - SE Europe≈3pp
  - Central Europe≈1pp
  - Other Europe≈0pp
- Nothing changed with negative euro area rates?

Negative EA rates and the effective lower bound (2)



- Some countries more affected than others
- Switzerland
  - Spread in 2007≈-1.5pp
  - Spread in 2017≈-0.4pp
- Czech Republic
  - Spread in 2007≈-1%
  - Spread in 2017≈0.4%
- Attempts to use balance sheet policies to offset FX appreciation pressures
- SE Europe
  - No change
  - Still headroom above ZLB

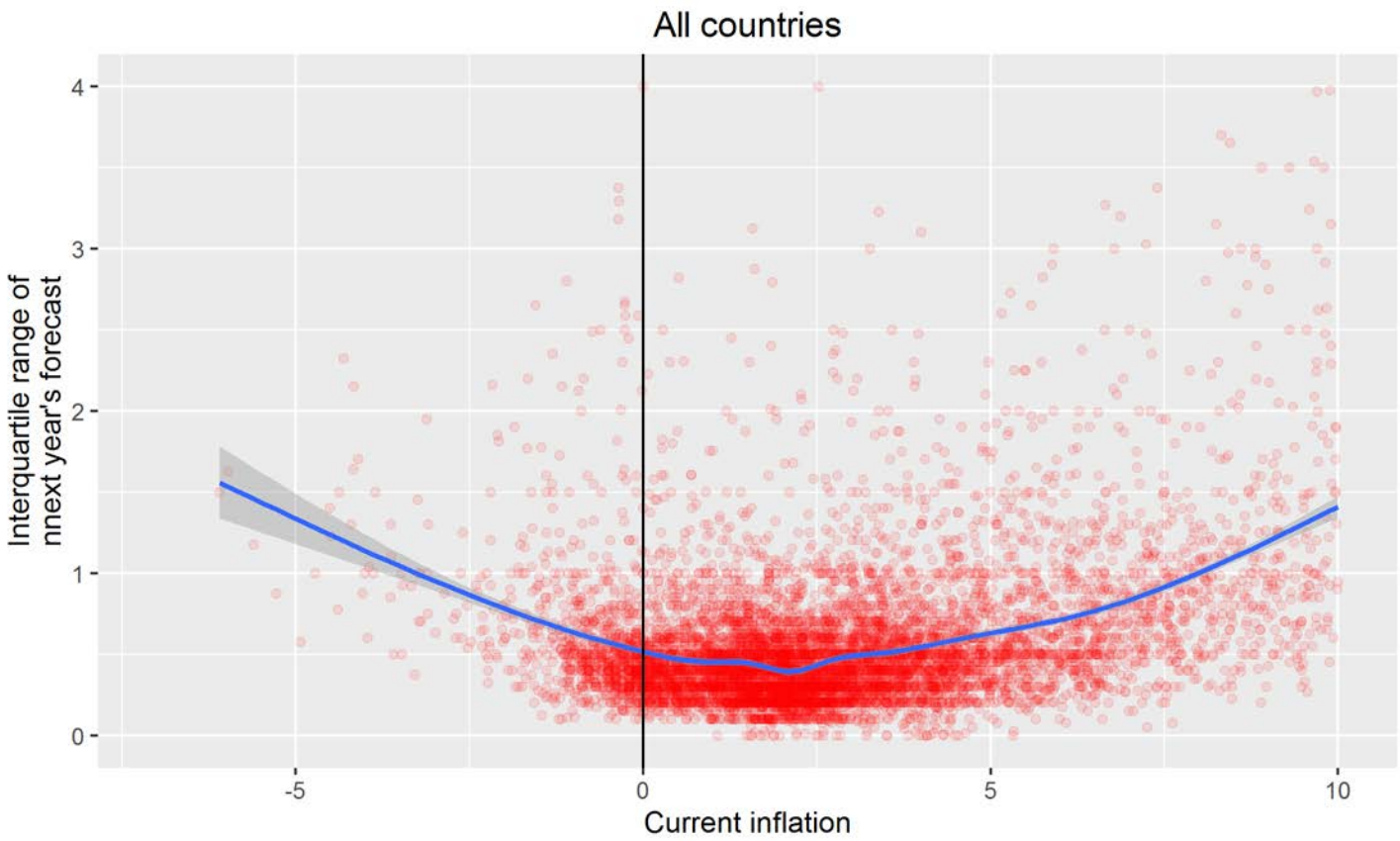
Influence of EA negative rates on inflation expectations

- Does heterogeneity in monetary policy space affect outcomes?

- $$\pi^{e}_{it+12} = \mathbf{0.24}\boldsymbol{\pi_{it}} - 0.08(defl_{it}) + \mathbf{0.22}(\boldsymbol{ECBneg_t}) - \mathbf{0.42}(\boldsymbol{defl_{it}} * \boldsymbol{ECBneg_t}) + \beta X_{it} + \varepsilon_{it}$$

- If country not in deflation
  - Negative ECB rates raises inflation expectations
- If country experiencing deflation
  - Negative ECB rates depresses inflation expectations

Costs from deflation?



- Dispersion of forecasts rise with deflation

Dispersion of forecasts: by type of deflation

By type of deflation — Table 5

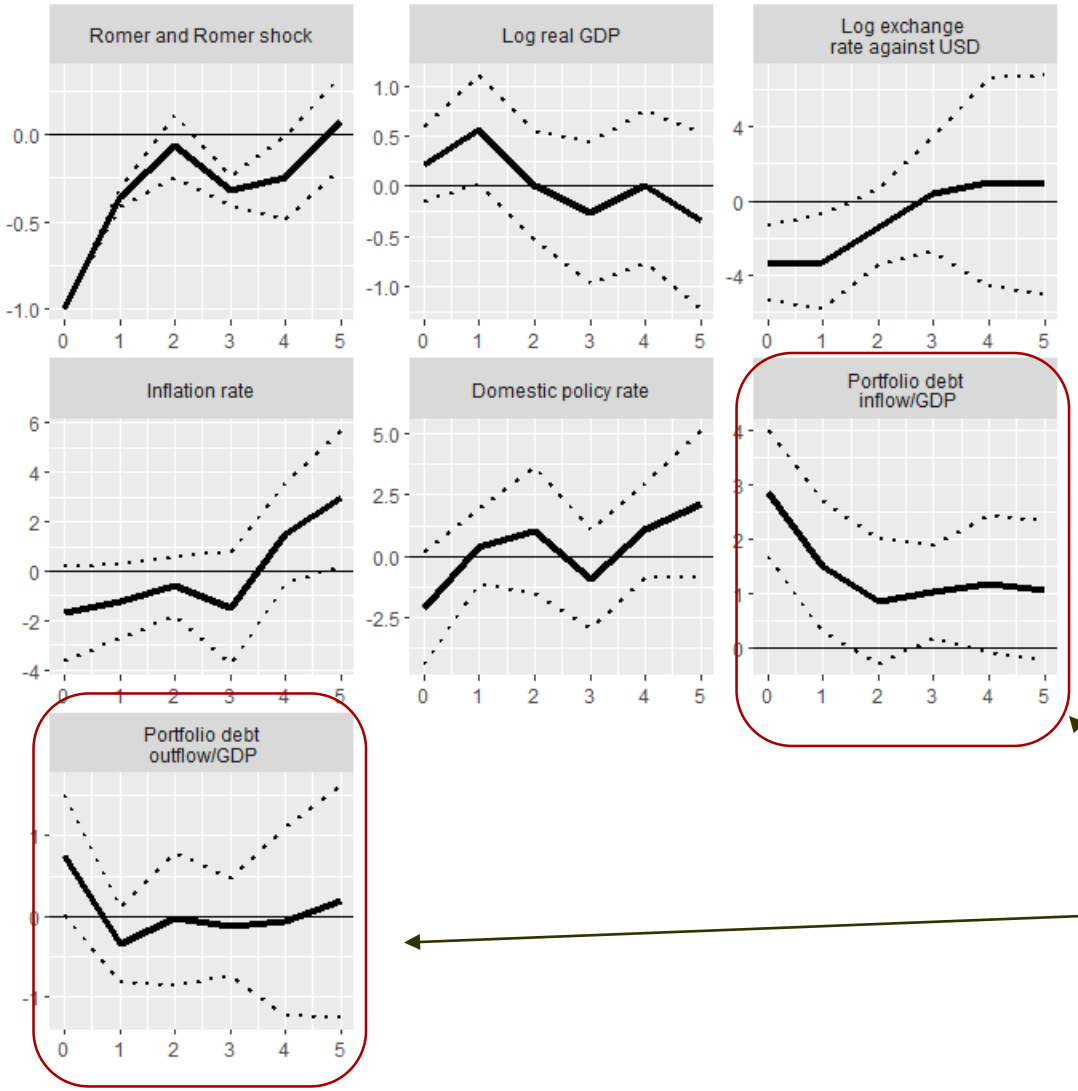
Variable	IT	Non-IT
$D_{c,t-1}^{defl\ credit}$	0.214*	-0.0446
	(0.104)	(0.0445)
$D_{c,t-1}^{defl\ neer}$	-0.0388	0.173*
	(0.0799)	(0.0904)
$D_{c,t-1}^{defl\ prop\ price}$	0.199	-0.0588
	(0.124)	(0.0554)
$D_{c,t-1}^{defl\ output\ gap}$	-0.192	0.0382
	(0.117)	(0.0504)
$E_{c,t}(\pi_{c,t+h})D_{c,t-1}^{High\ infl}$	0.0907***	0.131**
	(0.0256)	(0.0573)
$D_{c,t-1}^{High\ infl}$	-0.298***	-0.451**
	(0.0929)	(0.216)
Additional control variables	Yes	Yes
Obs	3,116	4,435
R-squared	0.485	0.661

Notes: Dependent variable is the interquartile range of expected inflation in the next calendar year, computed across forecasters. Robust standard errors clustered by country and time in parentheses. Columns (1) and (2) show the results for economies with high and low exchange rate stability, respectively; (3) and (5) show results for inflation targeting economies; (4) and (6) show results for non-inflation targeting economies. All models include country and time fixed effects.

Source: authors' calculations.

- Type of deflation matters
  - Deflations associated with high credit levels raise dispersion in IT economies
  - Deflations associated with exchange rate appreciation raise dispersion in non-IT economies

Role of financial frictions in "normal" spillovers (1)



- Monetary spillovers amplified by financial frictions

Role of financial frictions on "normal" spillovers (2)

- Banerjee et al (2016)
  - Monetary spillovers amplified by "double banking" financial friction
  - FX liabilities

1. Monetary loosening in centre raises, centre bank's net worth
2. Boosts capital inflows to EMEs from centre country banks
3. Also EME FX appreciation boost net worth of EME banks with FX liabilities
4. Reduces EME spreads
5. Boosts EME growth

Exchange rate appreciation positive for EME growth

Long-run elasticity of GDP growth with respect to real effective (REER) and debt-weighted (DWER) exchange rates

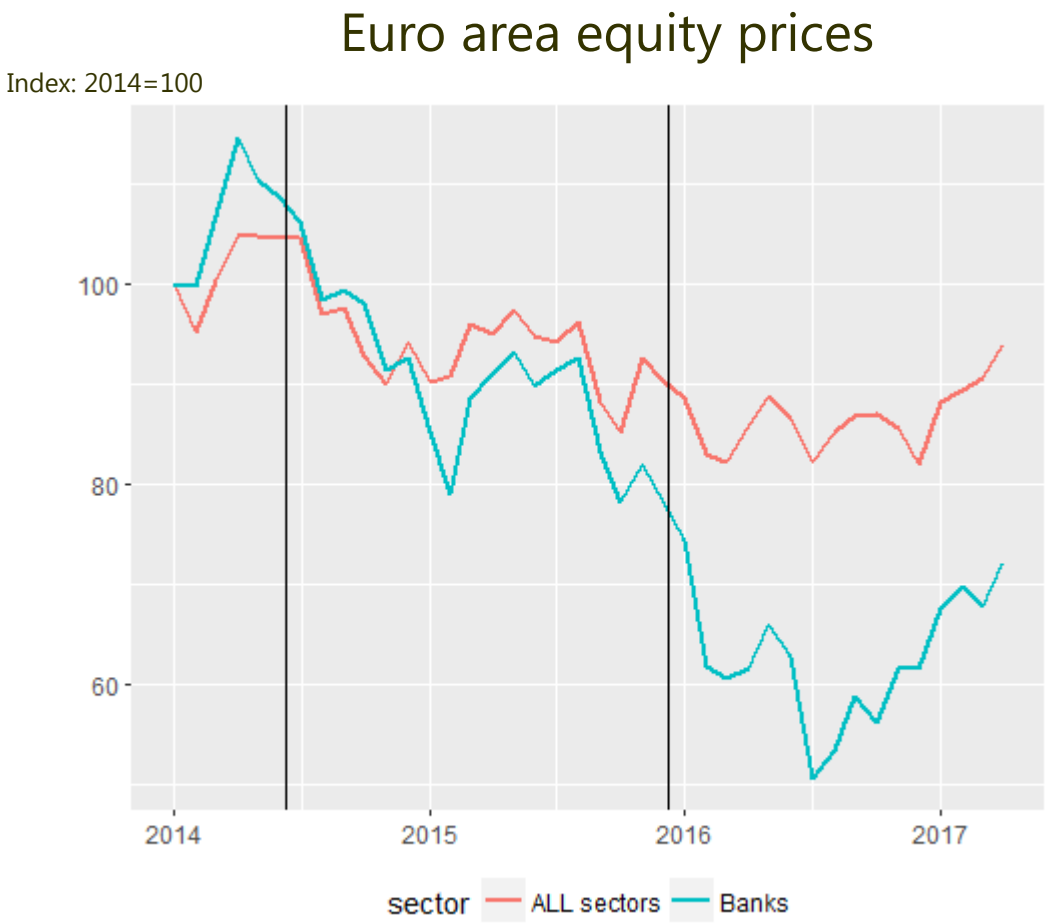
	EMEs			Advanced economies		
	Short-run	Long-run	Ratio: short-run to long-run	Short-run	Long-run	Ratio: short-run to long-run
REER	–0.103*** (0.017)	–0.1217*** (0.040)	0.85	–0.058 (0.034)	–0.104*** (0.044)	0.56
DWER	0.1322*** (0.025)	0.105*** (0.033)	1.26	0.026 (0.027)	0.032 (0.033)	.[1]
Observations		1055			1072	
R-squared[2]		0.92			0.32	

Robust standard errors (clustered by country) in parentheses; ***/**/* denotes results significant at the 1/5/10% level.

[1] Neither elasticity is statistically significant at 10%. [2] The higher R-squared for EMEs is a reflection of the higher explanatory power of the lagged dependent variable compared with advanced economies.

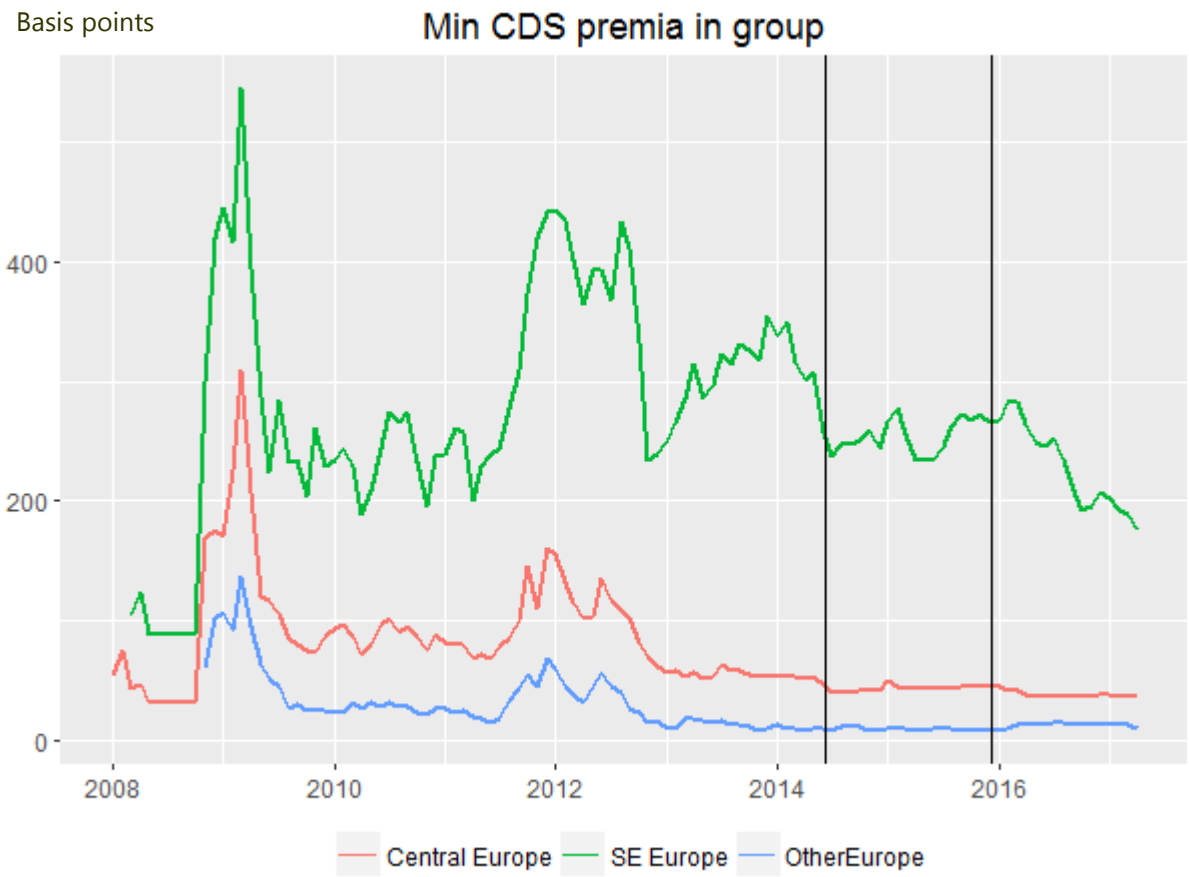
- In countries with high euro denominated liabilities, FX appreciation can be positive for growth

But negative rates squeezes EA bank profitability



- Lower banking sector net worth following negative rates
- Weaker cross border bank intermediated flows from EA to EA perimeter
- Weaker than "normal" increase in bank credit
- More flows through capital markets?
  - Market depth

Lower risk premia following negative EA rates



- Sovereign risk spread compression in central and SE Europe

Conclusion

- Does anything change with negative EA rates?
- Two possible channels
- Effective lower bound
  - If interest rates "close" to EA rates – friction from zero lower bound problem – exchange rate appreciation
  - If not, little change
- Bank profitability
  - Adverse effect of negative rates on EA banks
  - Weakens spillover through bank intermediated cross-border flows to riskier countries
  - Larger capital market spillovers?

EUROPEAN CENTRAL BANK

EUROSYSTEM

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European Central Bank

Negative interest rates and (other) non-conventional measures – Motivation and ECB experience

*Views expressed in this presentation are mine, and not necessarily the ones of the ECB

IMF Conference, Tirana, 4-5 May 2017

Part I:

Motivation and overview of accommodating ECB monetary policies

Why non-conventional monetary policy measures?

Lowering interest rates makes saving less attractive; induces investment and consumption. **Wicksellian arbitrage logic** provides basic idea:

if $i_t < E(r_t) + E(\pi_t)$ => inflationary impulse $\pi_t > E(\pi_t)$
if $i_t > E(r_t) + E(\pi_t)$ => disinflationary impulse $\pi_t < E(\pi_t)$

In recent years the following issues arose:

(I) **Low growth / low rate of return on capital, i.e. $E(r_t)$ low**

(II) **Inflation expectations $E(\pi_t)$ on a downward trend**

(III) **Increased credit and liquidity spread also affect firms' and households' funding costs missing in arbitrage equation above)**

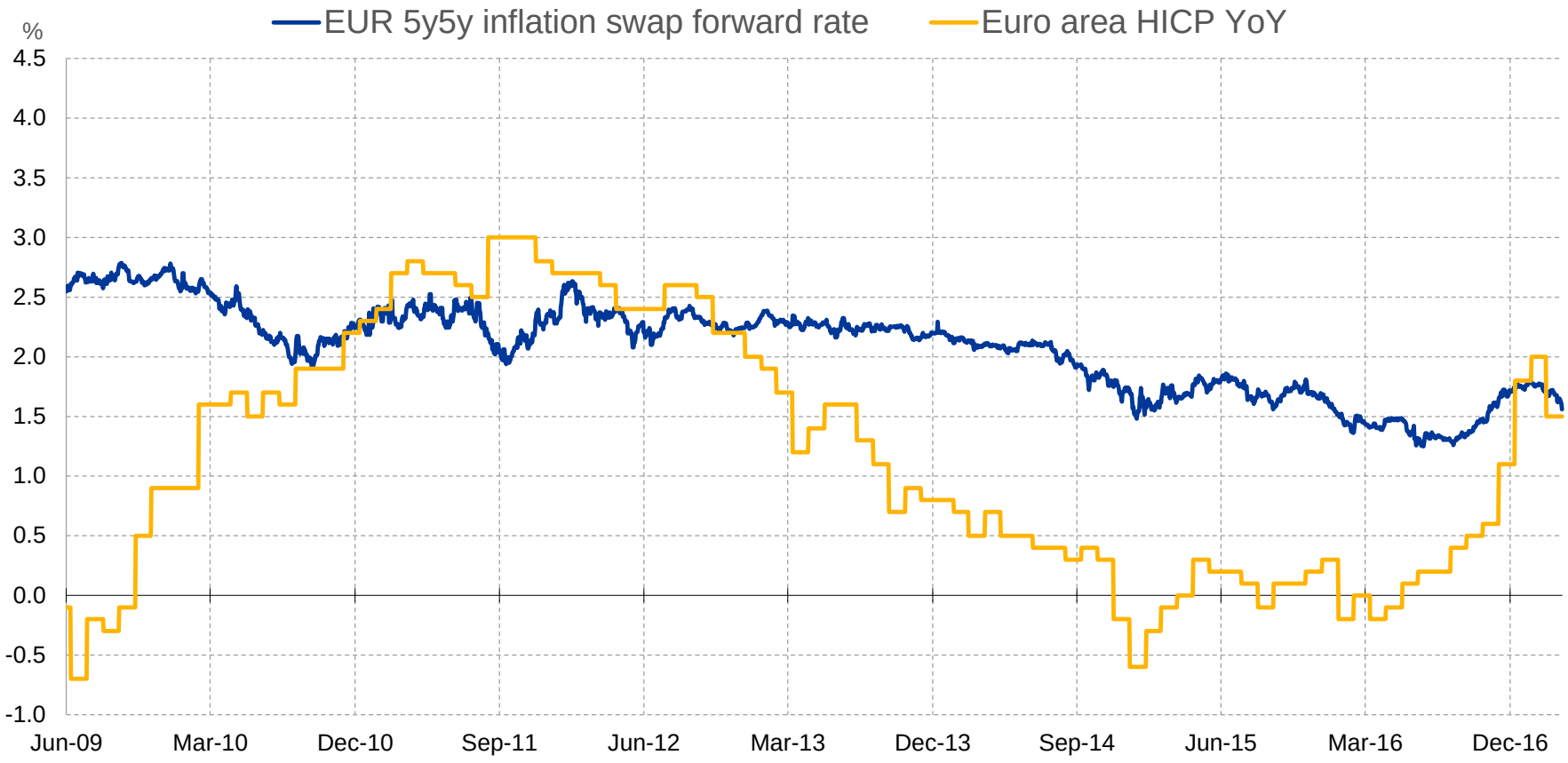
(IV) **(I) + (II) + (III) meets zero lower bound problem** => constraint on expansionary interest rate impulses

=> need to act forcefully, and in time, including through **unconventional monetary policy measures**: compress spreads (term, liquidity, credit) to reduce actual funding costs of the economy, thereby contribute to make monetary policy expansionary (prevent it to be contractionary)

Factors explaining low interest rates: (II) Inflation development

Eurozone HICP; 5Y5Y Inflation Swap Forward Rate

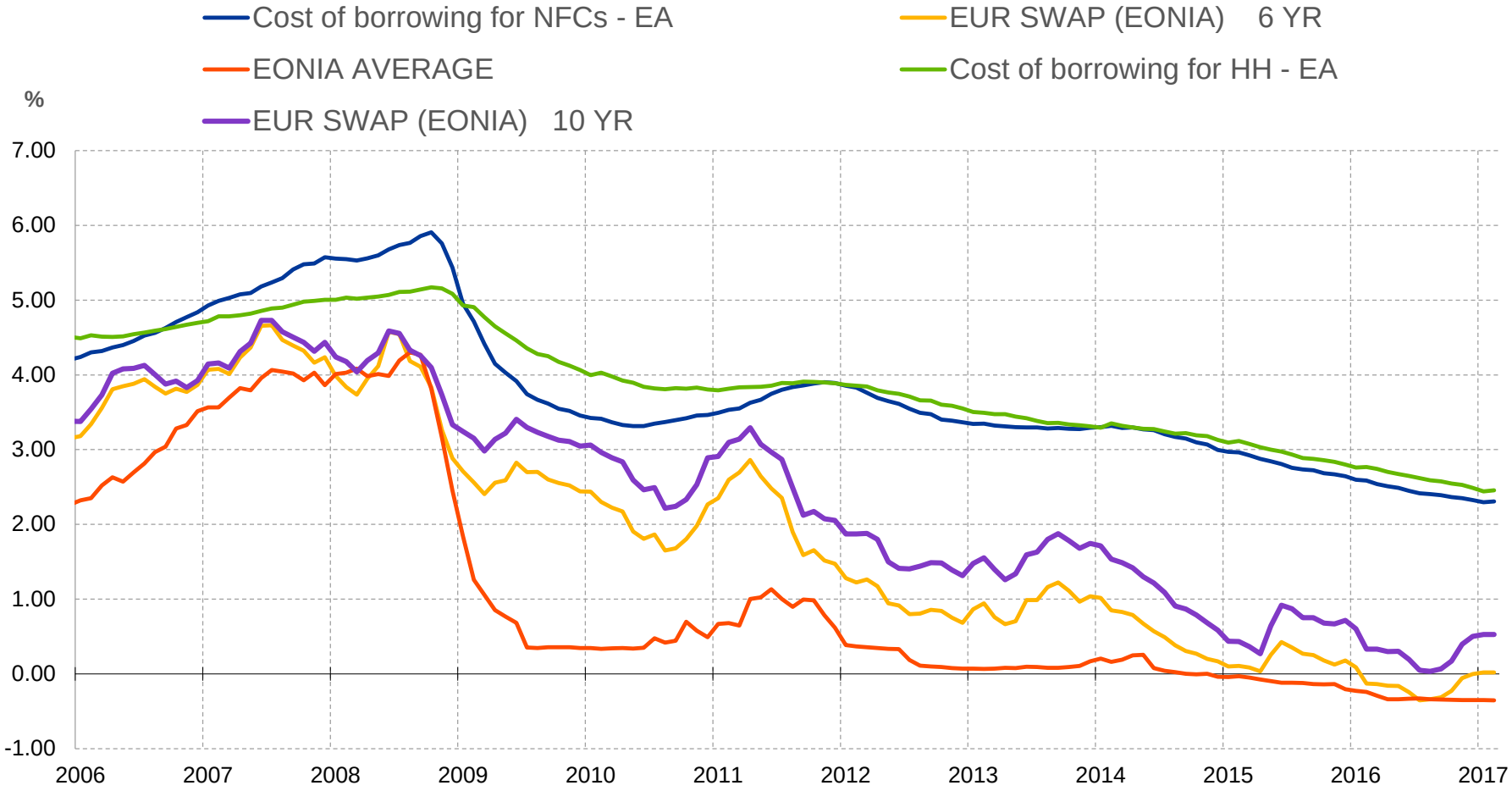
Low rates reduce neutral interest rate, and moreover create a need for an expansionary monetary impulse with i < i*



Sources: Bloomberg. Last observation on 31/03/2017

Factors explaining low rates: (iii) increased liquidity and credit spreads

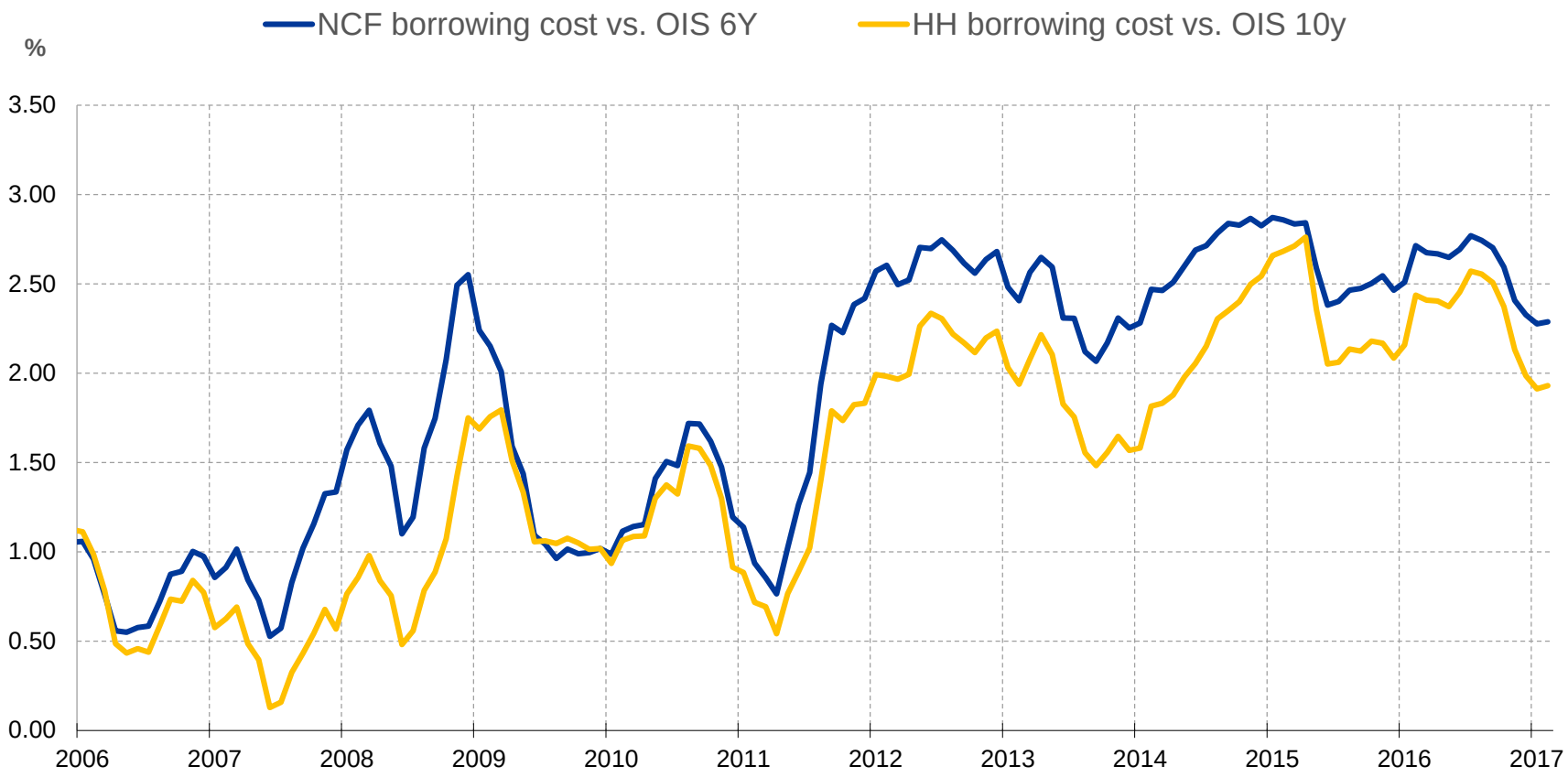
Composite indicator of the cost of borrowing for NFCs and households for house purchase



Souces: SDW, ECB staff calculations, Bloomberg. Last update 28/02/2017.

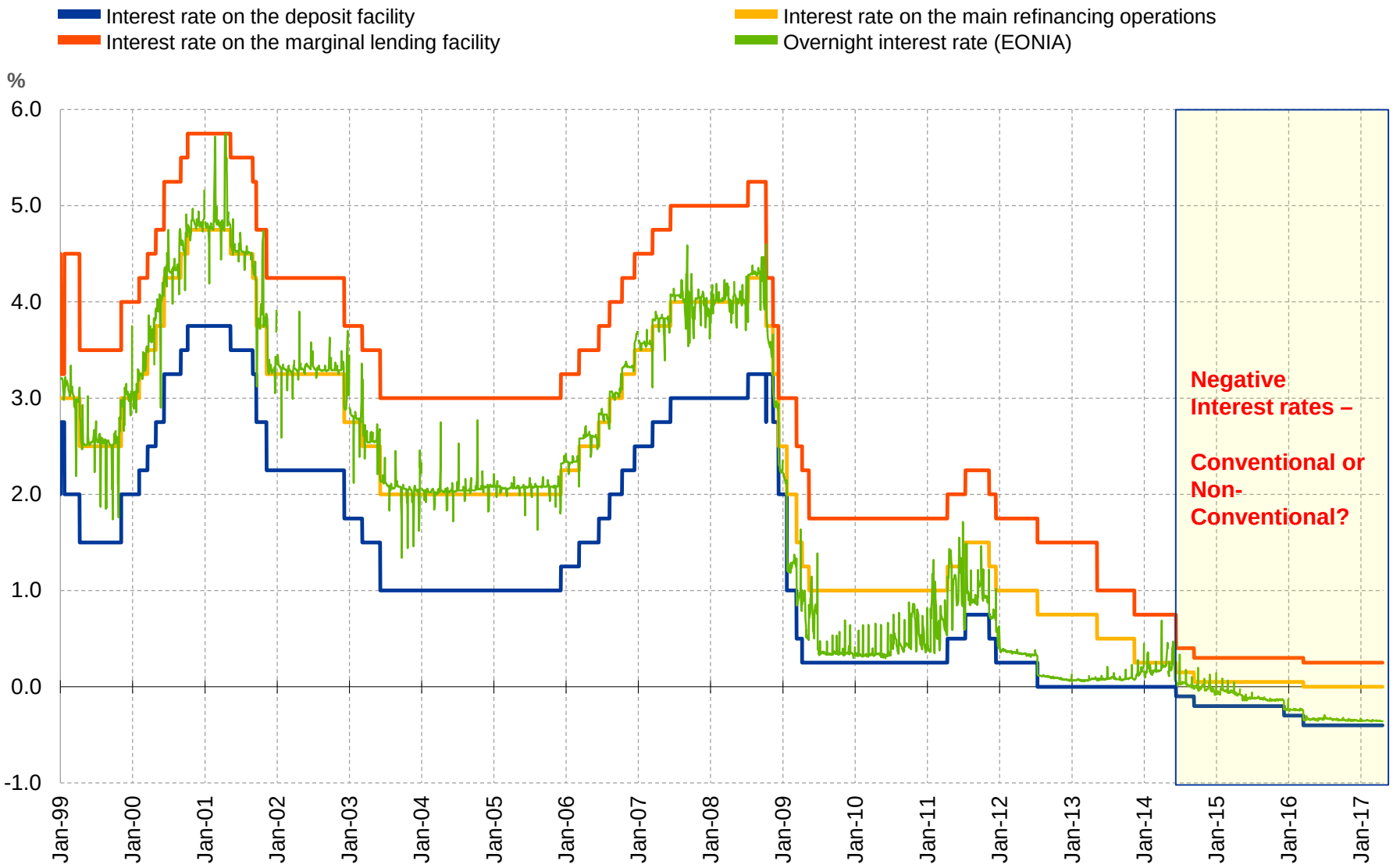
Factors explaining low interest rates: (liquidity and credit spreads

Borrowing costs spreads for HH and NFCs against OIS



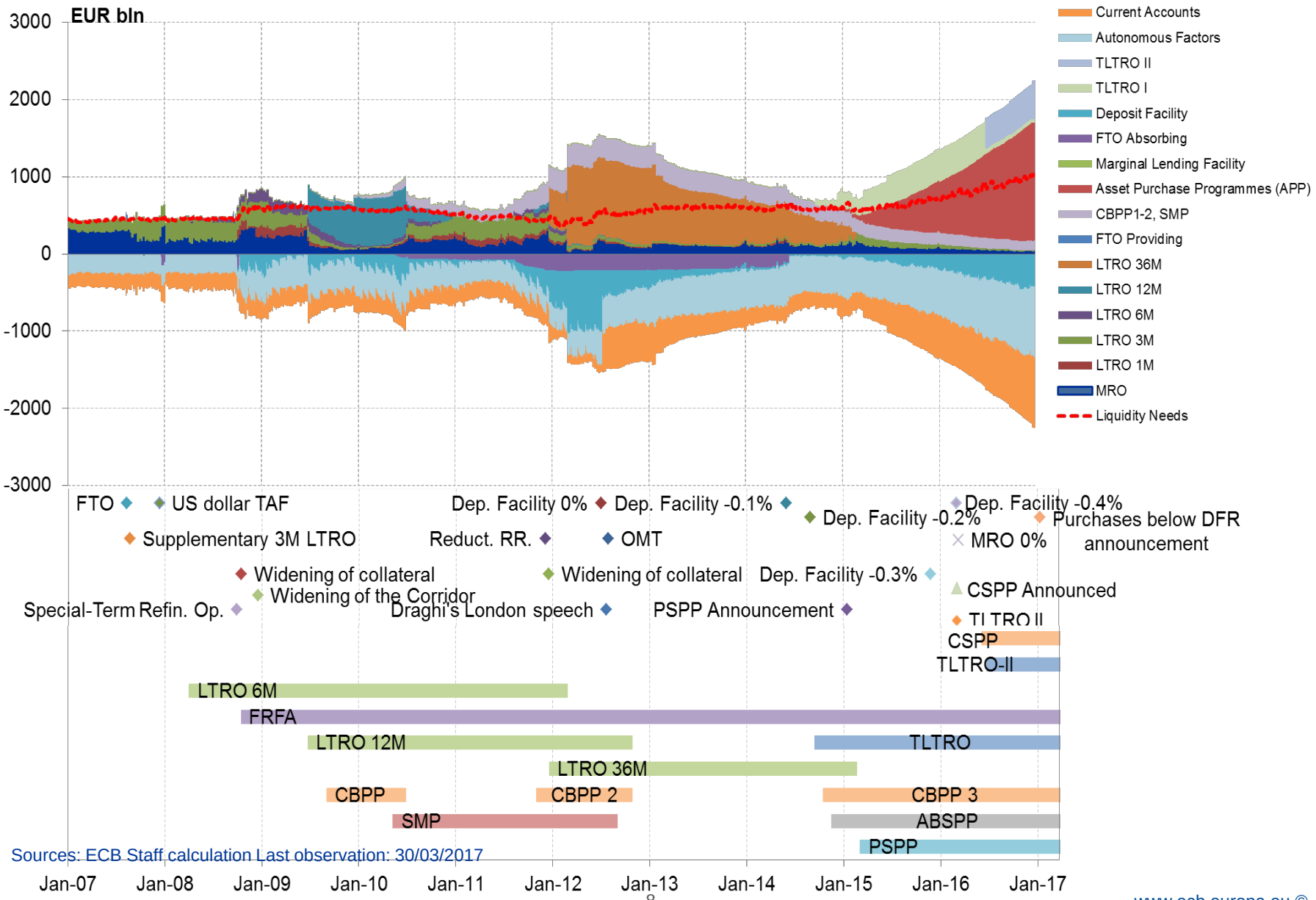
Souces: ECB data, Bloomberg. Last update: 28/02/2017.

Conventional policies: ECB interest rate corridor and EONIA since 1999



Sources: ECB Staff calculation Last observation: 24/04/2017

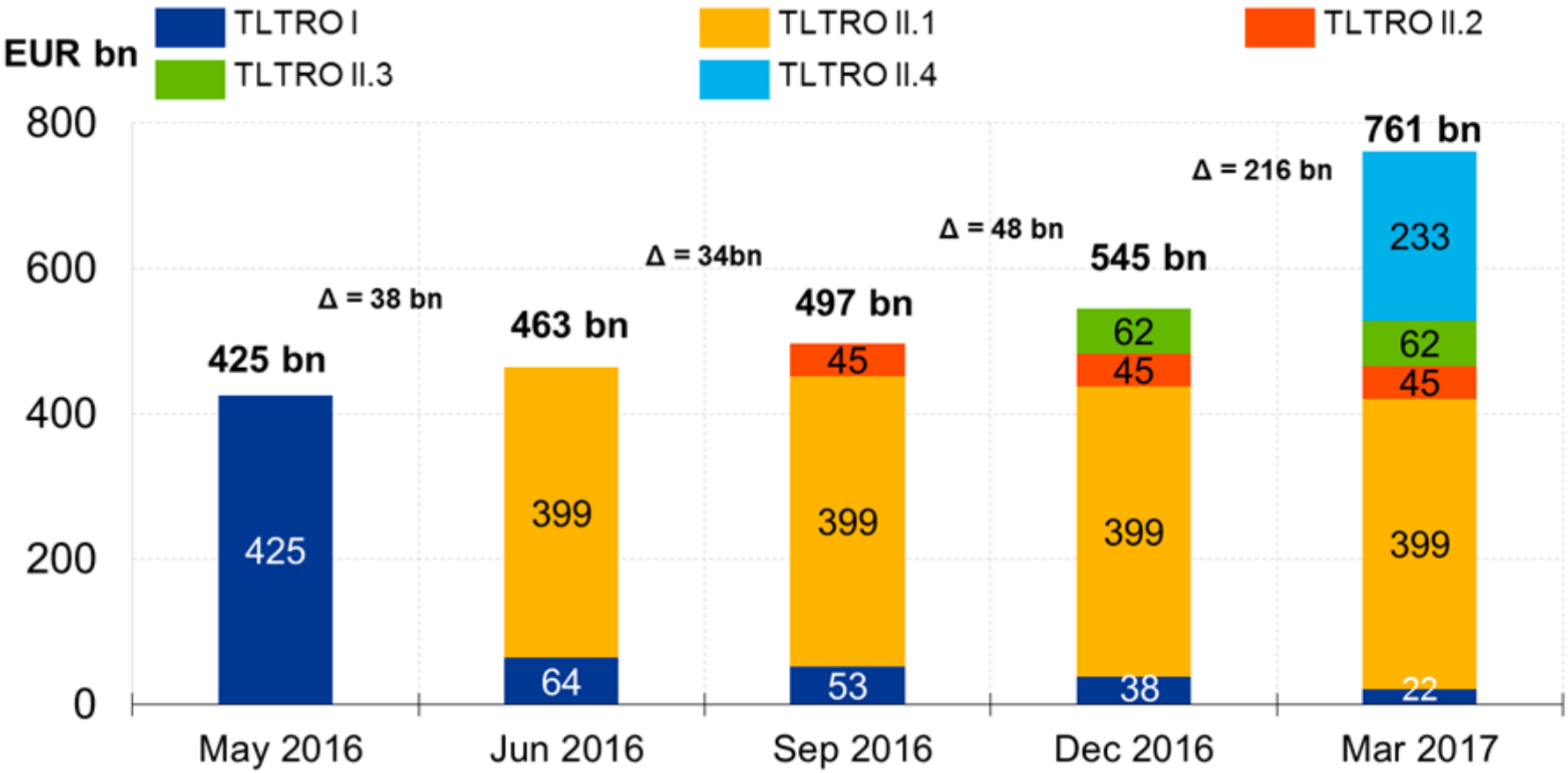
Unconventional policies: ECB balance sheet since 2007



Sources: ECB Staff calculation Last observation: 30/03/2017

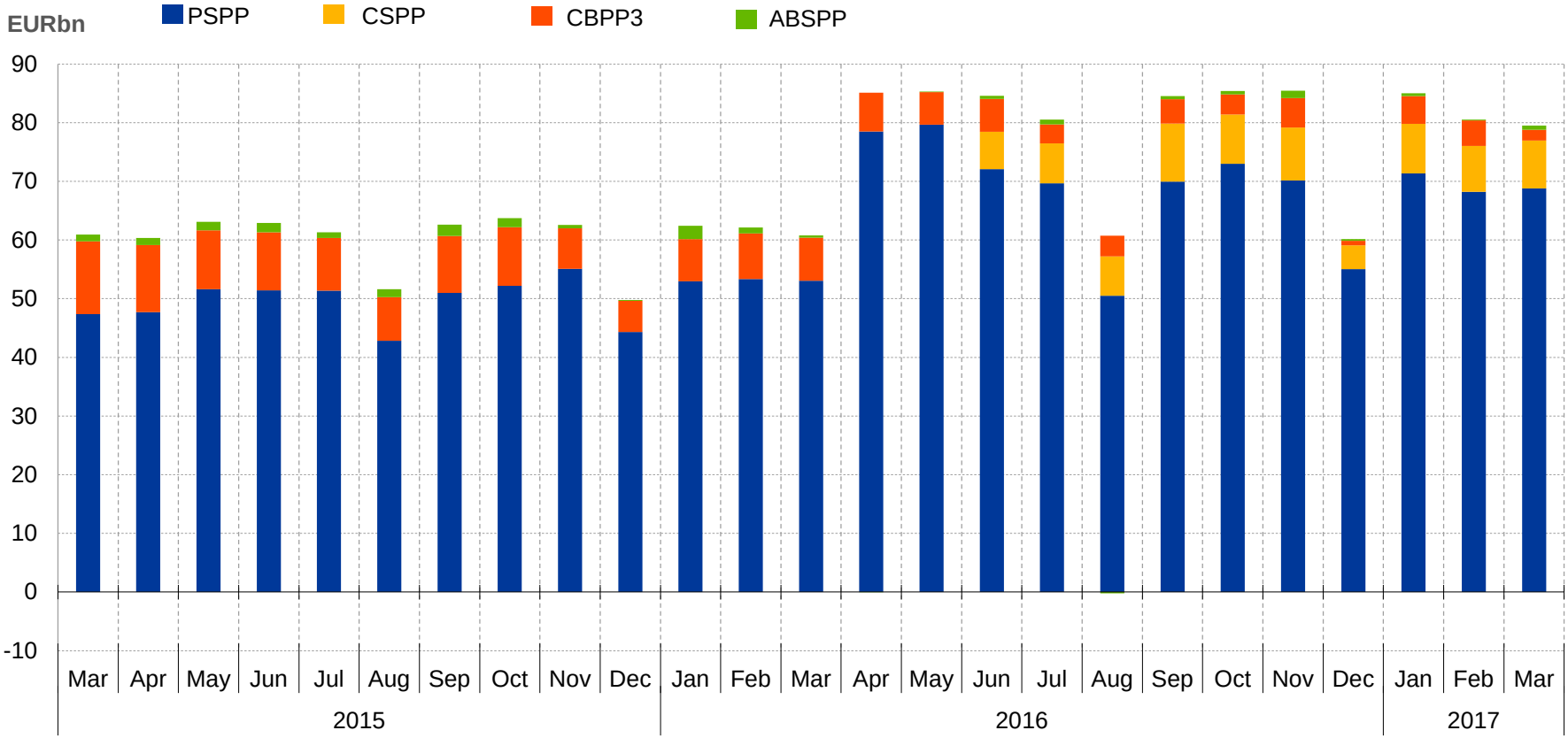
Unconventional policies: TLTROs – extra incentive for banks to lend

Recent TLTRO operations and outstanding amounts



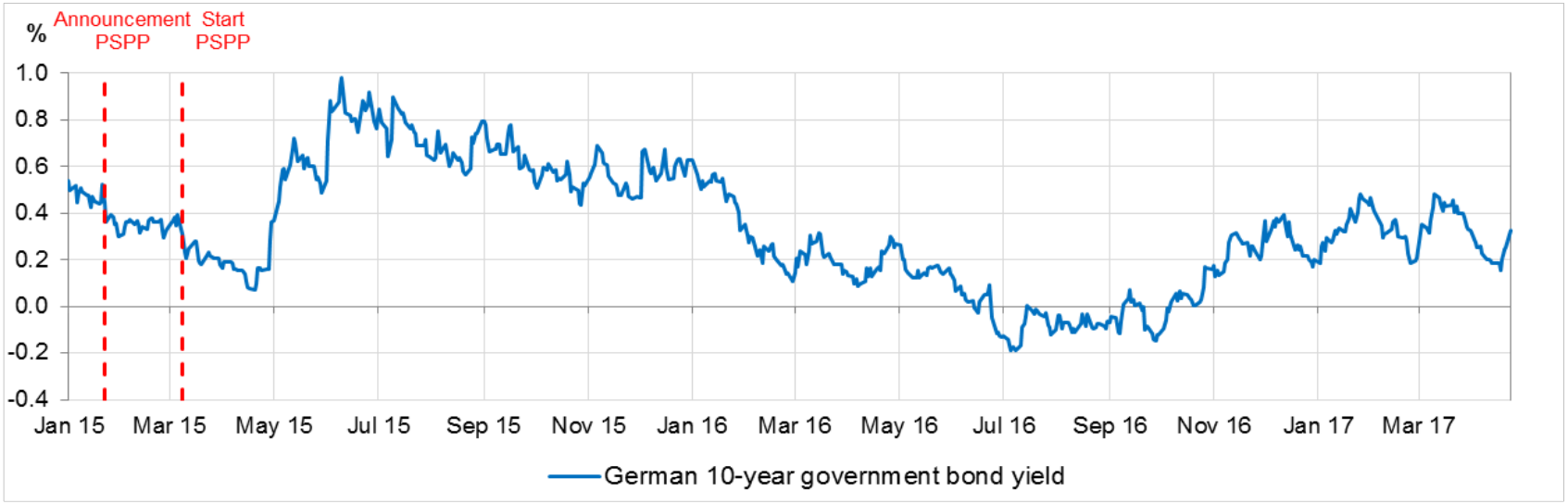
Source: ECB website

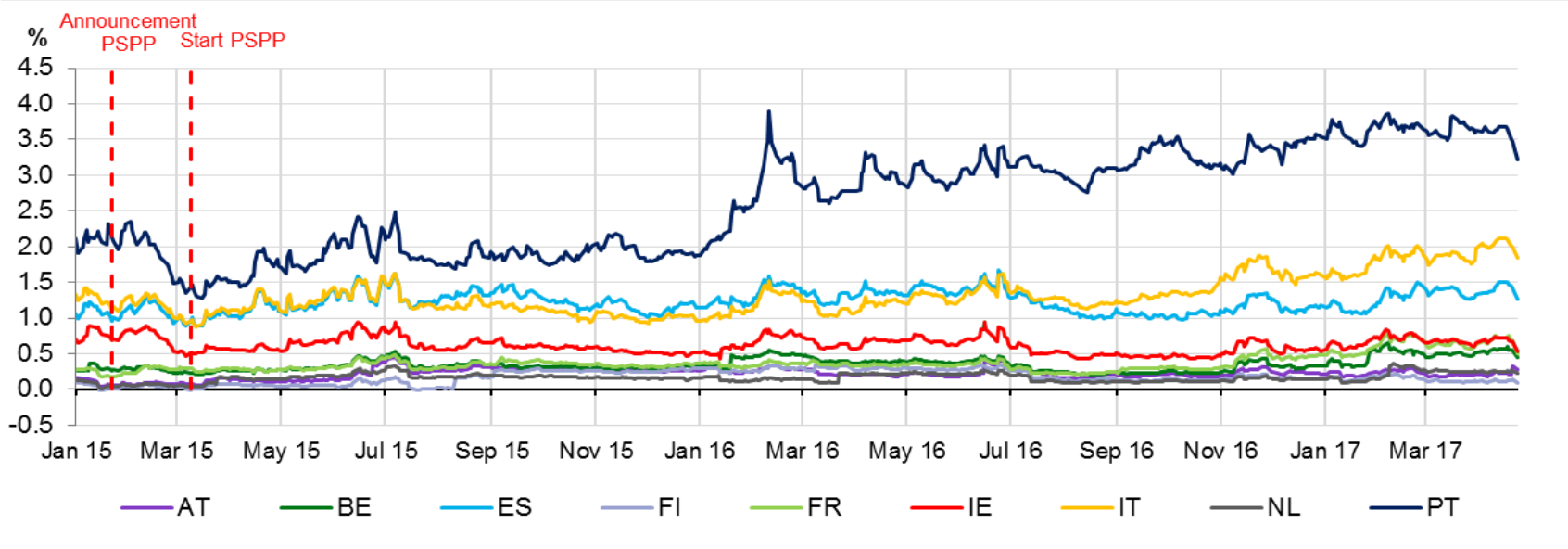
Monthly purchase volumes and composition



Source: ECB website. Last observation: March 2017

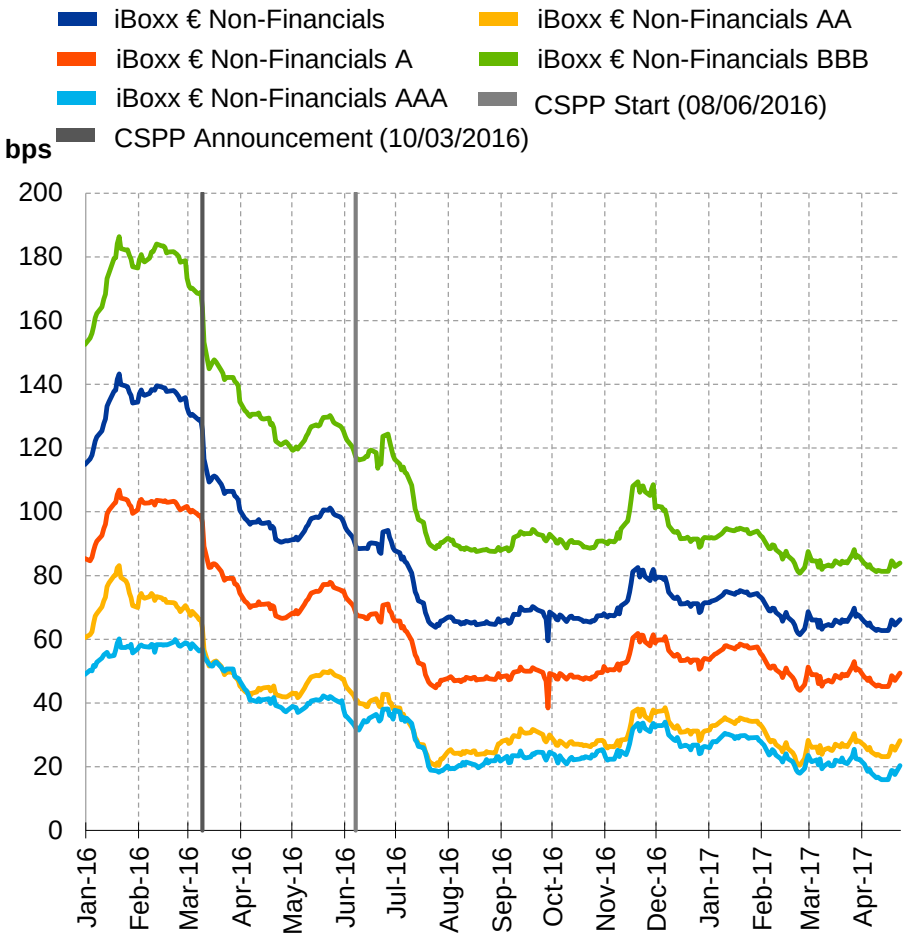
German 10Y yield and spreads

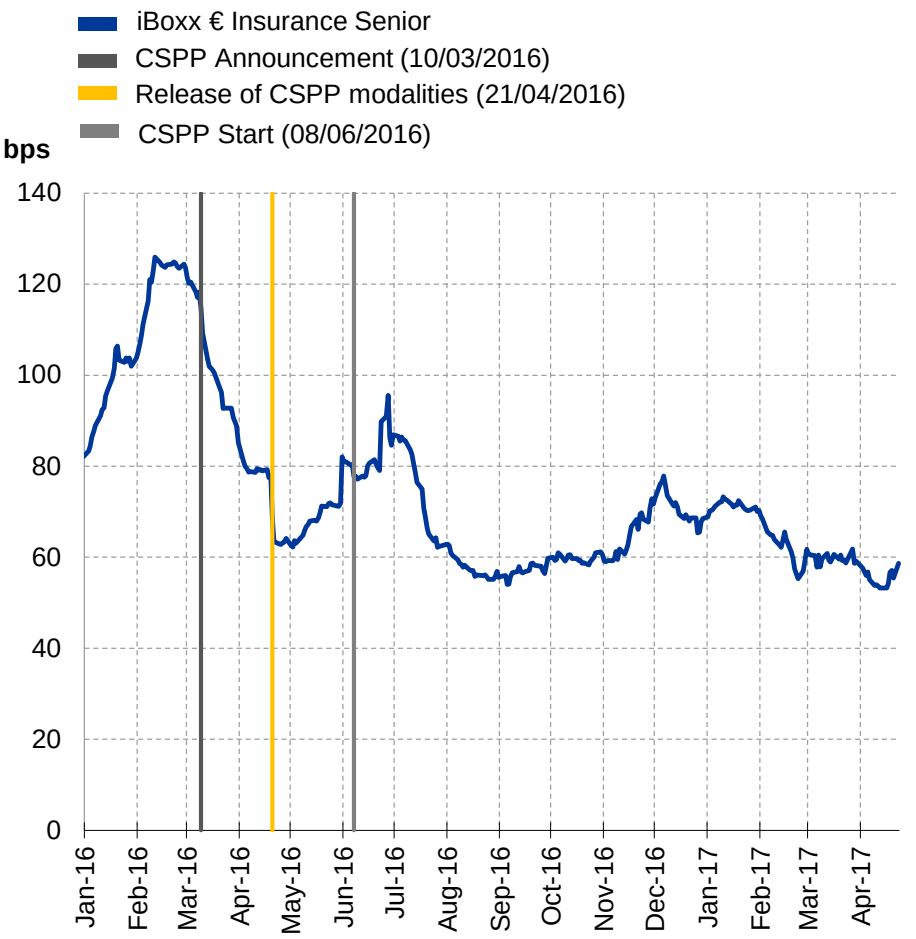




Source: Bloomberg. Last observation: 24 April 2017

Impact of CSPP on yields





Source: iBoxx, ECB staff calculations, last observation: 24 April 2017

Part II

Experience with negative interest rates

Overview of negative interest rate policies

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Central Bank	FIRST INTRODUCTION	EFFECTIVE POLICY RATE	NAME	EXEMPTION	LOW	CURRENT
Danmarks Nationalbank	06/07/2012 and 05/09/2014	Y	certificate of deposits rate	current account limit	-75 bps	-65 bps
European Central Bank	11/06/2014	Y*	deposit facility rate	reserve requirements	-40 bps	-40 bps
Swiss National Bank	22/01/2015**	Y	mid SNB target range for 3-month CHF LIBOR	individual exemptions	-75 bps	-75 bps
Sveriges Riksbank	18/02/2015	Y	repo rate	no, o/n deposits at even lower rates	-50 bps	-50 bps
Norges Bank	24/09/2015	N	reserve rate	all individual quotas	-50 bps	-50 bps
Bank of Japan	16/02/2016	N	Policy-Rate Balance	three tier system	-10 bps	-10 bps

Note: * For the ECB, the deposite facility rate becomes the effective policy rate amid high levels of excess liquidity.** The 3-month CHF LIBOR already moved into negative at announcement on 18 December 2014

Benefits

- Additional quasi-conventional monetary stimulus
- Additional easing of financial conditions relative to the case one would accept i=0 as the strict lower bound to central bank interest rate policies, in particular in a low-growth / low inflation environment.
- Benefits are not specific to the fact that interest rates are negative.
- Avoidance of the need to undertake even more (other) non-conventional measures, which would have more side effects.
- As the benefits are obvious, literature therefore mostly focuses on limits and unintended consequences of negative interest rate policies

Possible unintended negative consequences?

a) Technical constraints and limited pass-through (?)

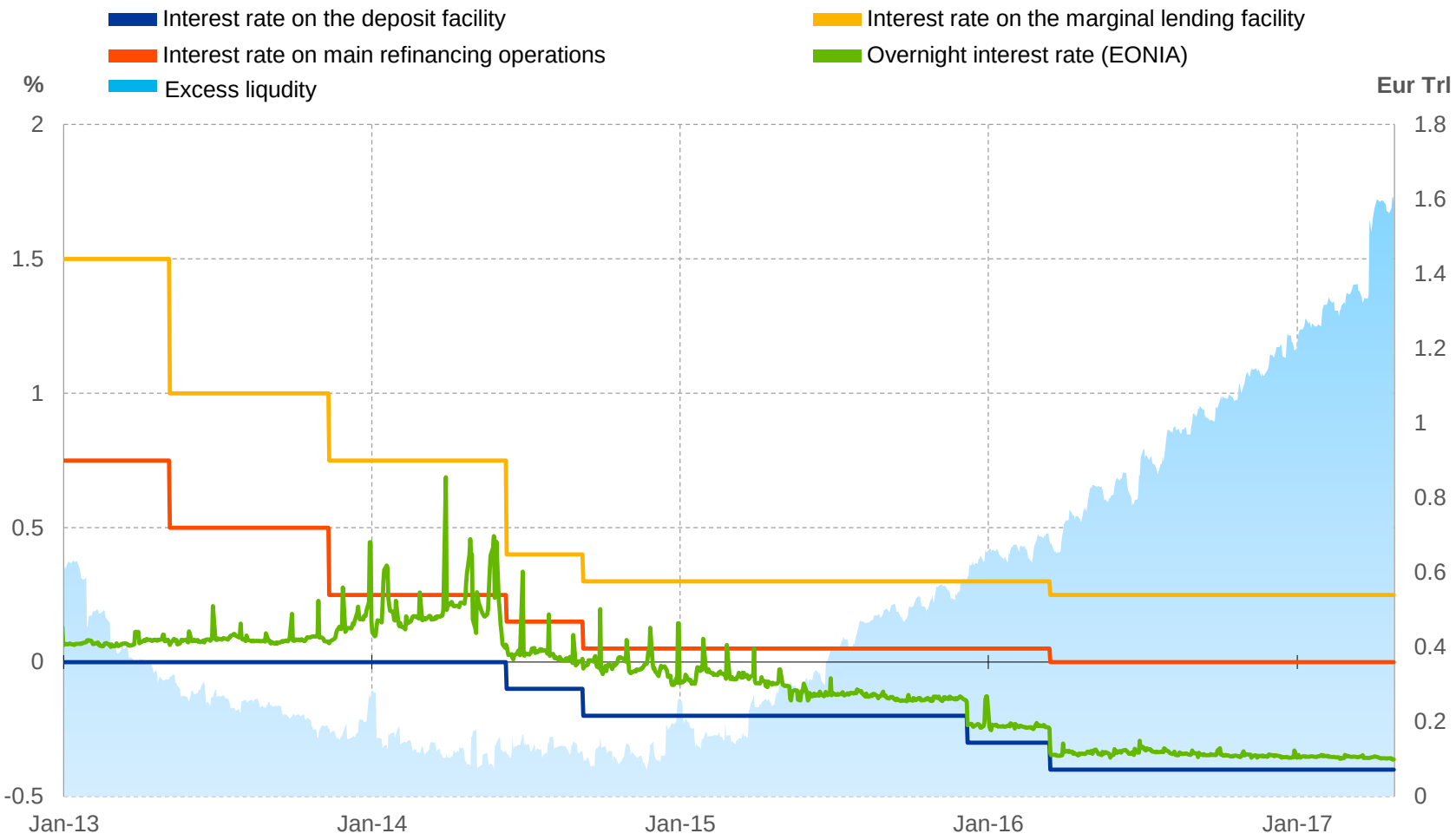
b) Lower money market activity (?)

c) Increase in banknotes/physical currency and demand for alternative secure deposits = "Effective lower bound I"

d) Bank profitability
   i. In particular retail banks with large deposit business suffer and in case banking system is in excess liquidity
   ii. In order to compensate banks might even increase lending rates => "reversal rate" or "Effective lower bound II"

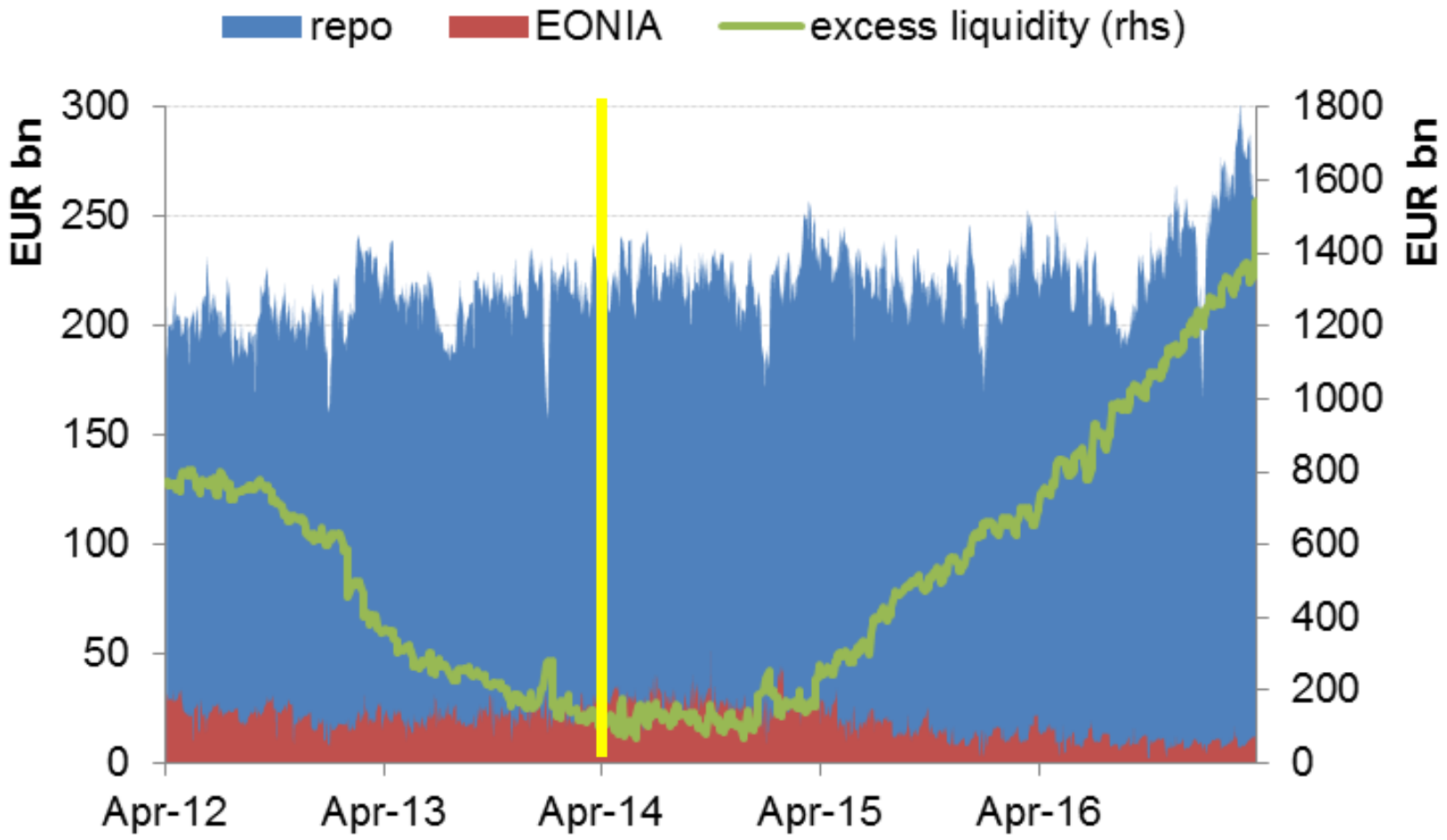
e) Risks to financial stability& possible detrimental long-term macroeconomic impact?
   i. Irresponsible risk taking to achieve positive returns? Gambling for resurrection?
   ii. Zombification of private sector?
   iii. Disincentives for fiscal consolidation?
   iv. Distracts from structural reforms?

Pass-through to money markets smooth



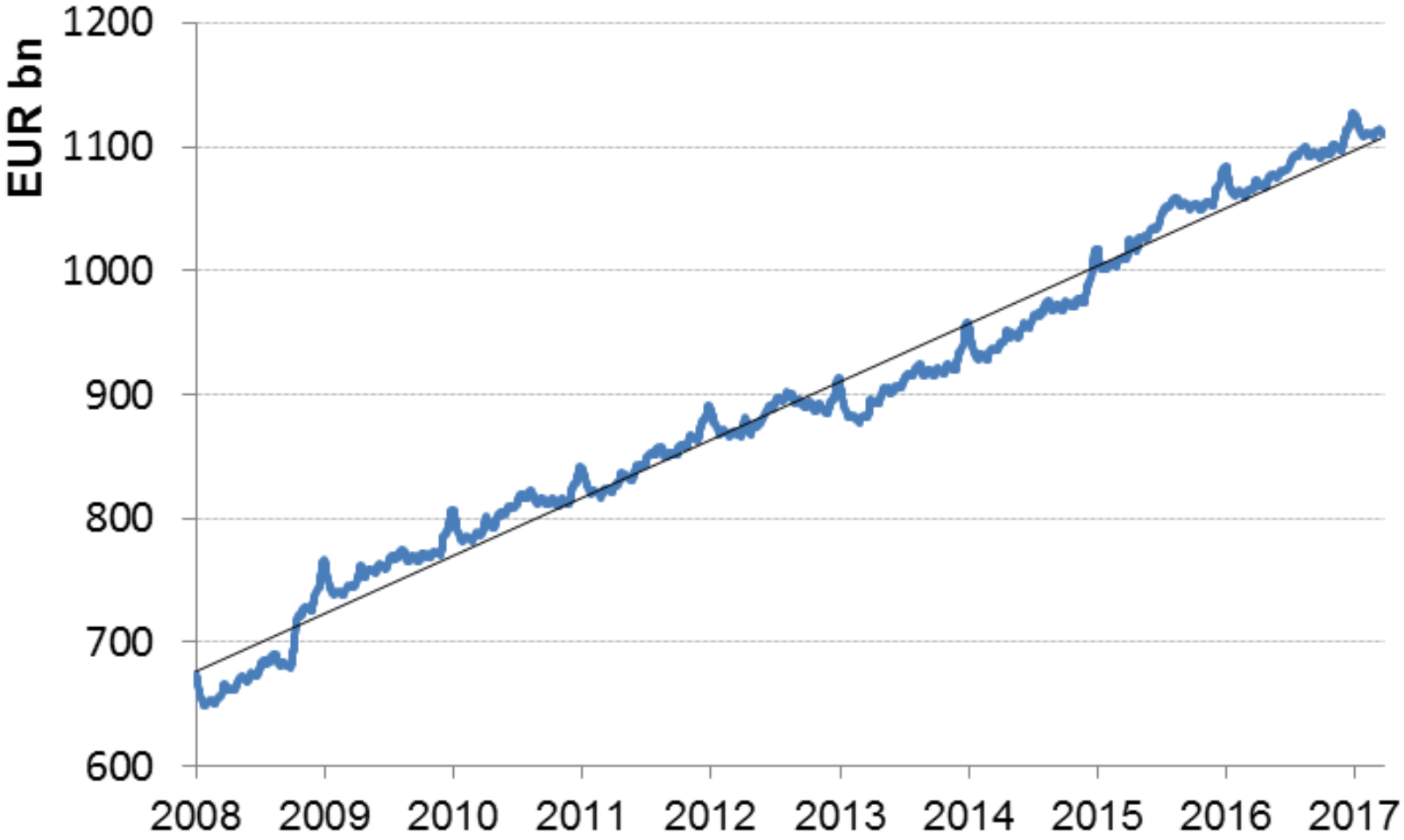
Source: ECB, last observation: 27 April 2017

Stable repo volumes and lower unsecured volumes amid increasing levels of excess liquidity



Source: ECB, Brokertec, MTS, Eurex repo, EMMI.

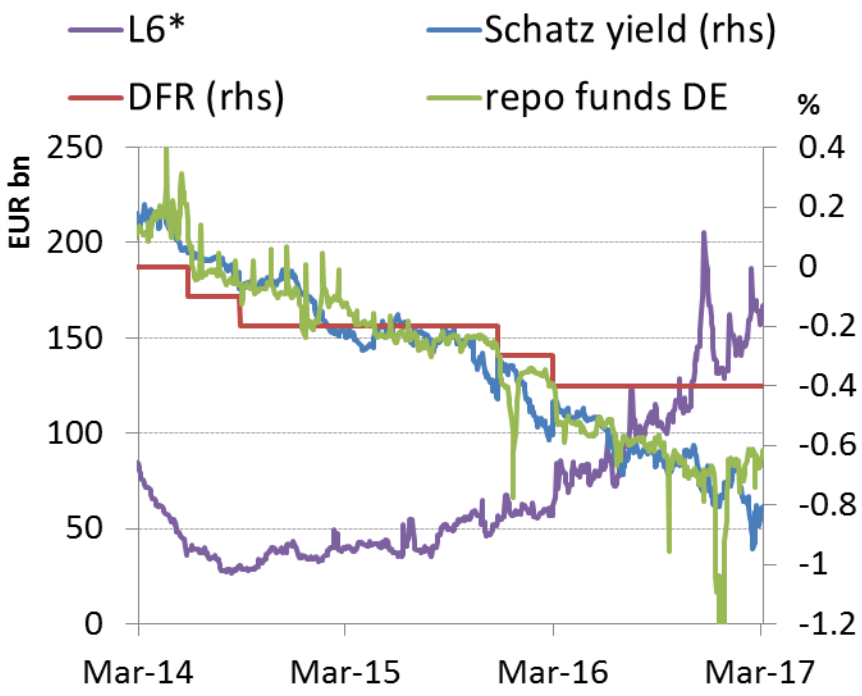
Banknote increase only slightly above trend



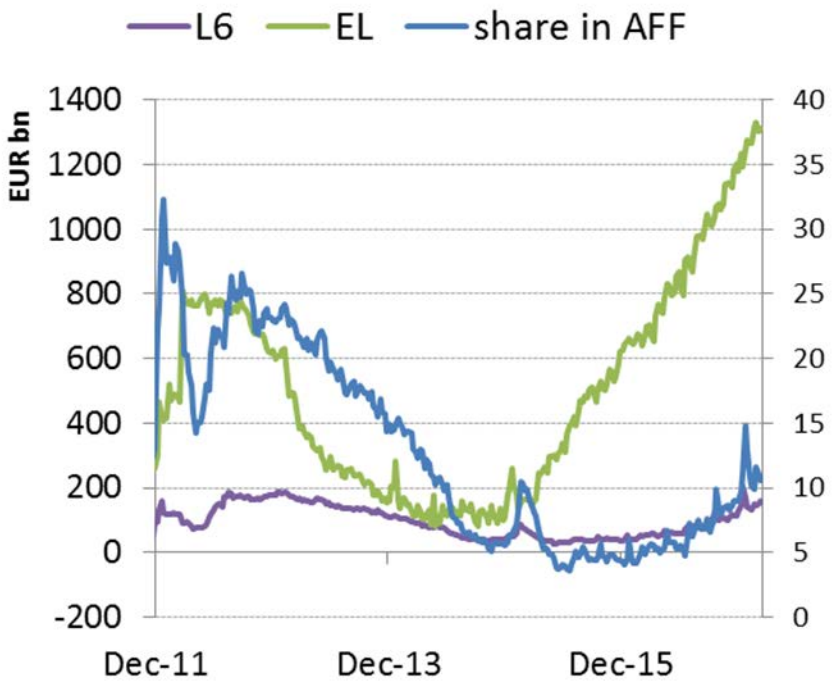
Source: ECB, Weekly financial statement.

Accounts of non-euro area official sector investors have increased somewhat, but attentioned paid that pricing is not overly attractive

Liabilities to euro non-euro area residents increase

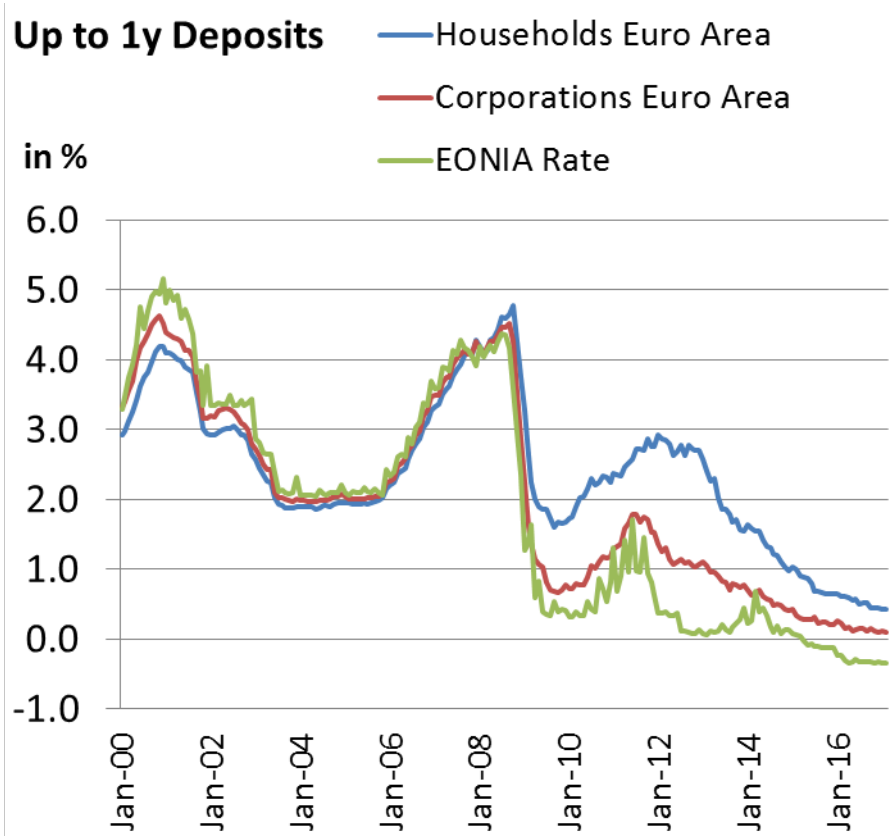


…but not so much in relative terms over the longer run

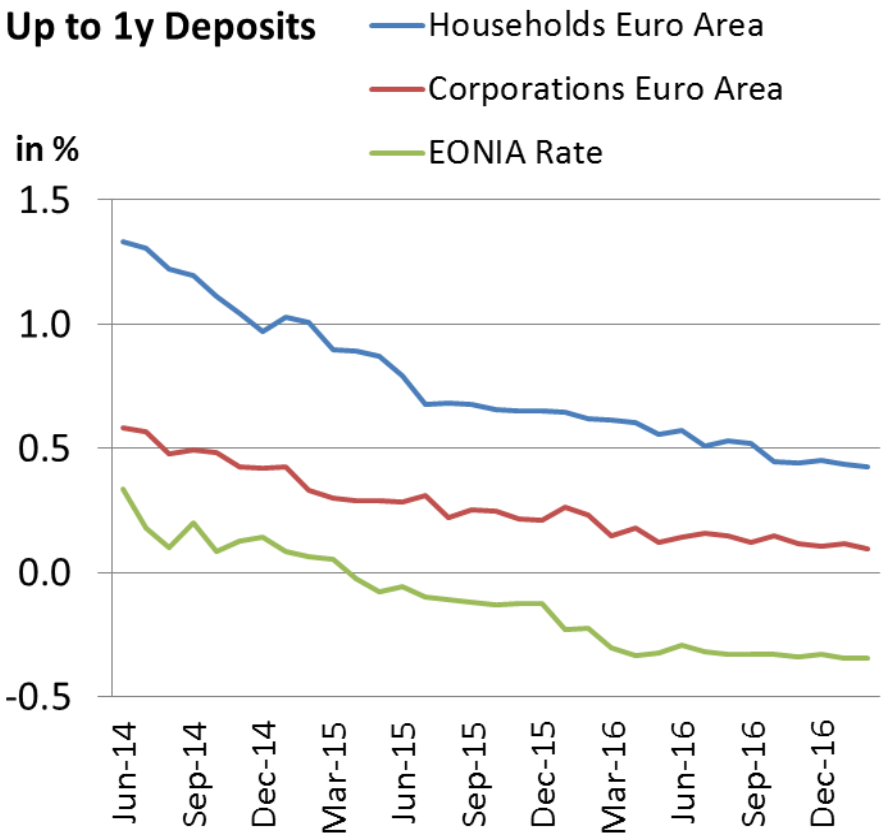


Source: ECB, Weekly Financial Statement and ECB calculations.

Household and corporate rates remain positive for the euro area average, but have substantially declined



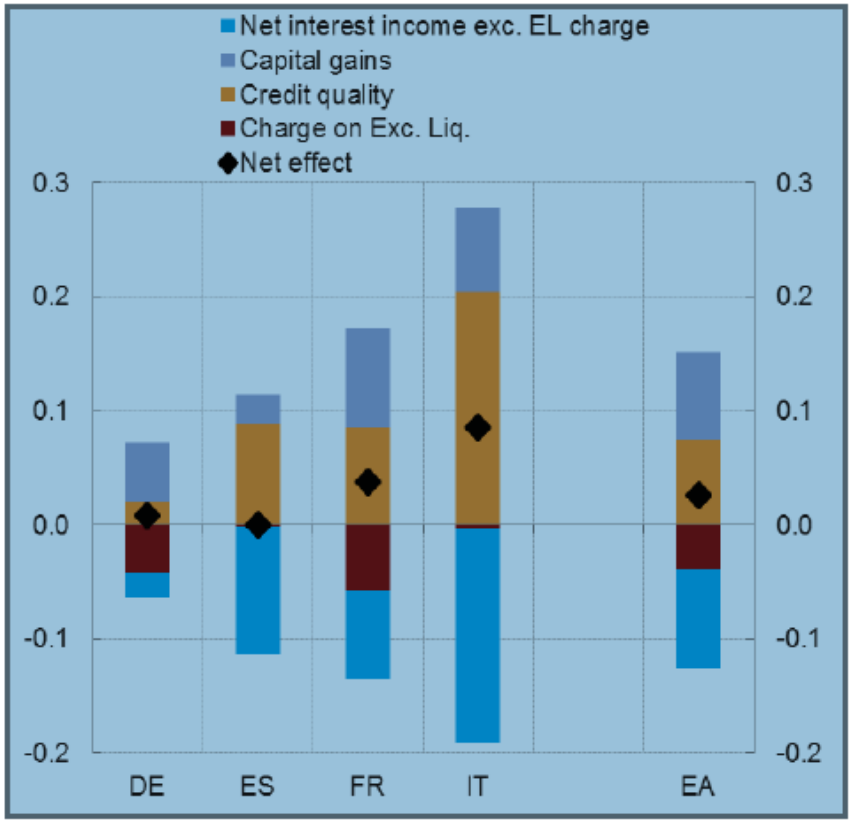
Source: ECB.



Source: ECB.

d) Effects on bank profitability – ECB estimate

Bank profitability and monetary policy: 2014-2017
(contribution to ROA, percentage points)

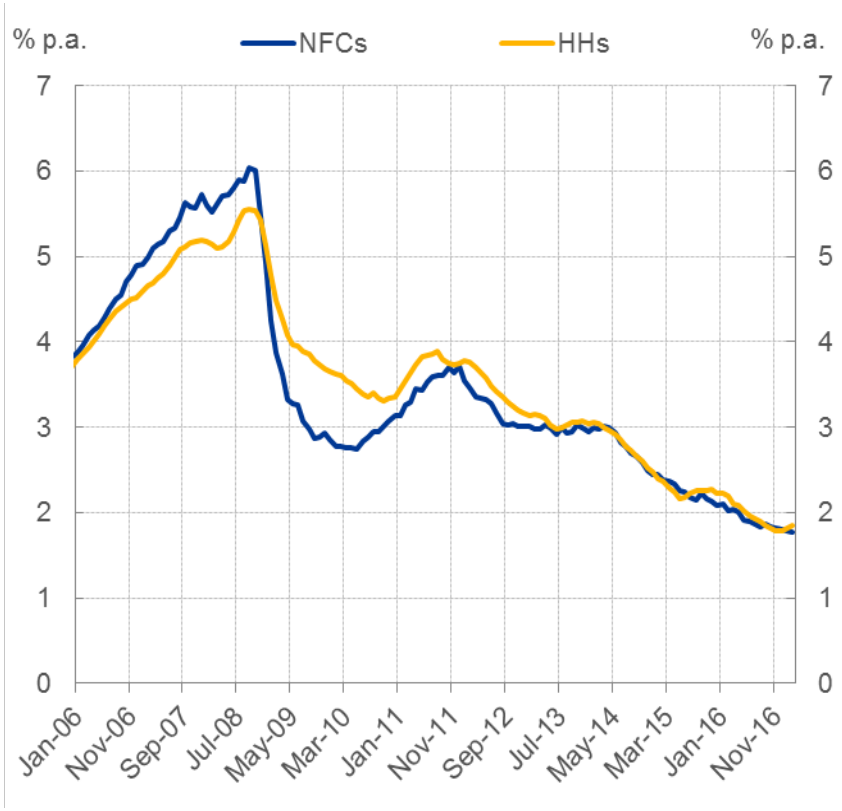


Multiple channels at work

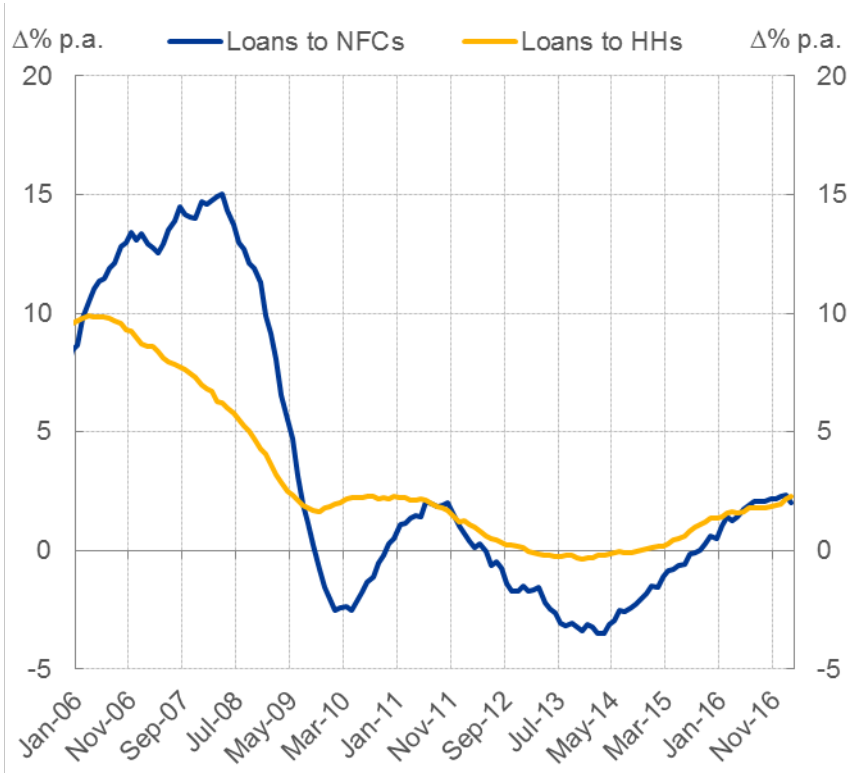
- Flattening of the yield curve compresses net interest income
- Negative rates on excess liquidity entail extra costs
- Lower charge-offs due to improvements in credit quality
- Capital gains on bond portfolios

Sources: EBA, ECB and ECB estimates.
Notes: Deviation from no policy action scenario. Capital gains based on data on a consolidated basis for 68 euro area banking groups under direct ECB supervision and included in the 2014 EU-wide stress test. Euro area figures calculated as the weighted average for the countries included in the sample using Consolidated Banking Data (CBD) information on the weight of each country's banking system on the euro area aggregate. Effect on net interest income based on aggregate BSI data and obtained by simulation of the interest income and interest expenses based on estimates of the effect of the APP on bond yields, lending and deposit rates, excess liquidity and economic growth taking into account BMPE projections for interest rates and credit aggregates. Effect on credit quality based on the median of estimates obtained from a suite of empirical studies.

Costs of external financing of NFCs and households and loan growth



Source: ECB.
Note: The indicator for the total cost of borrowing is calculated by aggregating short and long-term rates using a 24-month moving average of new business volumes.
Latest observation: February 2017.



Source: ECB.
Notes: Annual growth rates of loans are adjusted for sales, securitisation and cash pooling activities.
Latest observation: February 2017.

Possible unintended consequences?

- **Risks to financial stability**
  - Risks of a low interest rate environment if:
    - Some institutions had run a maturity mismatch in their balance sheet as they did not anticipate a period of low long-term or even negative interest rates => challenges created in the same way as by any similar other market risk exposure than turns sour.
    - Some institutions may be under external constraints that in case of negative interest rates or low long term rates put the viability in question => need to address these external constraints
    - Good in any case to monitor possible excessive risk taking
  - In any case, these challenges cannot lead to the conclusion to not do what is necessary from the monetary policy perspective. Not doing it achieves the worst: long term deflationary trap with zero inflation expectations becoming permanent. This would maximize possible financial stability risks
- **Possible detrimental long-term macroeconomic impact?**
  - Zombification of private sector?
  - Disincentives for fiscal consolidation?
  - Distracts from structural reforms?
  - No convincing evidence: low-growth environment is challenging for private sector and indebted Governments and need to undertake structural reforms and stability-oriented fiscal policies remains obvious.

Thank you

Literature review

- **Negative rates have so far had positive effect on economy**, but further substantial reductions would entail diminishing returns since lending channel is influenced by banks' expected profitability. (Jobst and Lin 2016)
- **Negative rates have led banks to adjust their balance sheets**. Banks tend to extend more loans, hold more non-domestic government bonds and rely less on wholesale funding (Demiralp, Eisenschmidt and Vlassopoulos 2017).
- Hameed and Rose (2016) find **little evidence that negative interest rates have had a substantial effect on exchange rates**.
- Negative rates are costly (inefficient subsidy to paper currency) but **when the economy is in a slump, the first-order benefits from boosting aggregate output outweigh the second-order costs** (Rognlie 2016).
- **Negative rates introduce a number of legal, operational, and economic frictions.** These complications limit pass-through and potential stimulus to aggregate demand. (McAndrews 2015)
- The effective lower bound is negative, but **still no consensus on how low rates can go and if viable policy tool over extended period of time** (Jackson 2015)

Literature review

- Retail deposit rates have remained insulated from negative rates as banks don't want to adversely affect their customer relationship.
- In a low interest rate environment, **interest rate changes generally have small effects on bank profits but changes in economic conditions do matter relatively more** (Genay and Podjasek 2014).
- ***Abstracting from macroeconomic effects*, a steeper yield curve increases banks' return on assets**. Under negative rates bank profitability suffers as valuation gains dissipate, lower interest margins remain (Borio, Gambacorta and Hofmann).
- When net interest margins are low, the **important issue is how banks can adjust their activities and cost structures so as to offset low rates' adverse effects on profitability** and capital (Clasessens, Coleman and Donnelly 2016).

Monetary Policy Below the Zero-Lower Bound

Thomas Moser
Tirana, 5 May 2017

SCHWEIZERISCHE NATIONALBANK
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SWISS NATIONAL BANK

NOMINAL EXCHANGE RATES

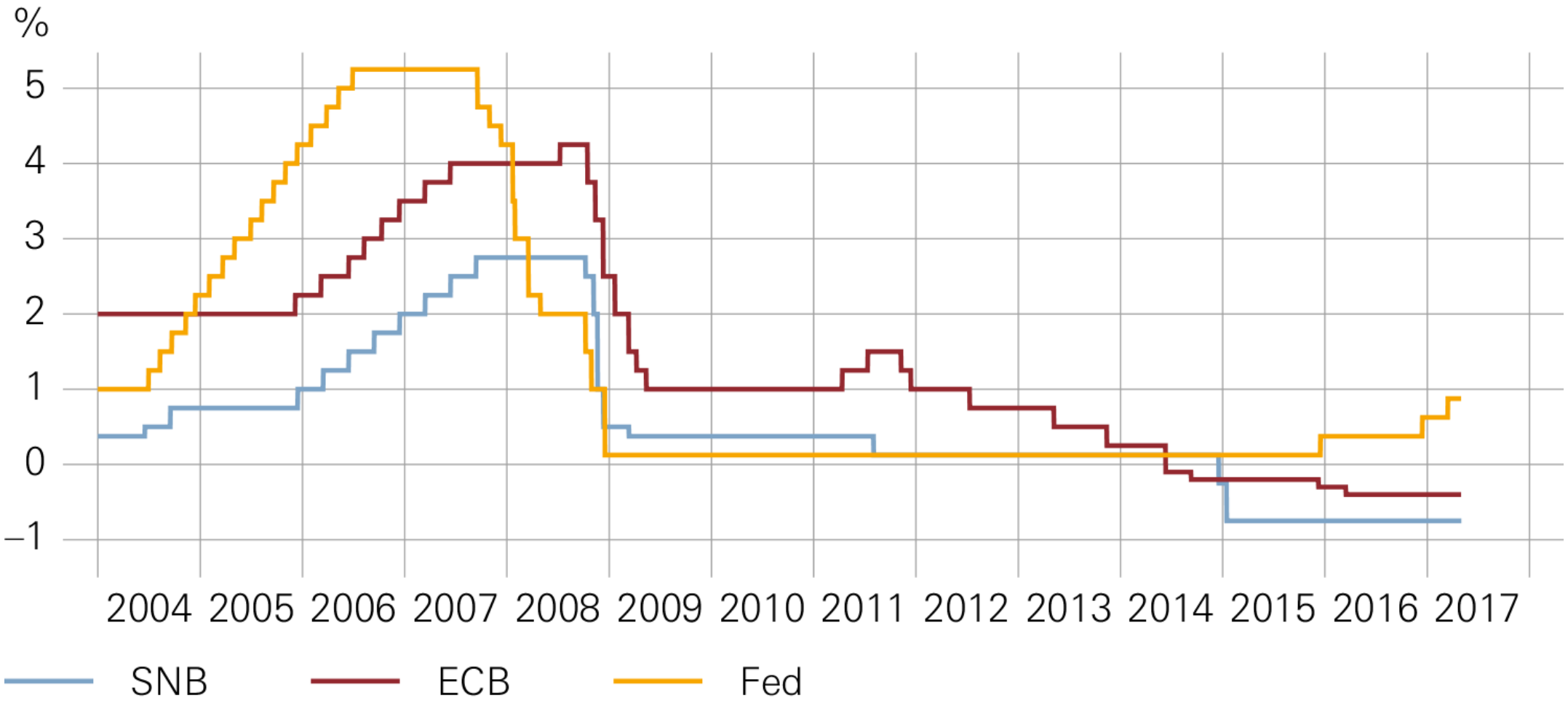
CHF per foreign currency

Source: SNB

CHF REAL EFFECTIVE EXCHANGE RATE (CPI-BASED)

Source: IMF

POLICY RATES



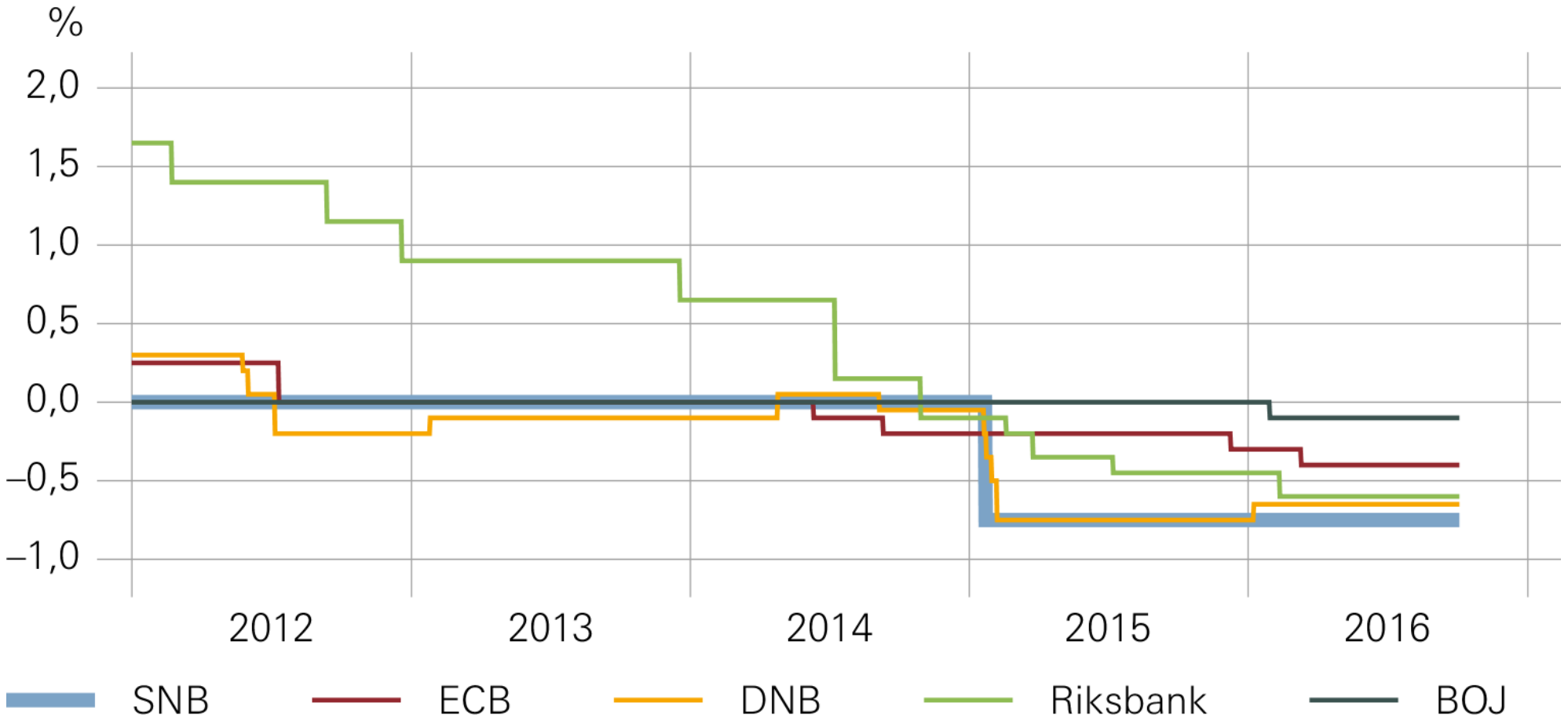
Source: Bloomberg, SNB

Design of Negative Interest Rates

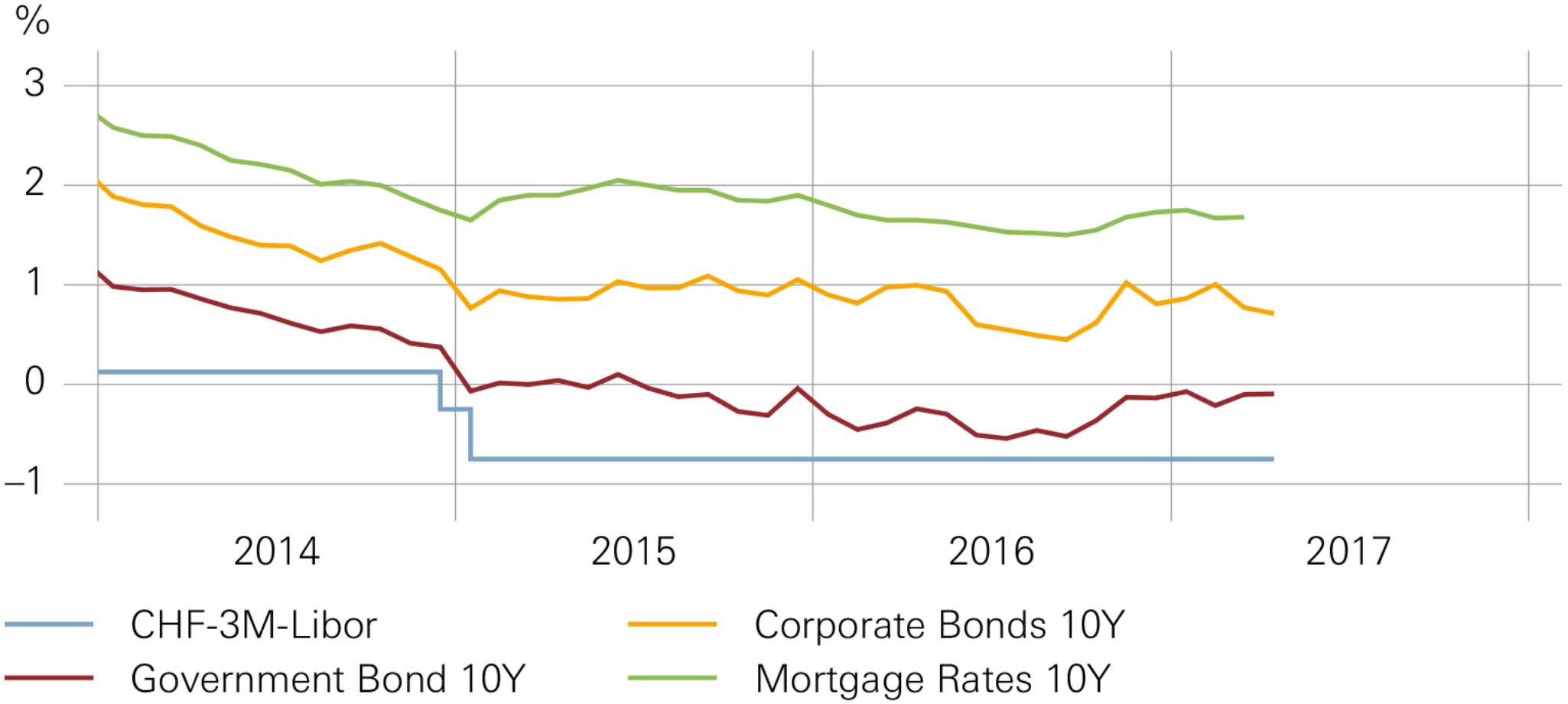
- Negative interest rate on sight-deposits held at the SNB (bank reserves)
- Large exemption threshold (idea: it is the marginal rate that counts)
- Static component
  - based on minimum reserve requirement (20x)
  - fixed amount for institutions without reserve requirement
  - few exemptions
- Dynamic component
  - Adjustment for cash holdings

NEGATIV INTEREST RATES

Rates on Reserves

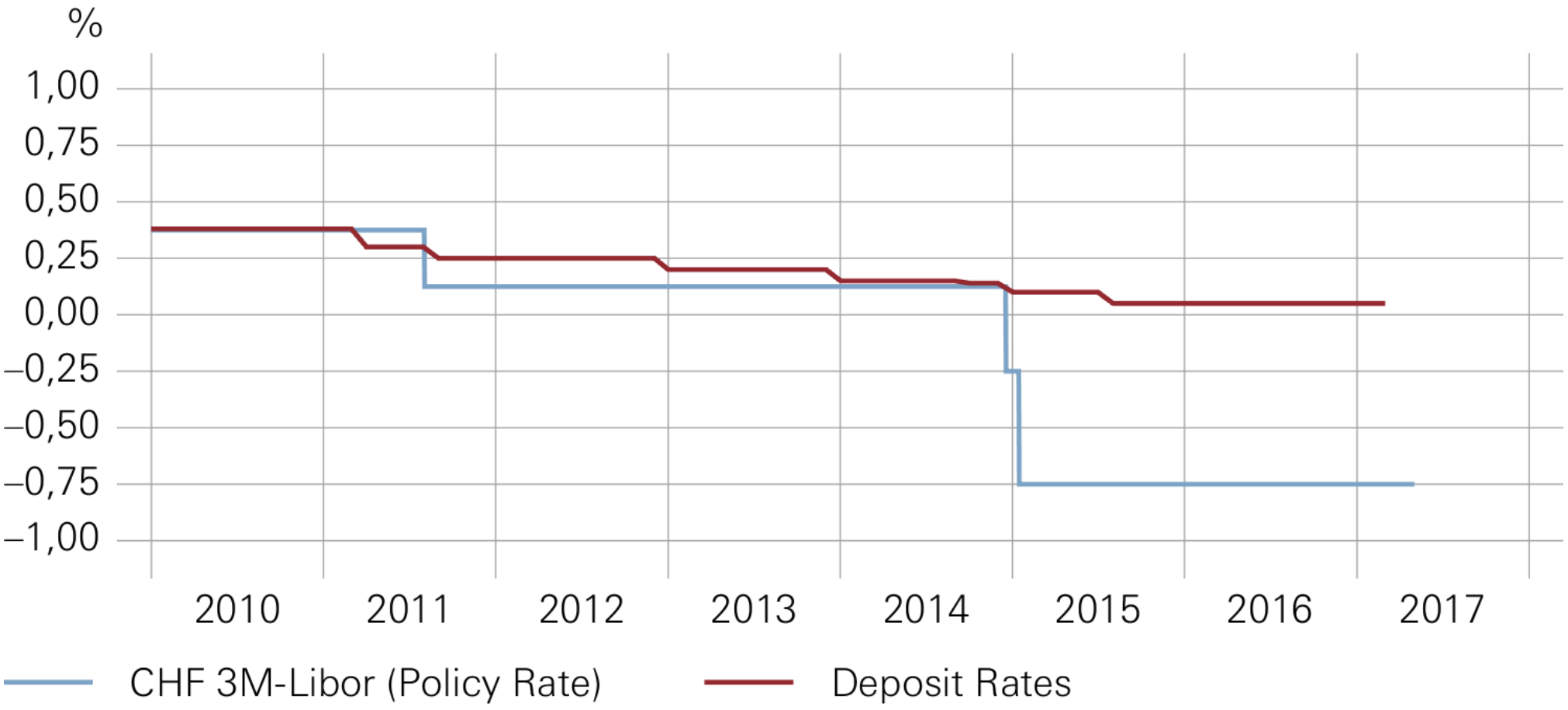


INTEREST RATE TRANSMISSION



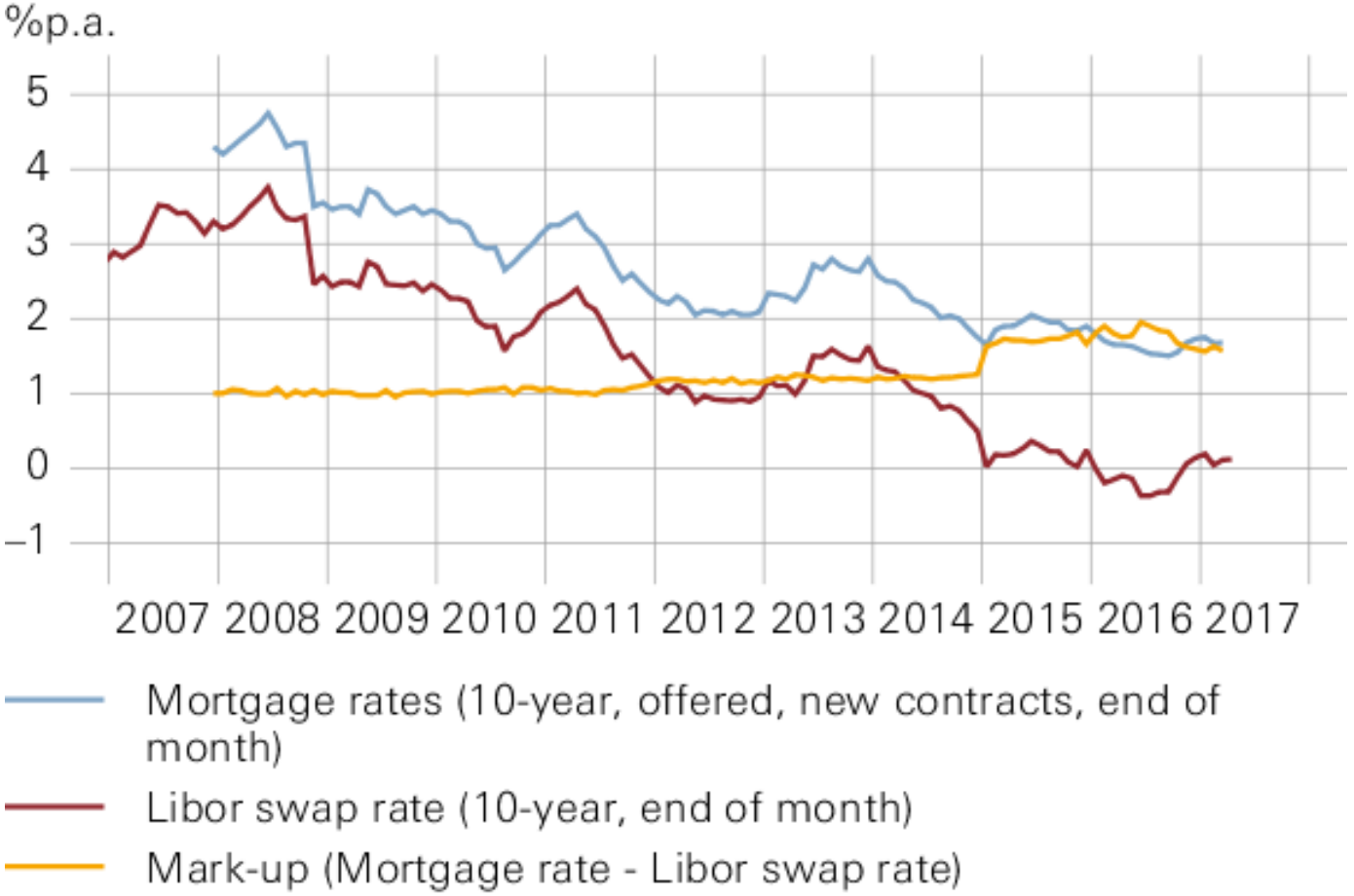
Quelle: SNB

INTEREST RATE TRANSMISSION (2)



Quelle: SNB

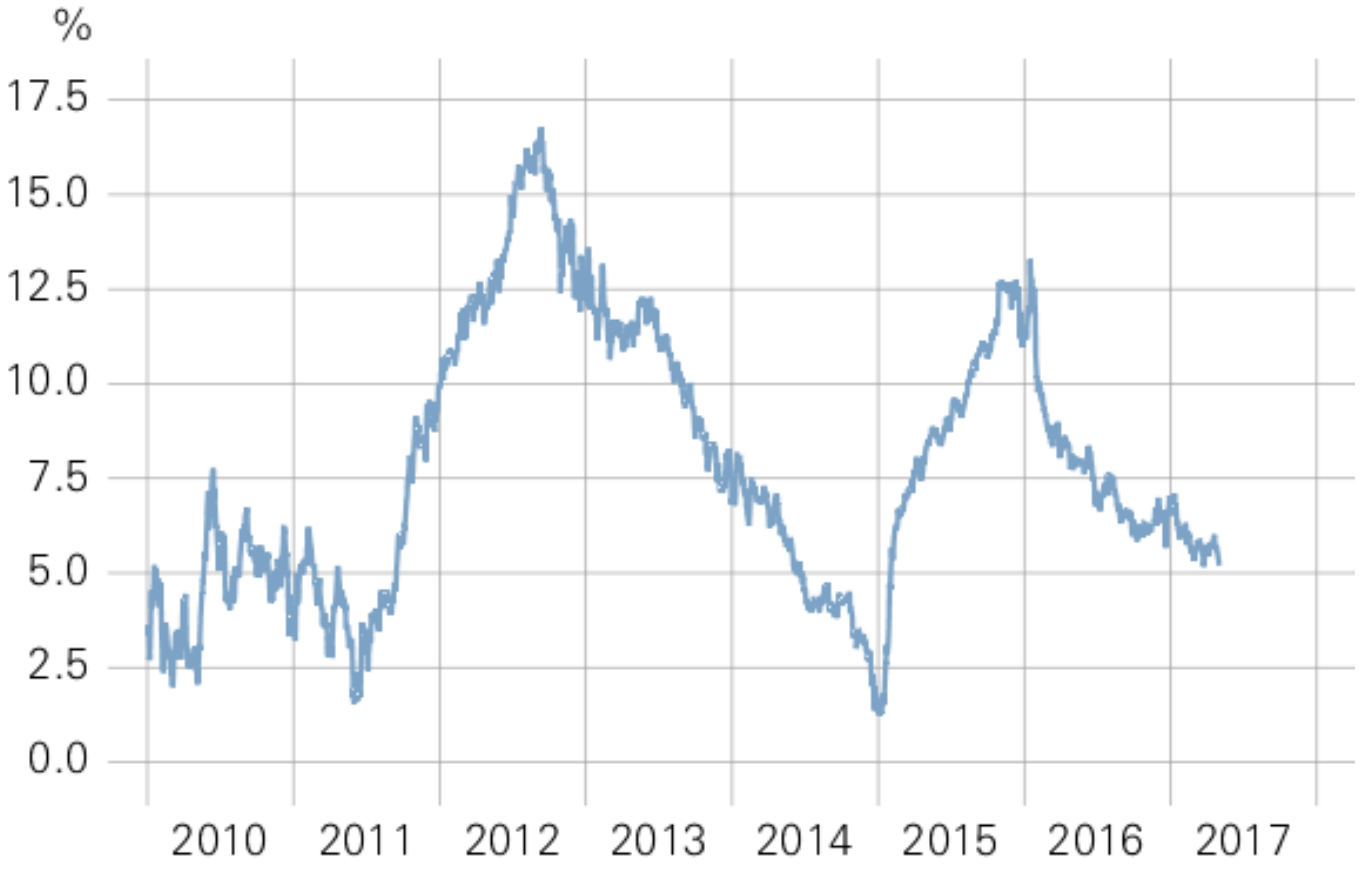
MORTGAGE RATES, LIBOR SWAP RATES AND MARK-UP



Source: SNB

CHF 1000 BANKNOTES IN CIRCULATION

Percentage change from previous year



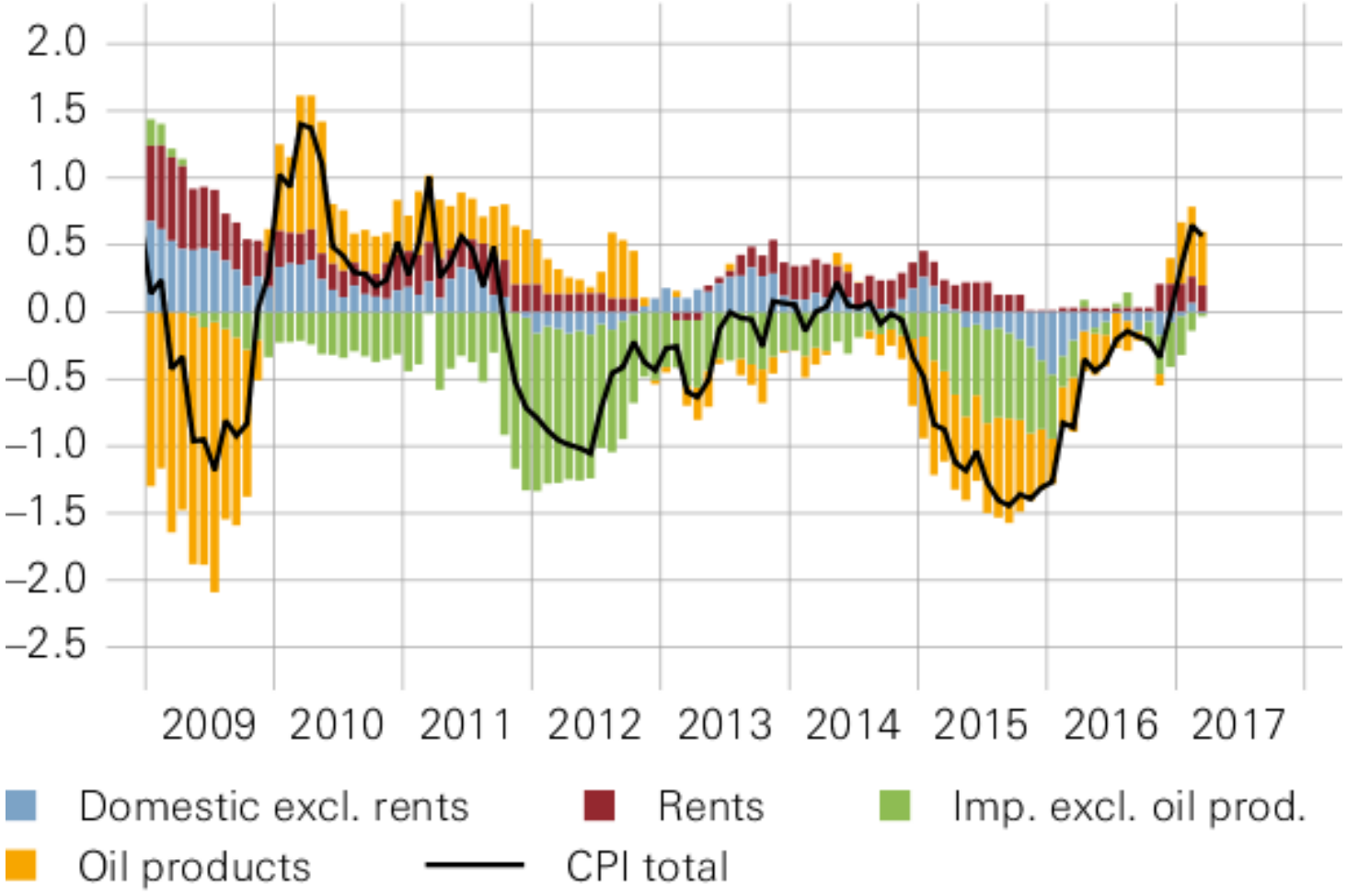
Source: SNB

GOVERNMENT BONDS 10Y

Source: Bloomberg, SNB

CONTRIBUTIONS TO CPI INFLATION

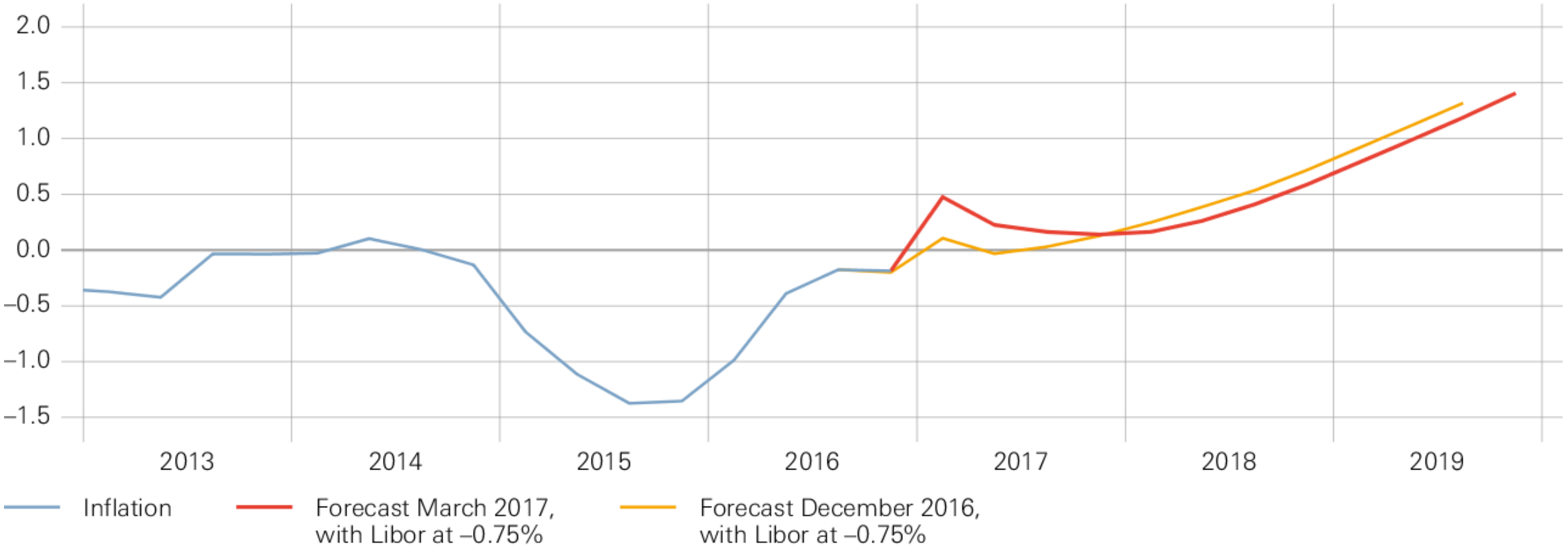
In pp, CPI inflation y/y in %



Source: SFSO

CONDITIONAL INFLATION FORECAST OF MARCH 2017

Year-on-year change in Swiss consumer price index in percent



Thank you for your attention!

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Monetary policy and exchange rate commitment in the Czech Republic

Dana Hajkova, Czech National Bank

Negative euro area interest rates and spillovers on Western Balkan central bank policies and instruments Conference

Tirana, 4–5 May 2017

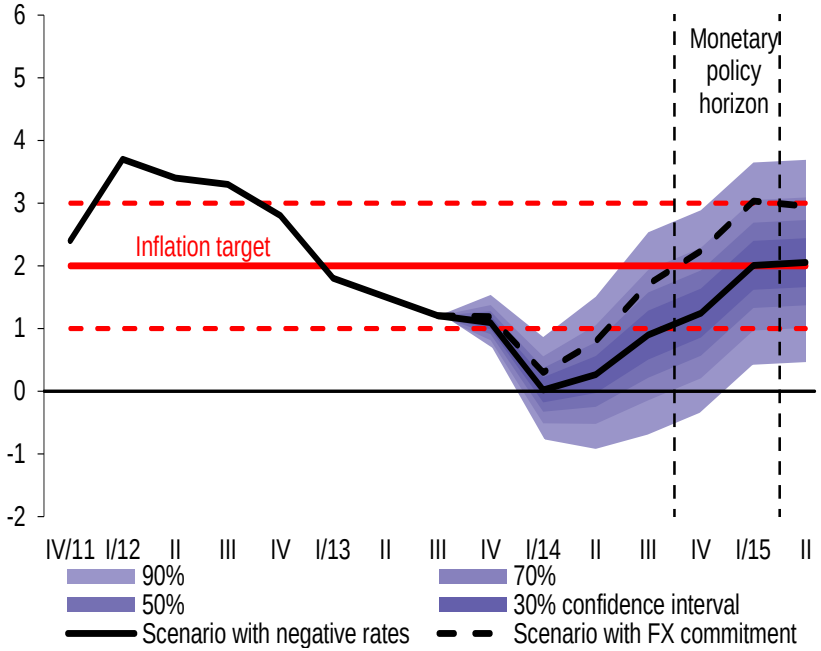
Outline

- Exchange rate as further instrument within inflation targeting regime
  - Conditions for its implementation in Czech Republic
  - Effects of FX commitment
  - Exit from exchange rate commitment

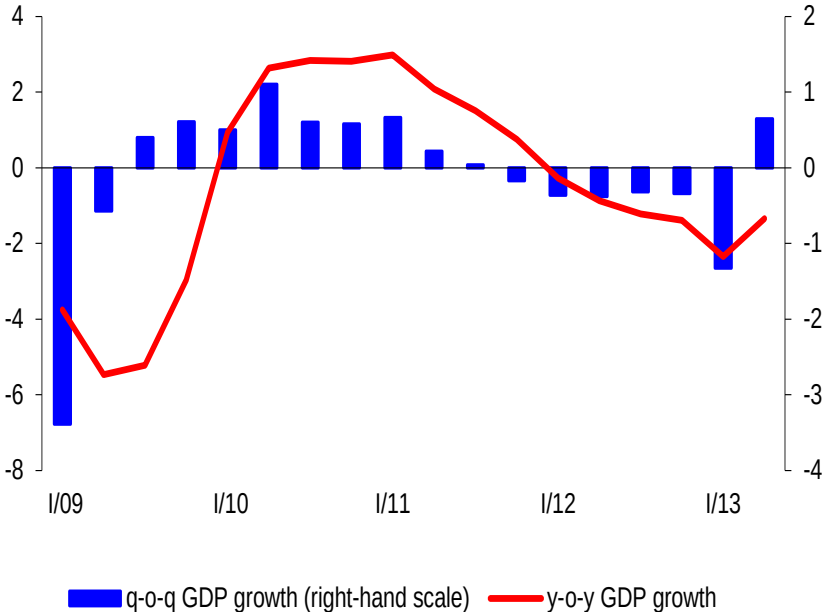
Context for implementation of FX commitment

Economic situation in 2012–2013

Inflation development and forecast
(year on year in %)



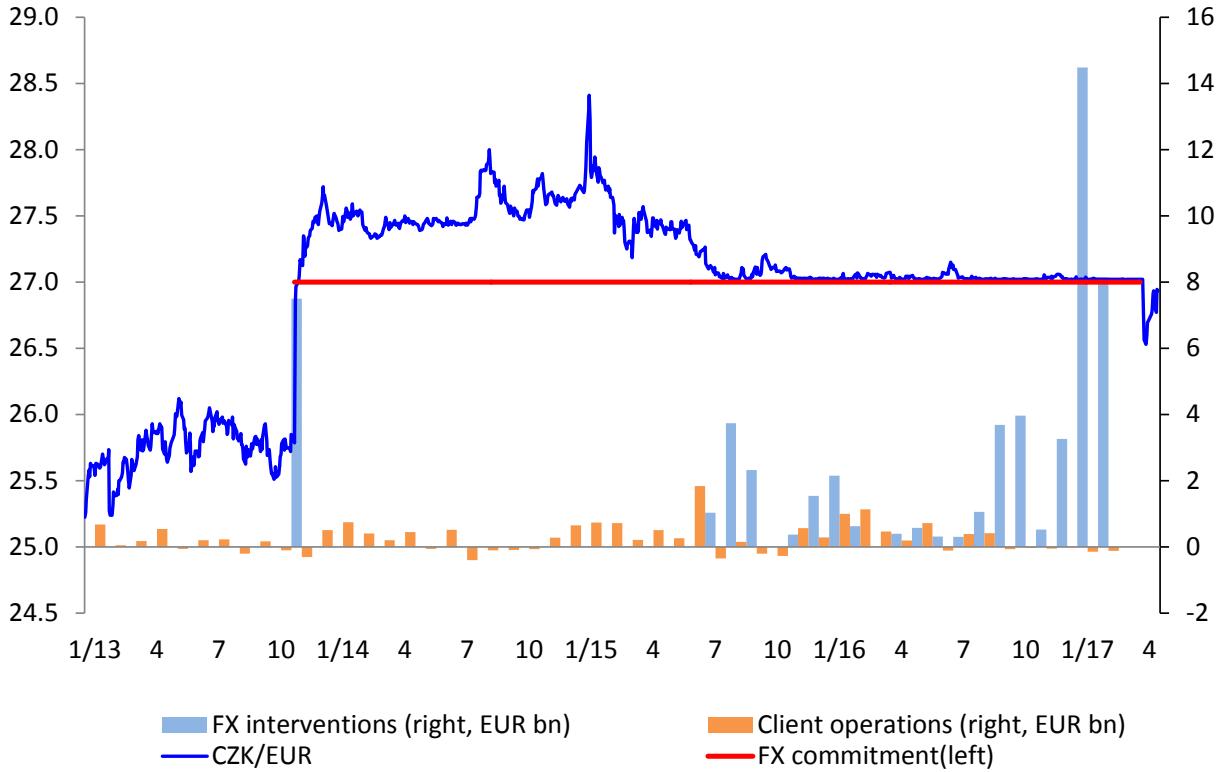
GDP growth
(annual and quarterly percentage changes at constant prices; seasonally adjusted)



- In 2012–2013, the Czech economy was going through the longest recession in its history (impact of the weakening of foreign demand and domestic fiscal consolidation).
- Inflation heading towards deflation with passive monetary policy.
- MP interest rates “technically“ at zero.

CNB FX commitment

CZK/EUR rate, CNB commitment and FX interventions

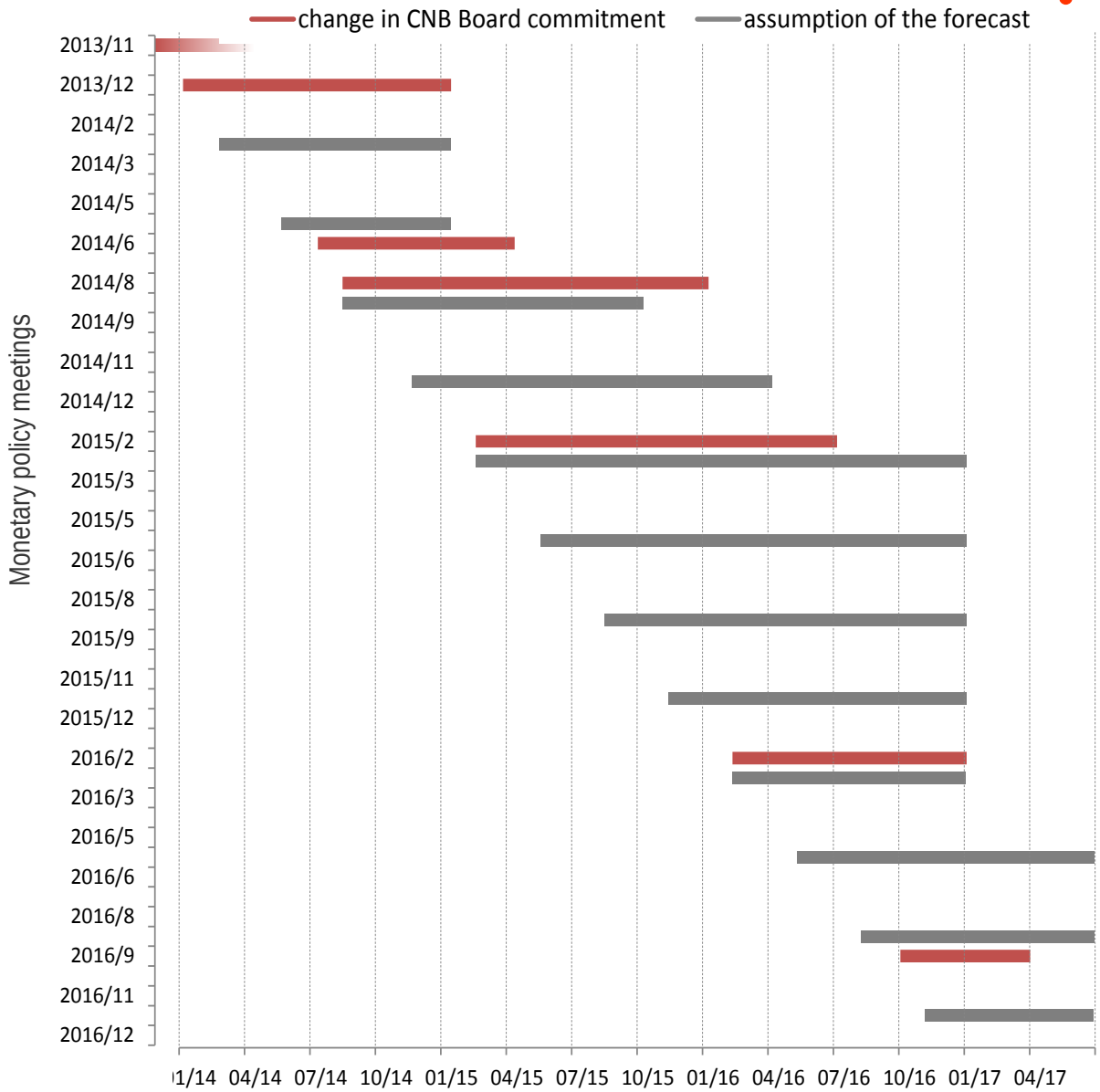


- CNB´s FX commitment lasted 3 years and 5 months.
- FX interventions (up to Feb 2017) amounted to EUR 56 bn.

- CNB implemented its FX commitment in November 2013 to avoid deflation or long-term undershooting of inflation target.
- Exchange rate was used as additional instrument for easing monetary conditions when interest rates reached ZLB.
- FX commitment was terminated on April 6, 2017.

Prolongations of FX commitment

FX commitment duration: CNB Board commitment and forecast assumptions



- Several postponements of FX commitment.
  - Prolonged external anti-inflationary pressures.
  - Repeated deflationary shocks and downward revisionary predictions.

Deflationary risks averted.

- But persisting need to maintain expansionary monetary conditions.

Effect of exchange rate commitment on Czech economy

CNB CZECH NATIONAL BANK

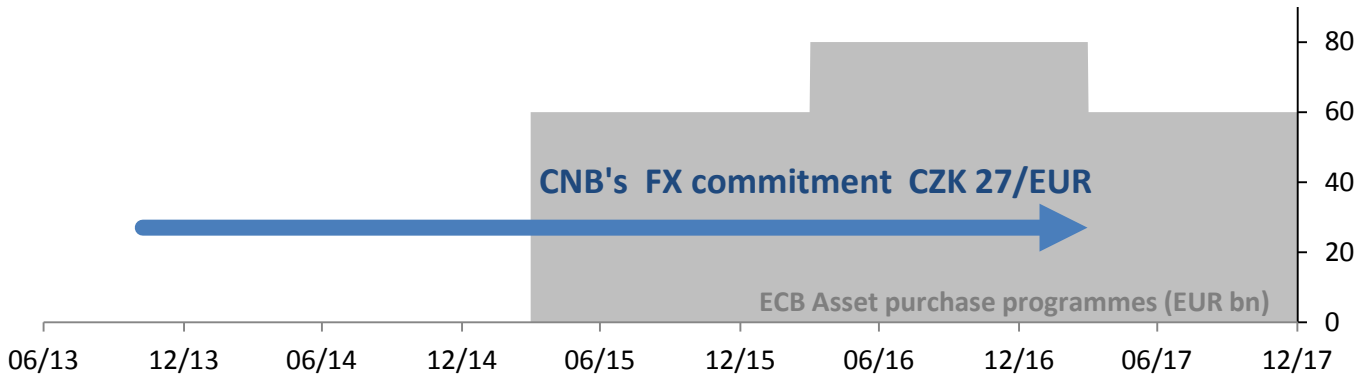
- Monetary easing significantly contributed to renewal of economic growth in 2014.
- Other significant growth contributors were external recovery and resumption of investment activity financed by EU funds.

	2013	2014	2015
GDP	**-0.5%**	**2.7%**	**4.6%**
Gross value added	-0.5%	3.4%	3.9%
Contribution of individual factors to the GDP dynamics			
fiscal impulse	-1.0 p.p.	0.3 p.p.	0.8 p.p.
growth in effective EA	0.6 p.p.	1.1 p.p.	1.9 p.p.
oil price	0.0 p.p.	0.1 p.p.	0.7 p.p.
tobacco excise duties	0.0 p.p.	-0.7 p.p.	0.7 p.p.
monetary pol. + sentiment	**-0.1 p.p.**	**1.9 p.p.**	**0.5 p.p.**

Source: CZSO, CNB's calculations

International context – financial markets

- Negative MP rates in numerous economies.
- ECB Asset purchase programmes.

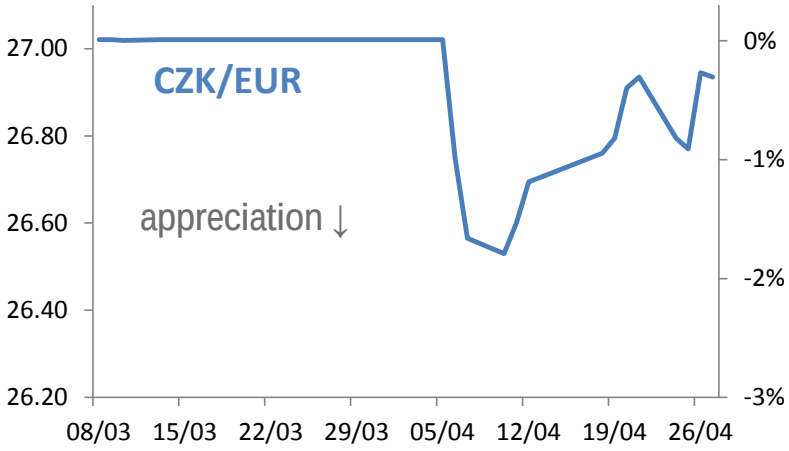


- Large amounts of capital searching for yield.

- Intervention activity of CNB influenced by real economy needs and by inflow of international liquidity.

Exit from the FX commitment

- Economic conditions were met:
  - Sustainable fulfilment of the 2% target.
  - No need to revert to unconventional policy measures.
- Form:
  - Transparent one-off termination.
  - Managed-float regime employed.
- Subsequent development of FX
  - Sharp appreciation not expected and did not materialize.



  - Weaker exchange rate has transmitted to nominal variables + slower real equilibrium appreciation.
  - Large speculative inflows before end of commitment = missing counterparty.
  - No excessive volatility so far.

Summary

- CNB successfully used exchange rate as further monetary policy instrument at ZLB within its inflation targeting regime.
- Weaker exchange rate averted risk of deflation driven by insufficient demand, and sped up economic recovery.
- Repeated imported anti-inflationary shocks led to several prolongations of FX commitment.
- CNB FX commitment was terminated in April 2017, so far without excessive FX volatility.
- In 2017, outlook is for sustainable fulfilment of inflation target.

Thank you for your attention

www.cnb.cz

Dana Hajkova
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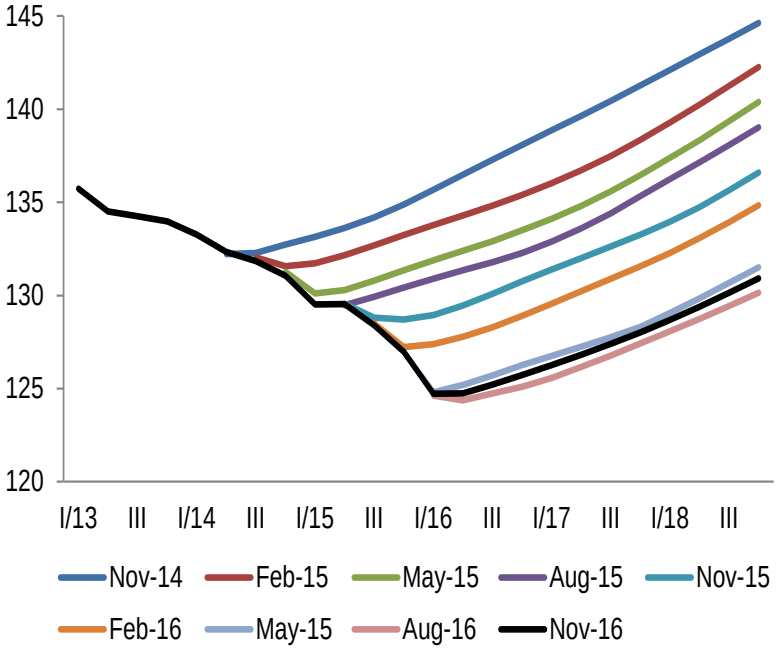
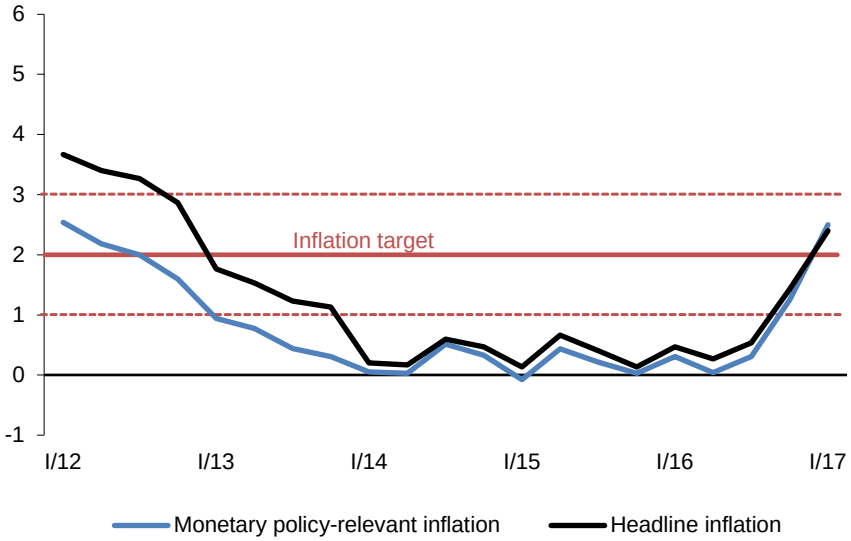
dana.hajkova@cnb.cz

Deflationary shocks and fulfilment of inflation target

Producer price scenarios for euro-area (base index, 2000=100)



Czech inflation: headline and monetary policy-relevant (year on year in %)



- Low global inflation imported; repeated external anti-inflationary shocks.
- Inflation stayed under the inflation target range for a prolonged period.

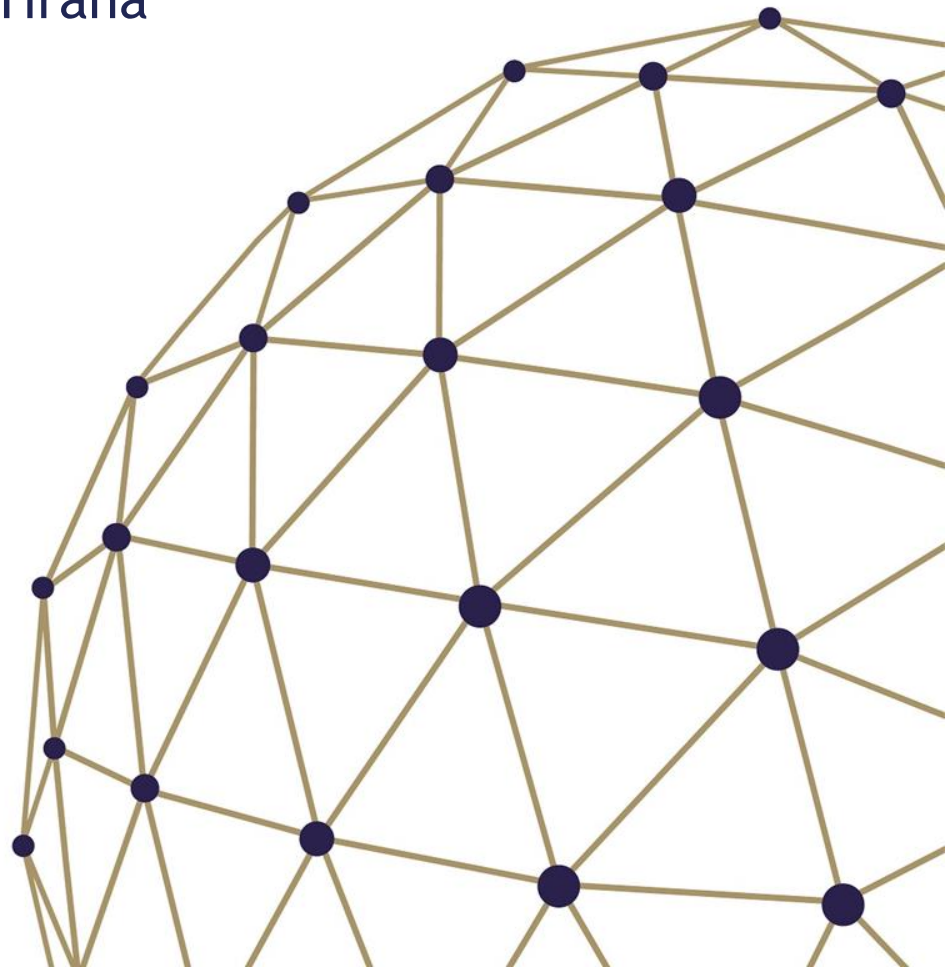
Non-standard monetary policy in a low interest rate environment

Daniel Felcser

Senior Analyst – Magyar Nemzeti Bank

IMF/BoA Conference, Tirana

5 May 2017



The MNB has eased monetary conditions while reducing its balance sheet

Optimal structure and size of the central bank balance sheet

ECB, FED, BoJ, CNB

Expanding central bank balance sheet

Examples:

Asset purchases

Exchange rate floor

MNB

Shrinking central bank balance sheet

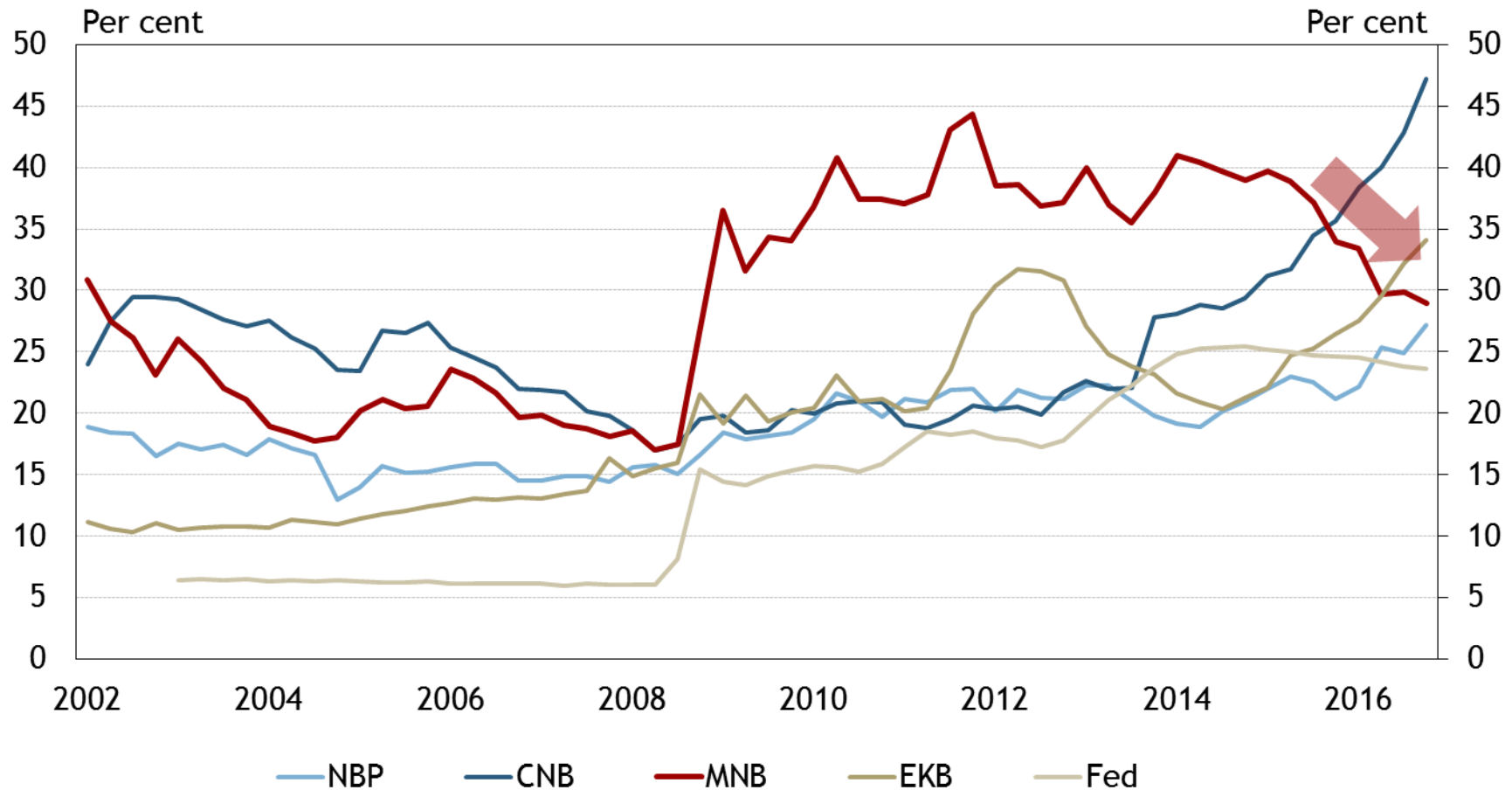
Examples:

Self-financing, HUF conversion

+ *targeted programmes*

The structure and the size of the balance sheet are equally important

The MNB has taken a different approach than some other central banks



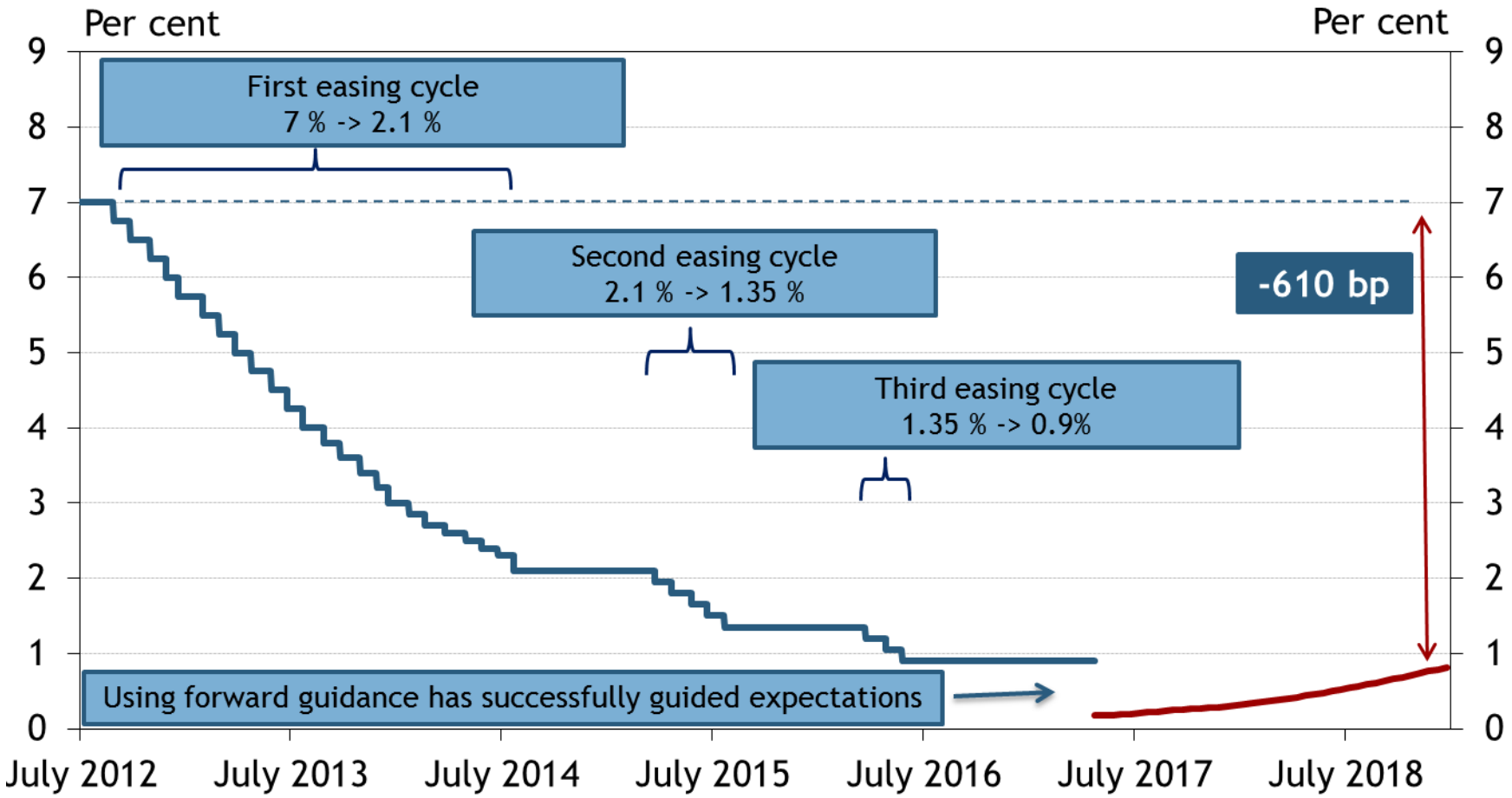
Central bank balance sheet relative to GDP

Source: central banks

Overview of recent traditional and unconventional monetary policy measures

- Base rate decreased to historical low level (0.9%)
- Narrowed asymmetric interest rate corridor and negative O/N deposit rate (-0.05%)
- Gradual phase-out of the two-week deposit facility supported by IRS instruments
- Upper limit on 3M central bank deposits as integral part of monetary policy instruments (and less frequent tenders)
- Growth Supporting Programme following FGS
- Required reserve ratio reduced from 2 percent to 1 percent

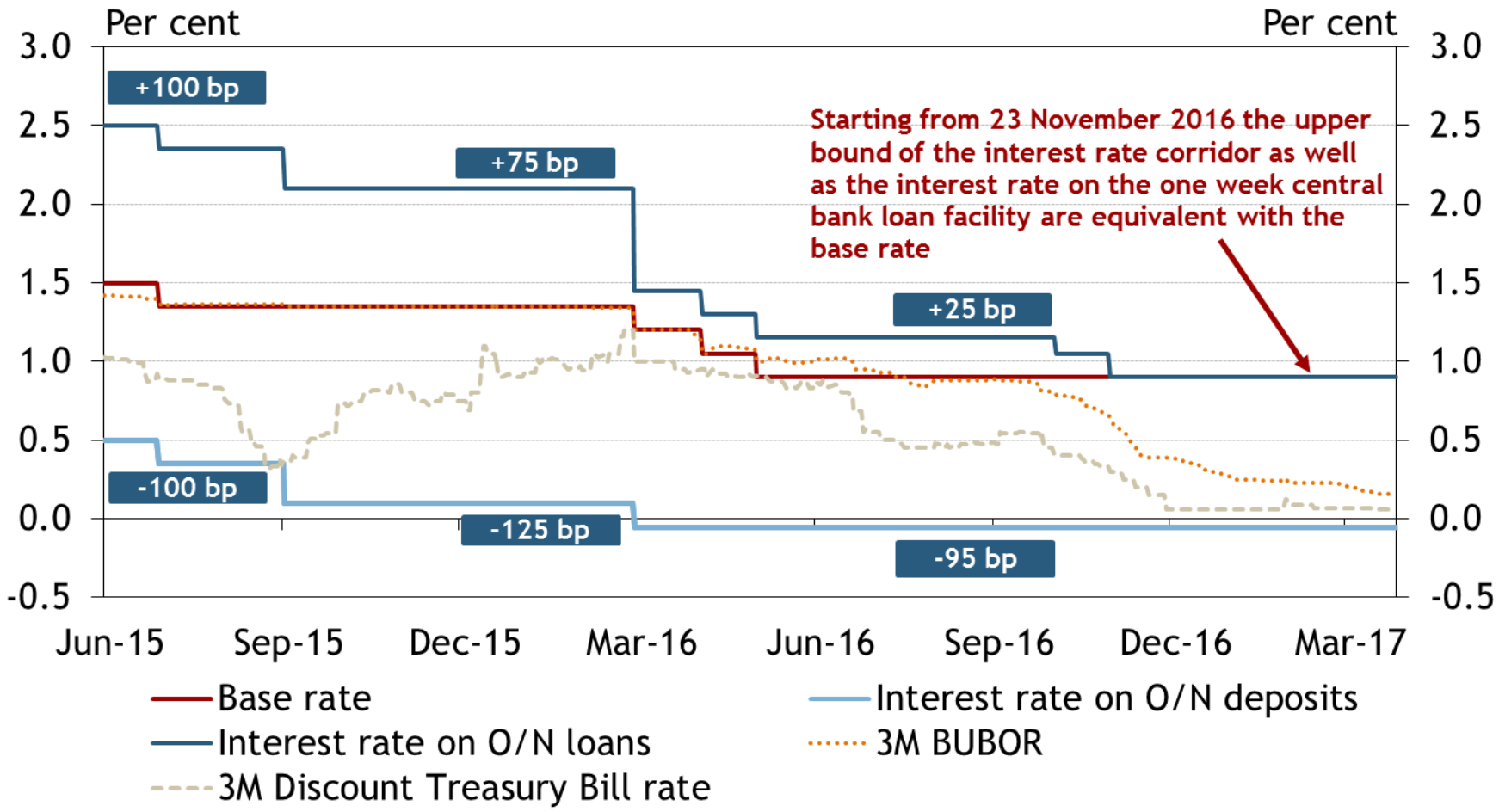
After a long easing cycle, the MNB maintains the current base rate for an extended period



The path of the central bank base rate and expectations

Source: MNB

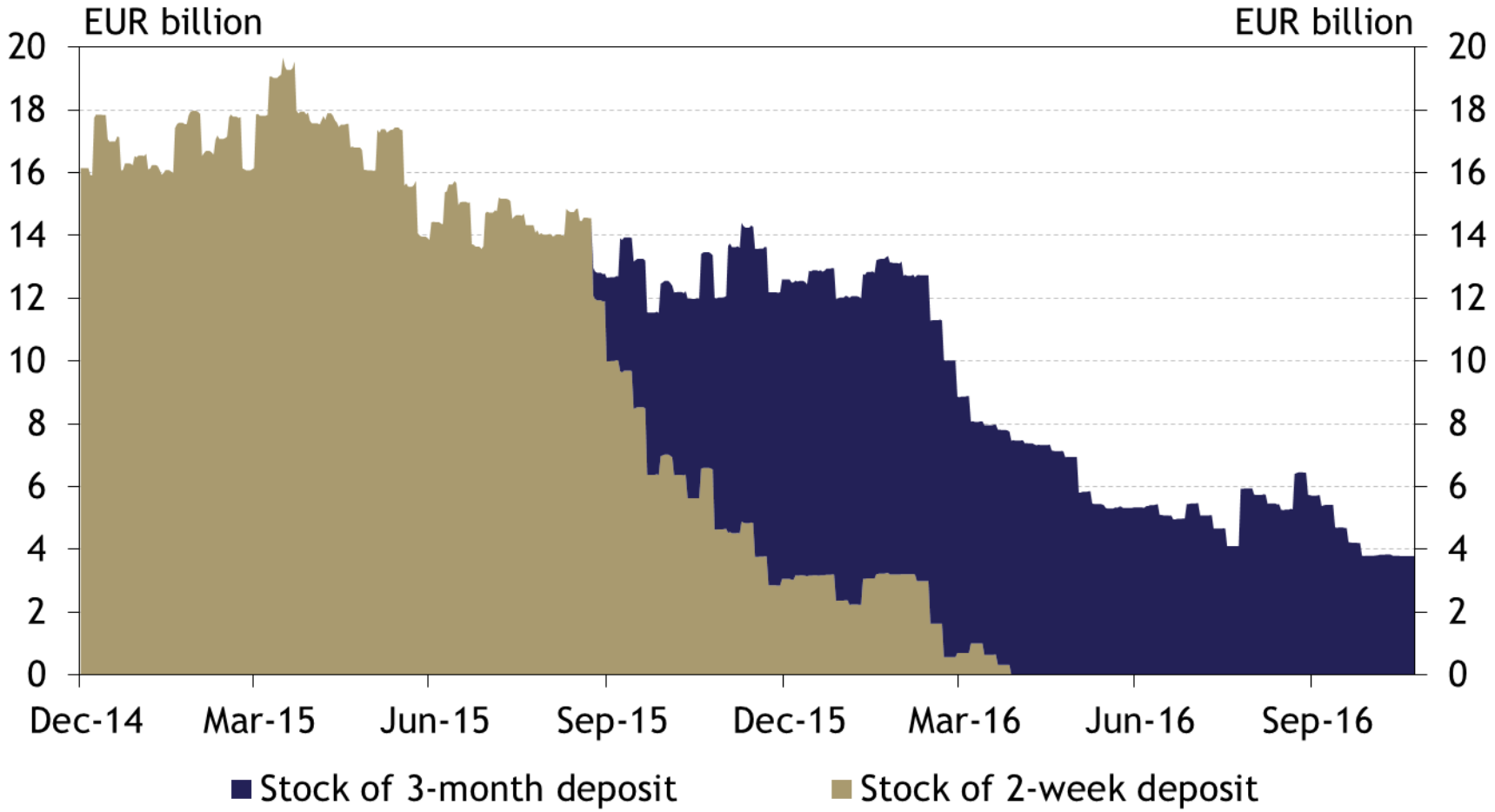
The interest rate corridor gradually became asymmetric



Money market yields and the interest rate corridor

Sources: MNB, ÁKK

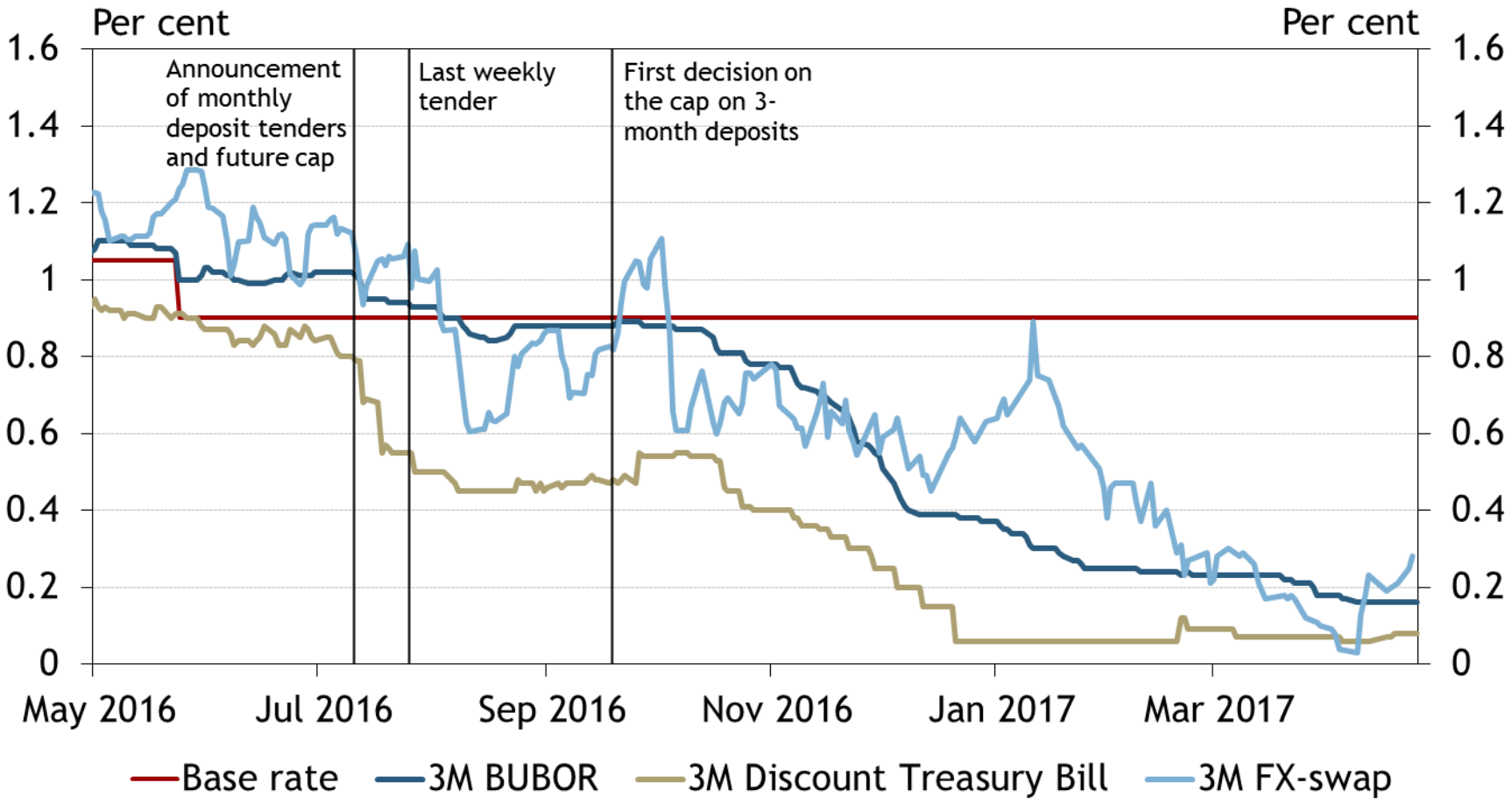
Gradual phase-out of the two-week central bank deposit facility



Stock of the main sterilisation instruments

Source: MNB

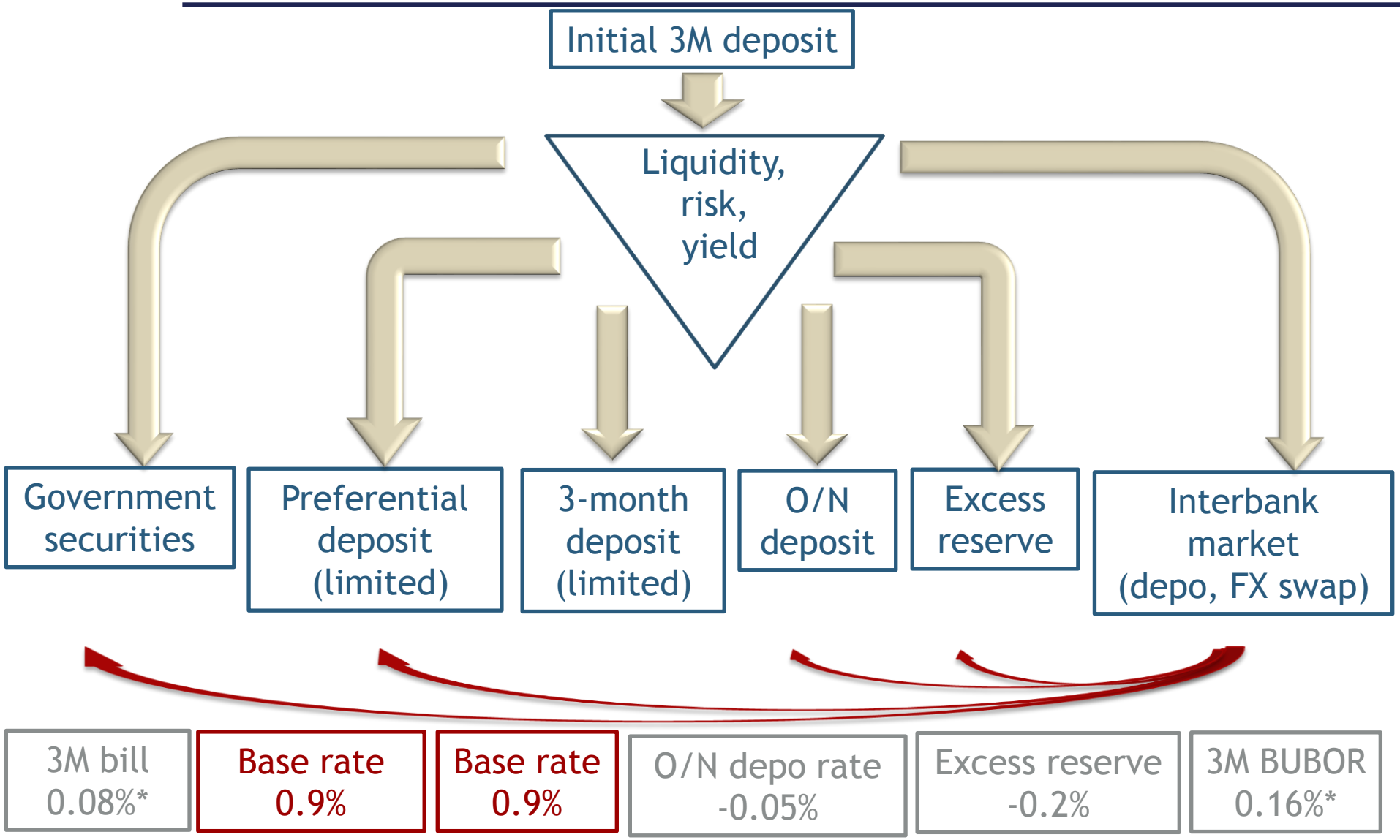
The limit on 3M deposits has resulted in a sharp fall in yields in all relevant markets



Short-term market yields and the base rate

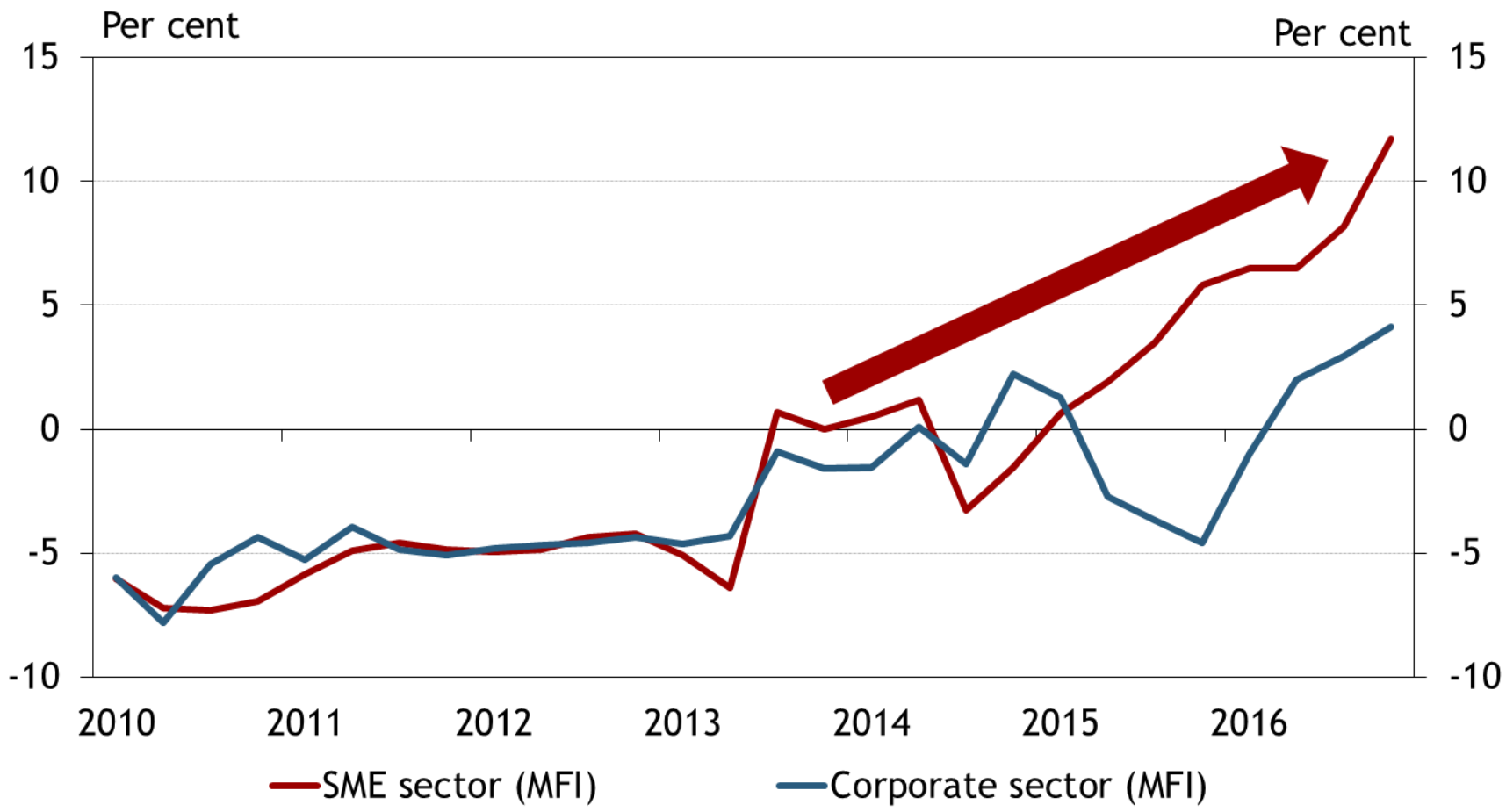
Sources: MNB, Bloomberg

Crowding liquidity out from the 3M deposit generates decline in yields



**Rates on 26 April*

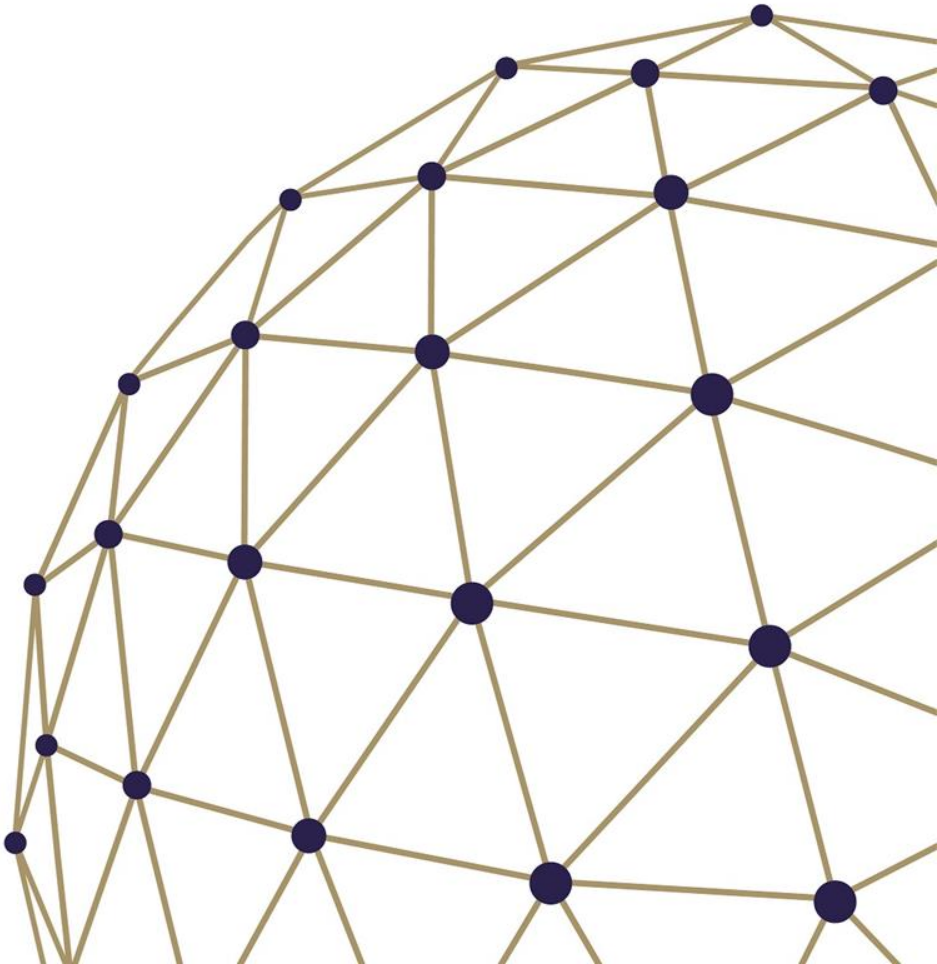
FGS improved significantly the financing conditions of the SME sector



Growth rate of corporate credit stock

Source: MNB

Thank you for your attention!



EUROPEAN CENTRAL BANK
EUROSYSTEM

Isabella Moder
International Relations &
Cooperation Division
European Central Bank

Spillovers from the ECB's non-standard monetary policy measures on south-eastern Europe

IMF/BoA Conference

Tirana, 5 May 2017

Overview

Motivation I

*"**International spillovers** from the monetary policy of one country to other economies are a **corollary of globalisation**. This entails that we, as **policymakers**, have **to rise to the challenge of conducting monetary policy in the presence of these unintended side-effects**. […] We should not underestimate the **challenges of living in the ever more closely interconnected global economy**."*

Vítor Constâncio, Vice President of the ECB
Hong Kong, 15 October 2015

- Discussion on **international effects** (i.e. spillovers) of **standard** and **non-standard monetary policy measures** of large economies in academia and policy making
- ECB launched **various non-standard monetary policy measures since October 2008**

Motivation II

- **South-eastern Europe** (SEE) in the neighbourhood of the euro area:
  - Bulgaria, Croatia, Romania: **3 EU member states**
  - Albania, Bosnia and Herzegovina, FYR Macedonia, Montenegro, Serbia: **5 EU candidate and potential candidate countries**
- Countries are **linked** with the **euro area through several potential transmission channels:**
  - Large presence of euro area headquartered banks and high euroisation → **financial/banking channel**
  - High trade integration and sizable remittance flows → **real channel**

Motivation III

- **SEE countries** operate under a **variety of exchange rate regimes**:
  - (Managed) floating inflation targeters (Albania, Romania, Serbia)
  - Stabilised arrangements with the euro as anchor (Croatia, FYR Macedonia)
  - Euro-based currency boards (Bosnia and Herzegovina, Bulgaria)
  - Unilateral adoption of the euro (Montenegro)
- **Literature** on **euro area monetary policy spillovers to SEE** countries is **scarce** (even absent for some countries)

Research questions

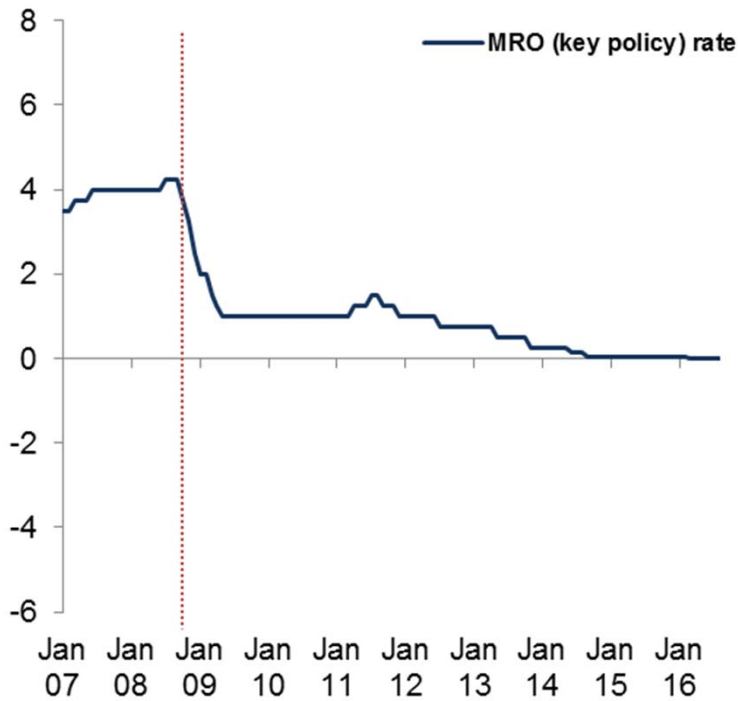
1. **How have the ECB's non-standard monetary policy measures affected macroeconomic developments in SEE?**

2. **Through which channels are shocks transmitted to SEE?**

3. **Does the exchange rate regime play a role in determining the sign/magnitude of a country's response?**

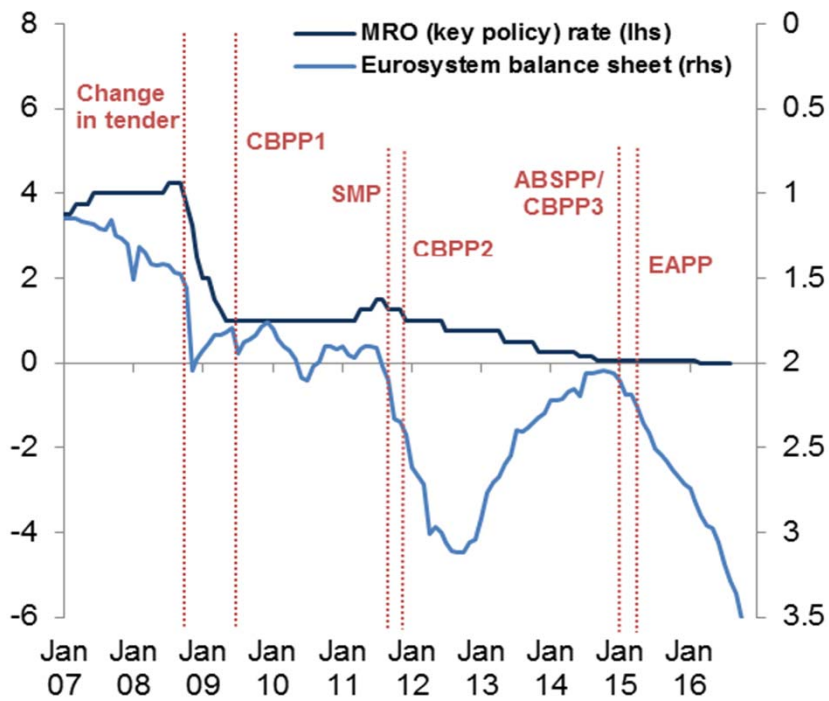
How to measure non-standard monetary policy?

MRO (key policy) rate
(in percent)



Source: ECB

MRO (key policy) rate (in percent) **and inverted Eurosystem balance sheet assets** (in EUR trillion)



Source: ECB

- Key policy rate does not incorporate non-standard monetary policy measures
- Eurosystem balance sheet assets mirror liquidity providing/absorbing measures
- Alternative indicators for non-standard measures: shadow rates, term spreads, announcement dummies

Empirical strategy to identify spillovers I

$$\sum_{s=0}^{p} \begin{bmatrix} A_{11}(s) & A_{12}(s) \\ A_{21}(s) & A_{22}(s) \end{bmatrix} \begin{bmatrix} y_1(t-s) \\ y_2(t-s) \end{bmatrix} + \begin{bmatrix} c_{11} \\ c_{21} \end{bmatrix} = \begin{bmatrix} \varepsilon_1(t) \\ \varepsilon_2(t) \end{bmatrix}$$

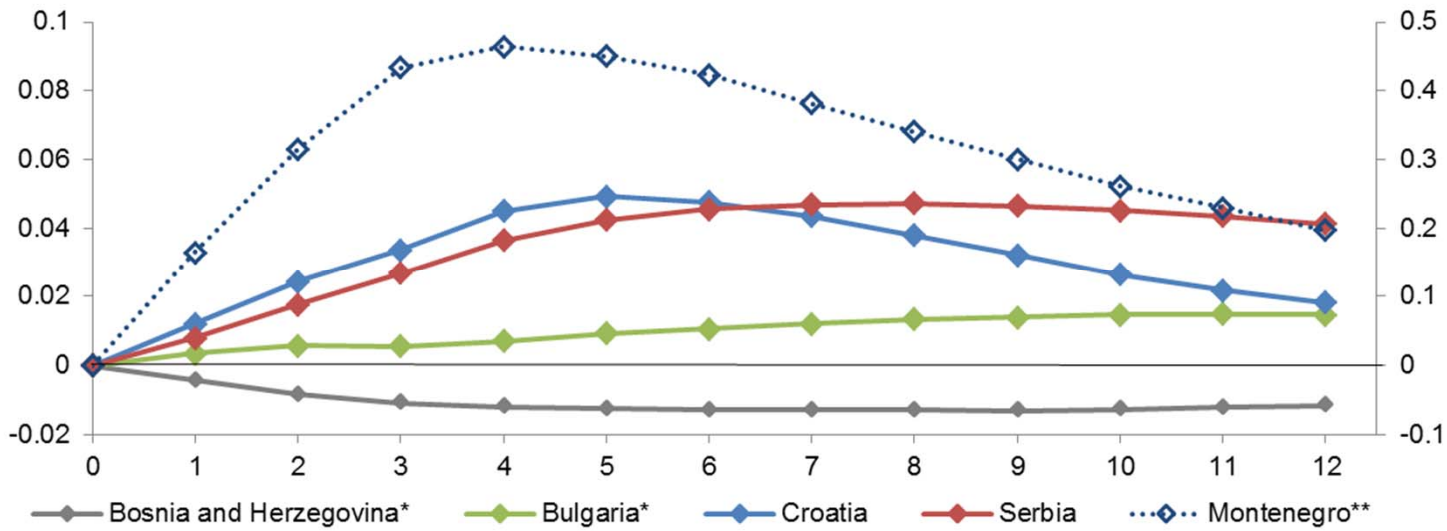
- Estimation of a **separate SVAR model per country**, consisting of
  - **Euro area variables** (output, price level, balance sheet assets, CISS-indicator of financial stress [Holló et al., 2012], EONIA-MRO spread, MRO)
  - **SEE country variables** (output, price level, exports, trade partners' output, interbank interest rate, monetary policy and exchange rate [if applicable])
- **Block exogeneity** in the spirit of Cushman and Zha (1997) → neither current nor past SEE variables influence euro area
- **Estimation with 4 lags**

Empirical strategy to identify spillovers II

- **Bayesian estimation** with BEAR toolbox (developed by R. Legrand, A. Dieppe and B. van Roye)
- **Monthly data** from **January 2008 to December 2015**
- **Shock identification** for impulse response functions via **sign and zero restrictions** (for euro area following Boeckx et al., 2014)
- **Main interest**: output and price level spillovers; role of financial/banking and real transmission channels

Output responses

Selected median responses to expansionary Eurosystem balance sheet shock
(in percent)

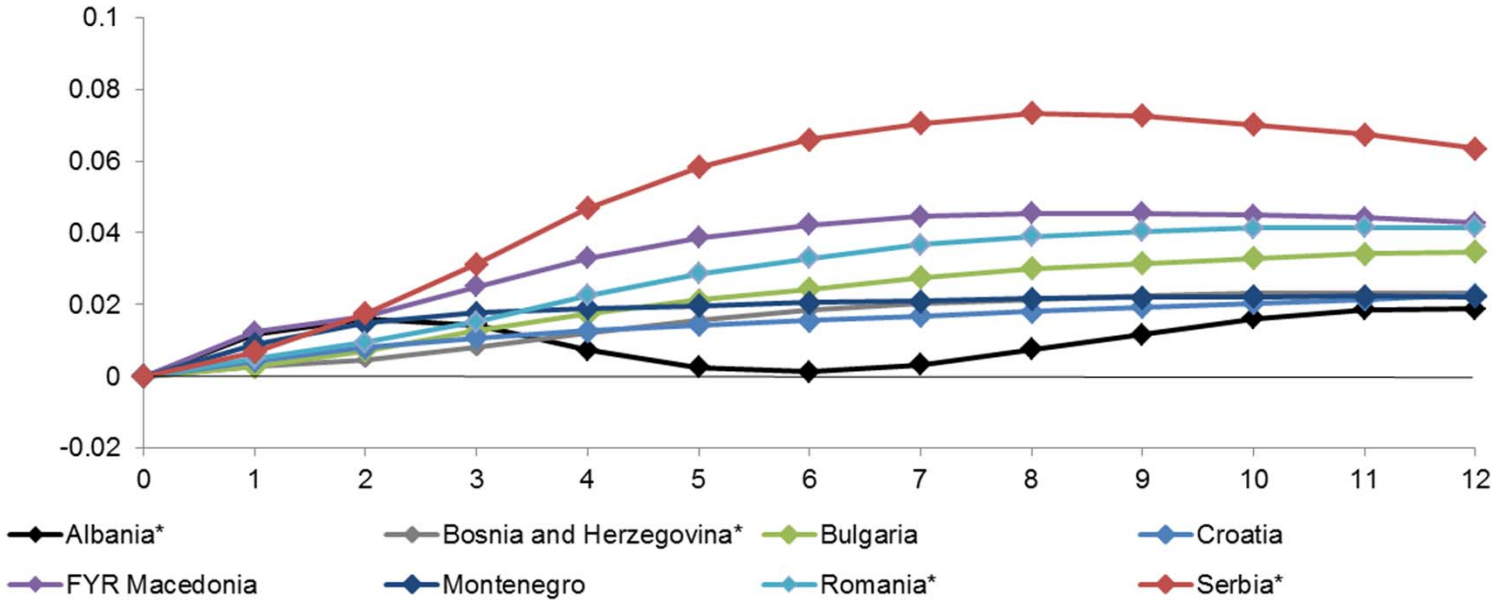


Notes: Response to one standard deviation Eurosystem balance sheet shock. The x-axis reports months and the y-axis percentage changes. (*) denotes not strictly significant shock responses. **For Montenegro, the response of industrial production is depicted on the right hand side.

- Strongest GDP reaction for Croatia and Serbia, followed by Bulgaria; spillover also on Montenegrin industrial production
- Bosnia and Herzegovina output responds slightly negatively
- No visible exchange rate regime effect

Price level responses

Median responses to expansionary Eurosystem balance sheet shock
(in percent)

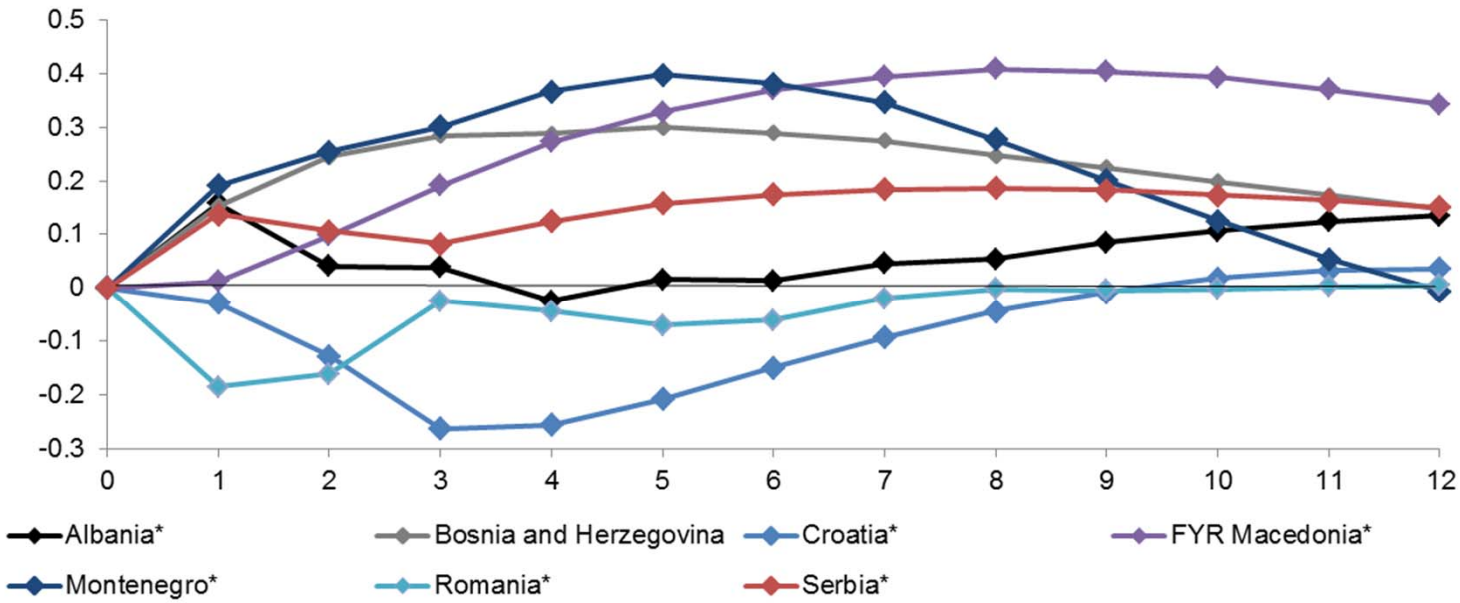


Notes: Response to one standard deviation Eurosystem balance sheet shock. The x-axis reports months and the y-axis percentage changes. (*) denotes not strictly significant shock responses.

- Positive price responses in all countries
- Potential pass through of import prices given high import ratio from euro area
- Again no visible exchange rate regime effect

Export responses

Selected median responses to expansionary Eurosystem balance sheet shock
(in percent)

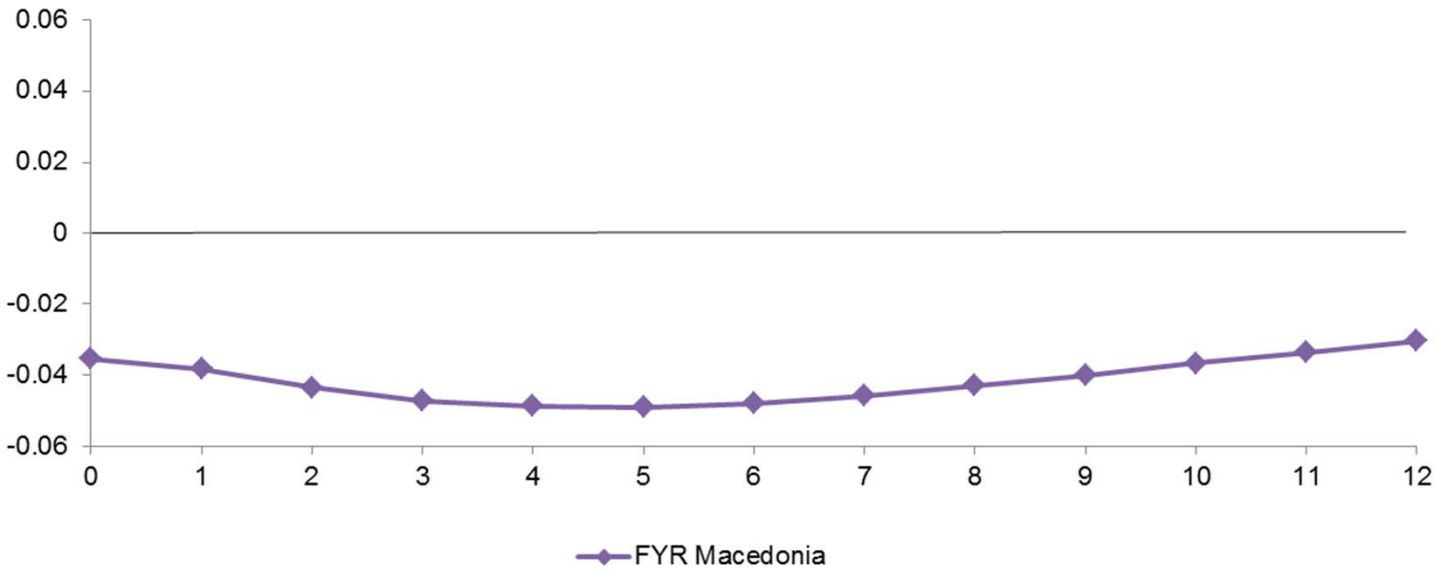


Notes: Response to one standard deviation Eurosystem balance sheet shock. The x-axis reports months and the y-axis percentage changes. (*) denotes not strictly significant shock responses.

- Distinct response of goods exports in almost all countries
- Mostly positive, negative for Croatia and Romania
- Importance of export transmission channel seems to be heterogeneous across countries

Interest rate responses

Selected median responses to expansionary Eurosystem balance sheet shock
(in percentage points)



Notes: Response to one standard deviation Eurosystem balance sheet shock. The x-axis reports months and the y-axis percentage point changes.

- Short-term interbank interest rate reacts immediately and significantly only in the case of FYR Macedonia
- Limited role of bank lending channel driven by cross-border bank deleveraging in the aftermath of the crisis?
- Other financial flows (foreign direct investment, portfolio) not captured in the model

The role of exchange rates/exchange rate regimes

- In the model output **no pronounced response of exchange rates** in the respective countries (Albania, Romania, Serbia)
- In line with **relatively stable exchange rates during 2008 to 2015**, especially in the case of Albania and Romania
- Moreover, Albania, Romania and Serbia have **significantly decreased domestic key policy rates** (by cumulatively between 450 to 575 basis points)
- Absence of strong exchange rate response **explains why output and price level responses do not differ with respect to exchange rate regimes**

Conclusions

- **Sizable spillovers** from ECB non-standard monetary policy measures **on SEE**:
  - **Output effects in around half** of the countries
  - **Pronounced price effects on all countries**, potentially driven by import prices given high euro area import share
- **(Goods) exports** respond in almost all countries, **mostly positive**
- **Evidence for bank lending channel low**
  - Only in one country shock spills immediately over to interbank interest rate
  - Other financial flows (foreign direct investment, portfolio) not included
- **Exchange rate regimes do not explain sign/magnitude of output and price level responses**
  - No distinct exchange rate response in model output
  - In line with real developments from 2008 to 2015

Policy implications

- **SEE countries clearly affected** by euro area non-standard monetary policy measures
- Ultimately, whether **spillovers beneficial or harmful** depends on **business cycle position of SEE country** (and more generally on business cycle synchronization with euro area)
- **Outcome relevant for predicting potential spillovers** from **reversal** of ECB non-standard measures
  - Spillovers might however be asymmetric and depend on SEE country fundamentals

Thank you for your attention!

Related literature

Conventional monetary policy spillovers:

- Near-VAR model in Jimenez-Rodriguez et al. (2010), GVAR model in Feldkircher (2015) as well as Hajek and Horvath (2016), BVAR model in Petrevski et al. (2015), FAVAR model in Potjagailo (2016) → Results are very heterogeneous

Non-standard monetary policy spillovers:

- Halova and Horvath (2015) employ PVAR model for CESEE, find significant spillovers on output while price effect is rather weak
- Bluwstein and Canova (2016) use mixed-frequency two-country models, find slightly negative output effect and ambiguous effect on inflation for SEE (BG and RO)

→ Four SEE countries not covered at all in spillover literature!

Identification via sign and zero restrictions

$assets_t^{EA}$	$CISS_t$	$spread_t^{EA}$	MRO_t	y_t^{EA}	p_t^{EA}	i_t^{SEE}	e_t	r_t^{SEE}	y_t^{SEE}	x_t^{SEE}	p_t^{SEE}	y_t^*
$+$	$-$	$-$	0	0	0	$\cdot$	$\cdot$	0	0	0	0	0
1-1	0-1	0-1										

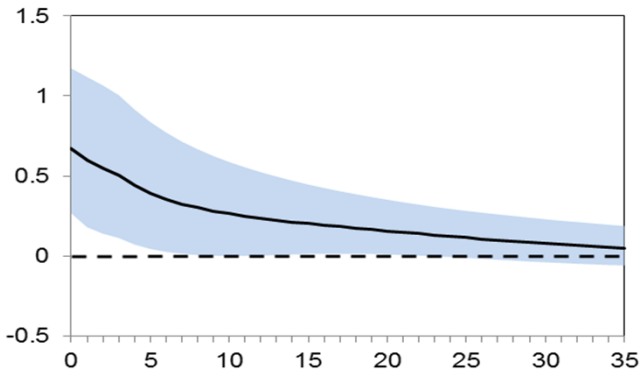
0 … zero restriction on impact

+/– … sign restriction on the periods specified

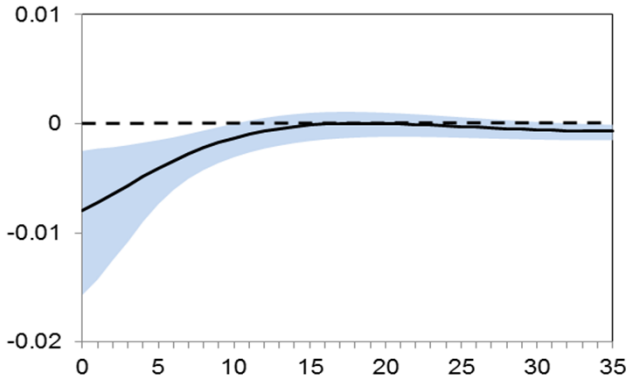
$\cdot$ … no restriction

Euro area results I

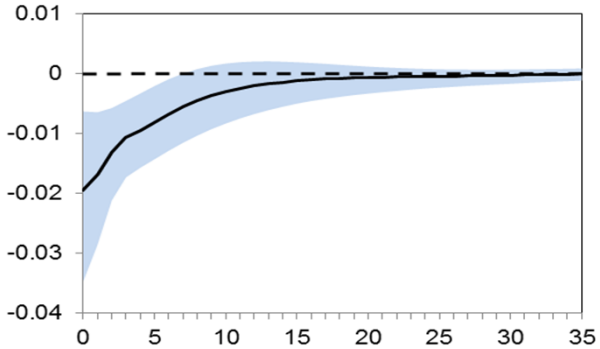
Eurosystem balance sheet assets
(in percent)



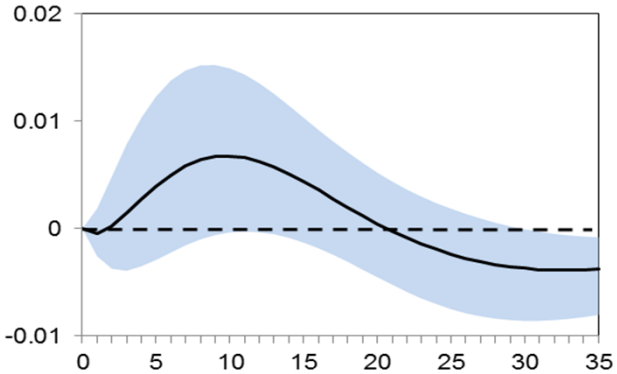
CISS
(in absolute values)



EONIA-MRO spread
(in percentage points)



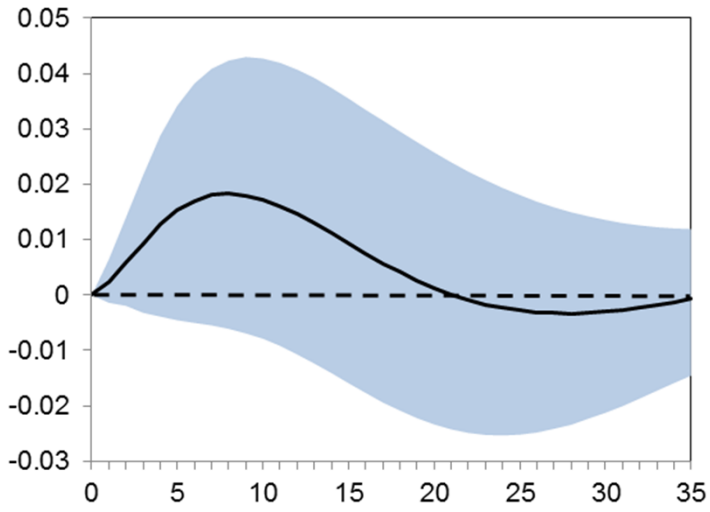
MRO
(in percentage points)



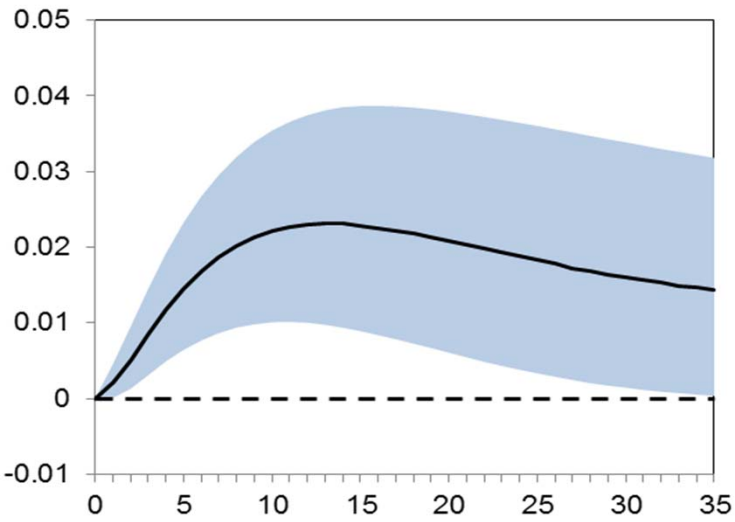
Notes: Response to one standard deviation Eurosystem balance sheet shock. The x-axis reports months and the y-axis changes in units as indicated. The shaded area reports pointwise 68 percent credibility intervals.

Euro area results II

Euro area output
(in percent)



Euro area price level
(in percent)



Notes: Response to one standard deviation Eurosystem balance sheet shock. The x-axis reports months and the y-axis percentage changes. The shaded area reports pointwise 68 percent credibility intervals.

Robustness tests and future work

- **Results are robust when using**
  - **Shadow rate by Wu and Xia (2016):** one exception (Serbia) where exchange rate appreciates, alleviating inflationary pressures on the price level → in line with our findings on the role of exchange rates
  - Only position "**Securities held for monetary policy purposes**" of the Eurosystem's balance sheet: Serbia again exception
  - A **shorter data sample** that stops in December 2014 (as from January 2015 asset purchases were pre-announced)
- **Future work might shed light on**
  - Spillovers of **conventional versus non-standard monetary policy measures**
  - Spillovers of **euro area versus US monetary policy shocks**
  - Whether **foreign direct and portfolio investment** transmit shocks
  - Systematic **examination of determinants** of sign/magnitude of spillovers (beyond exchange rate regimes)

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Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs,
Education and Research EAER
State Secretariat for Economic Affairs SECO

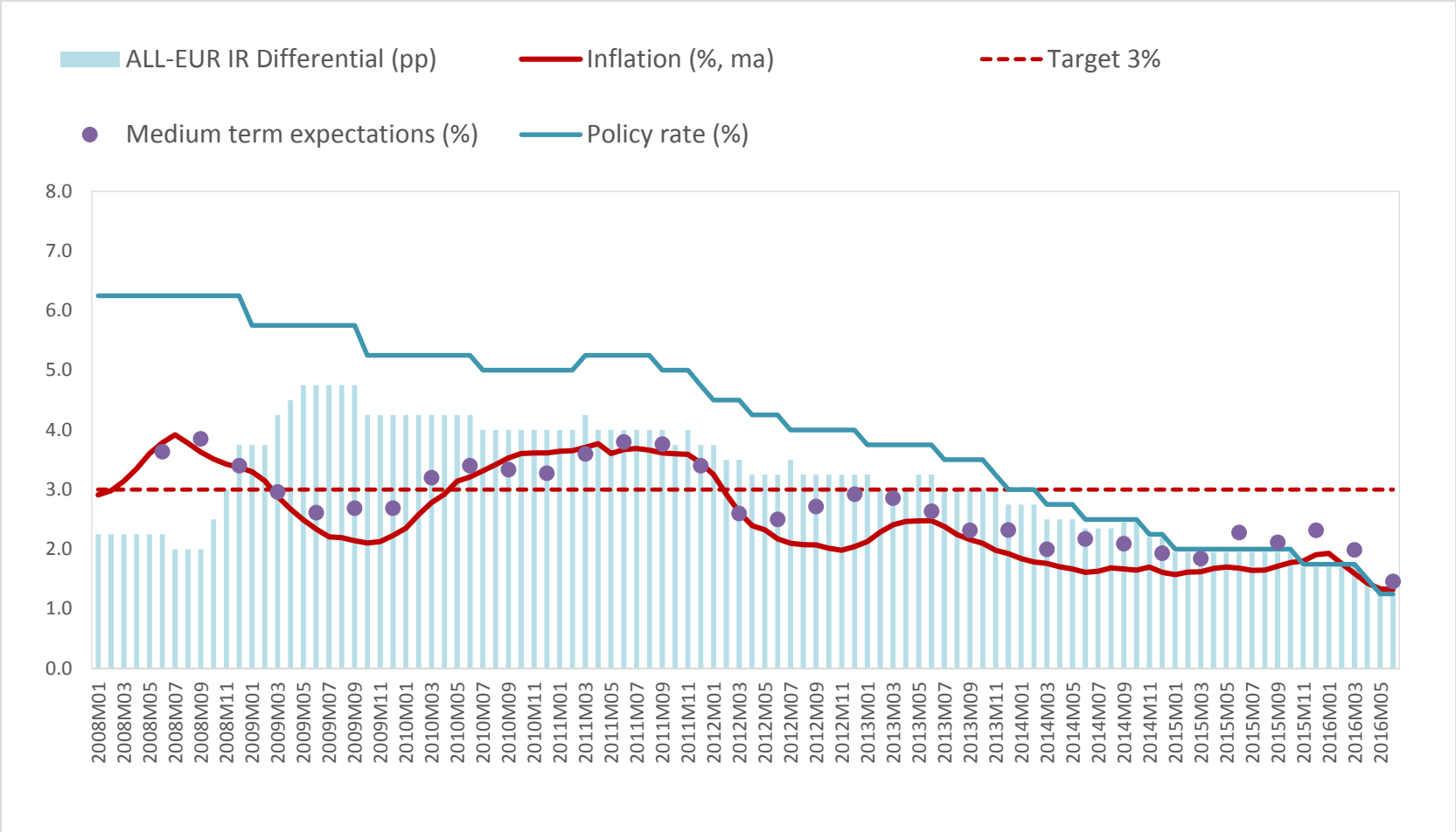
Estimating the lower policy rate bound in a euroized economy*

*Based on an IMF Working Paper from Erald Themeli (Bank of Albania), Romain Veyrune, Ezequiel Cabezon, Shaoyu Guo and Guido della Valle (all IMF), forthcoming

CONTENT

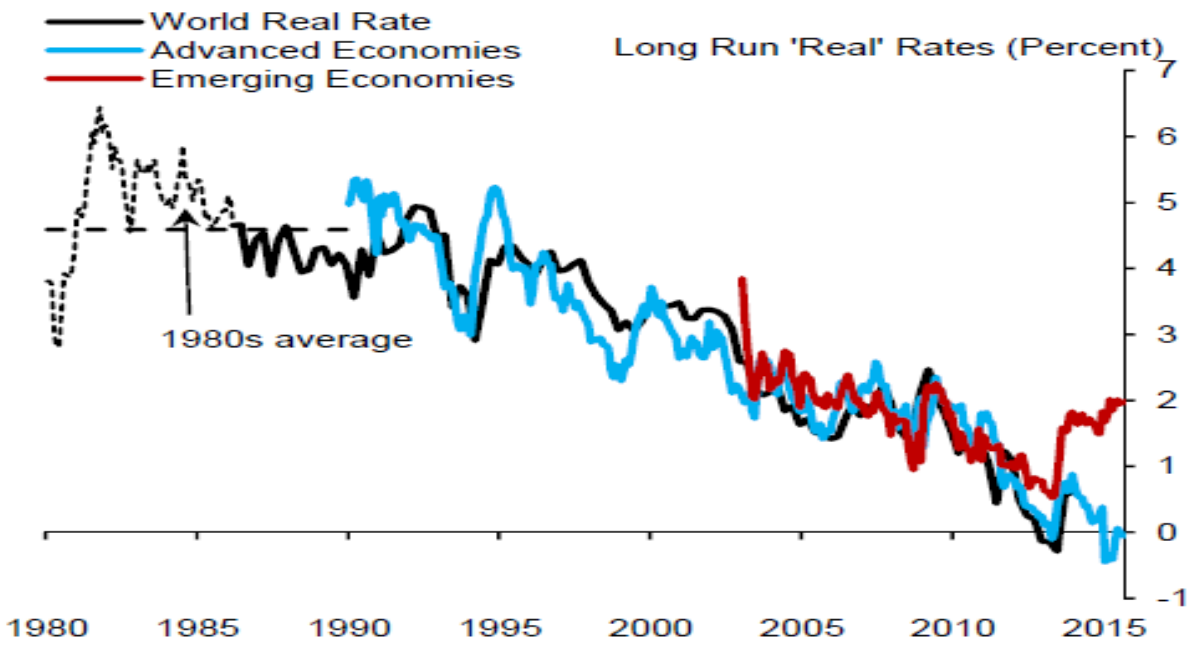
CONTENT

I. THE CONTEXT (i)



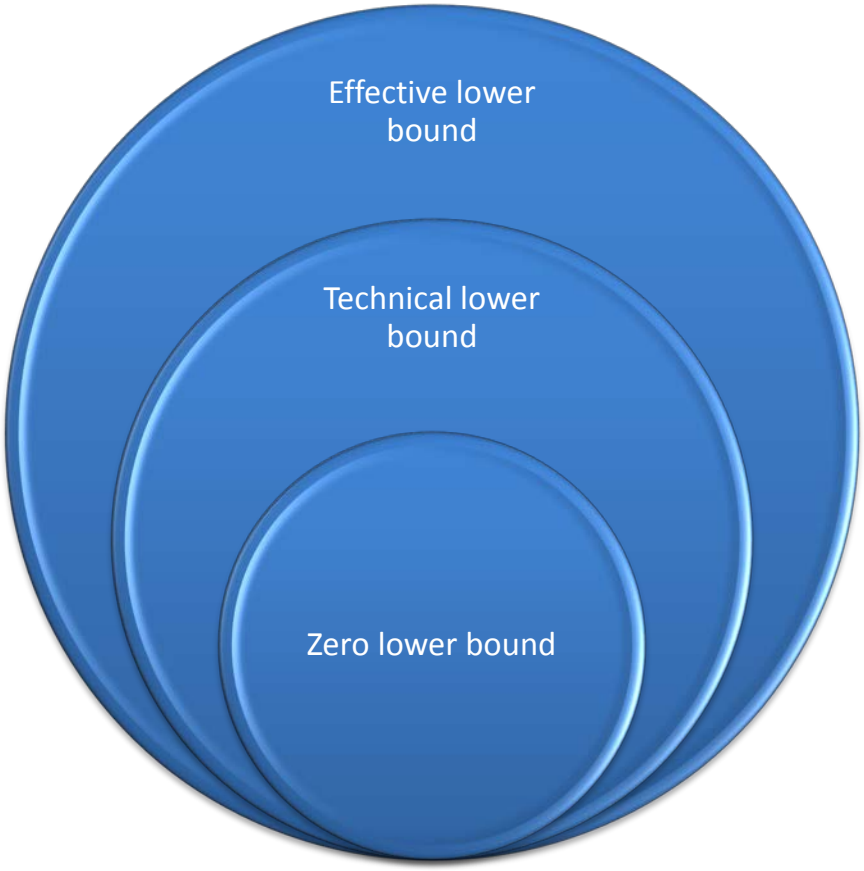
I. THE CONTEXT (ii)

Global real interest rates since 1980

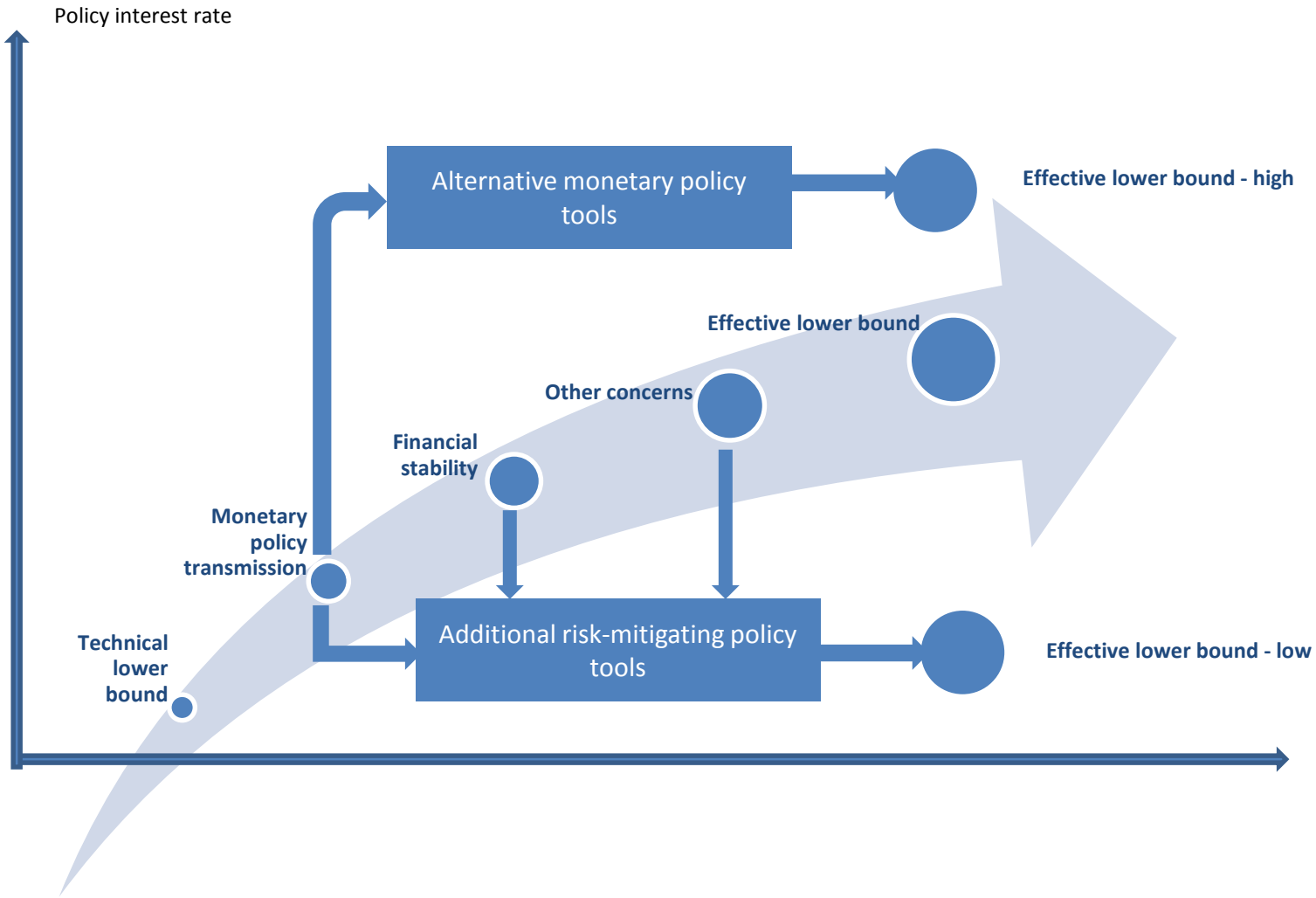


CONTENT

II. SOME CONCEPTS (i)

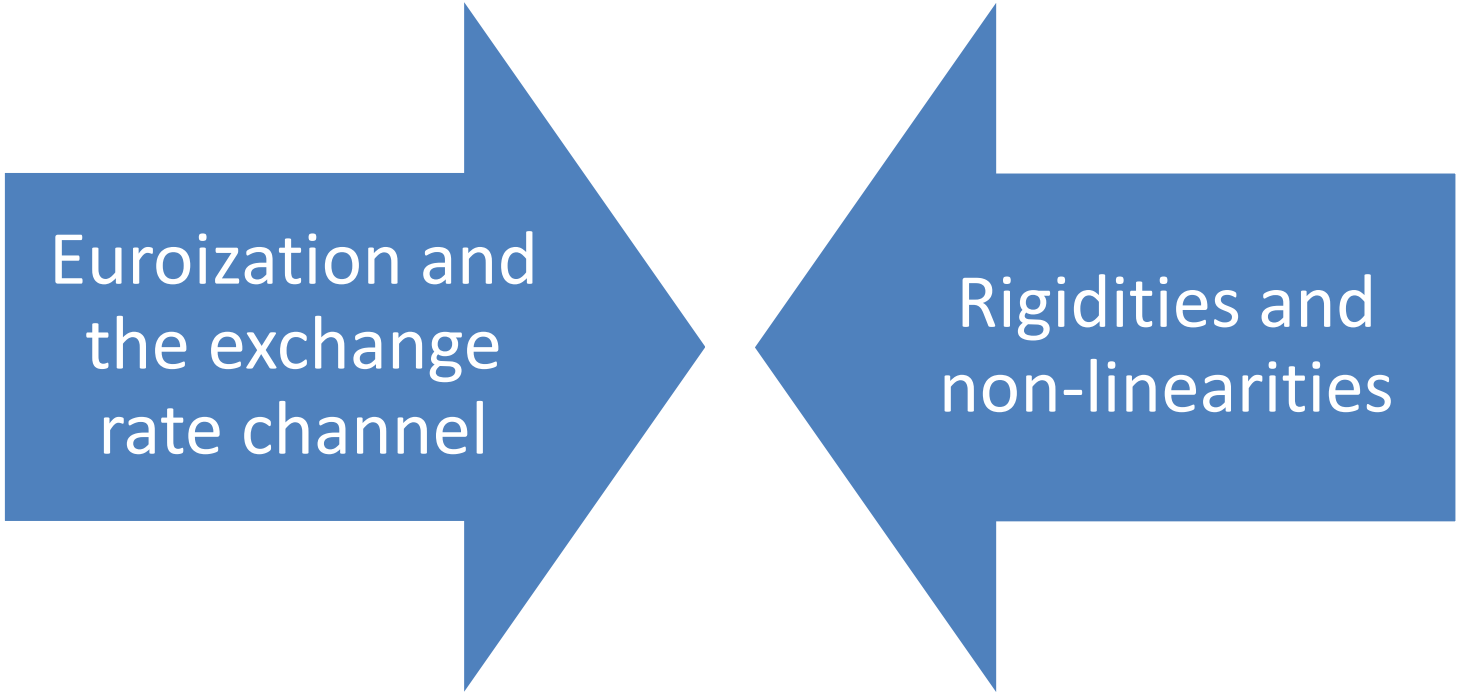


II. SOME CONCEPTS (II)



CONTENT

III. THE IMPAIRMENT IN THE TRANSMISSION MECHANISM (i)

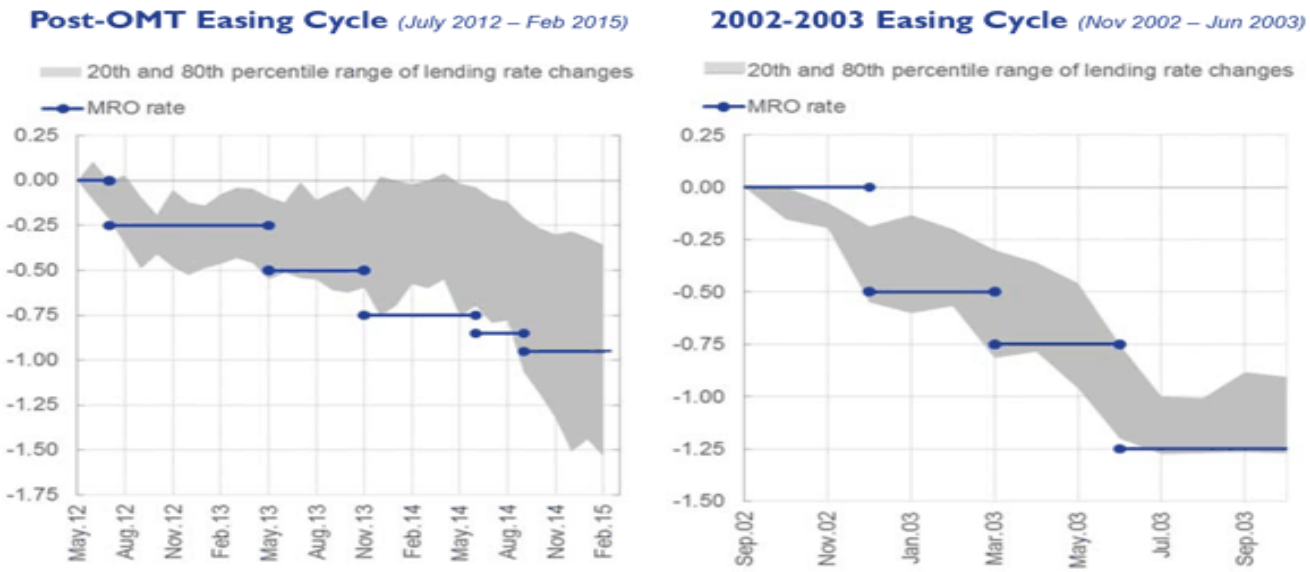


III. THE IMPAIRMENT IN THE TRANSMISSION MECHANISM (ii)

The ECB experience

Impairments in Transmission

Transmission of MRO Rate Reductions to Bank Lending Rates
(percent)



Sources: Reuters, ECB calculations.
Notes: Last observation for lending rates February 2015 (left chart), or October 2003 (right chart). The grey ranges define the 20th to 80th percentile of short-term bank lending rates for small-sized loans (<€1mln) to NFCs.

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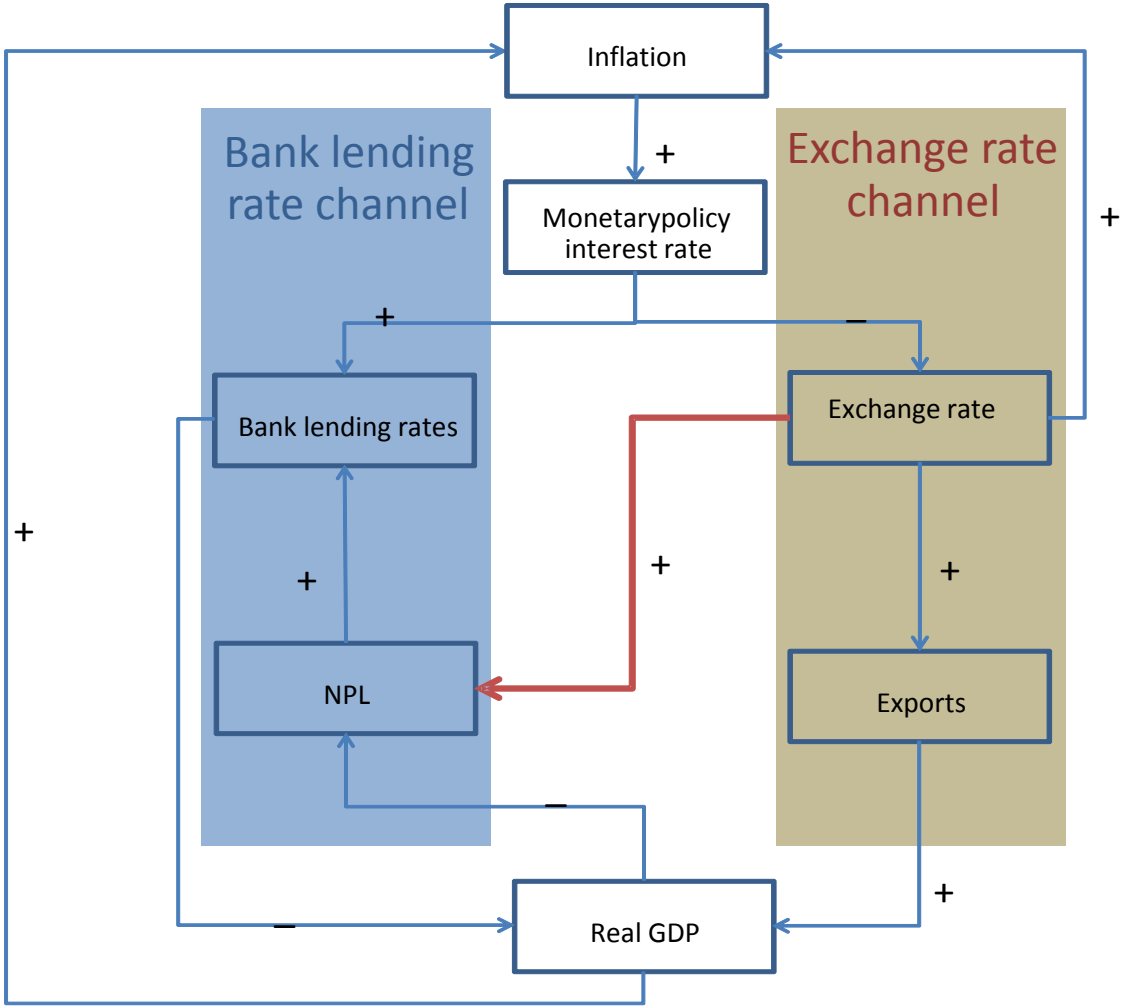
www.ecb.europa.eu

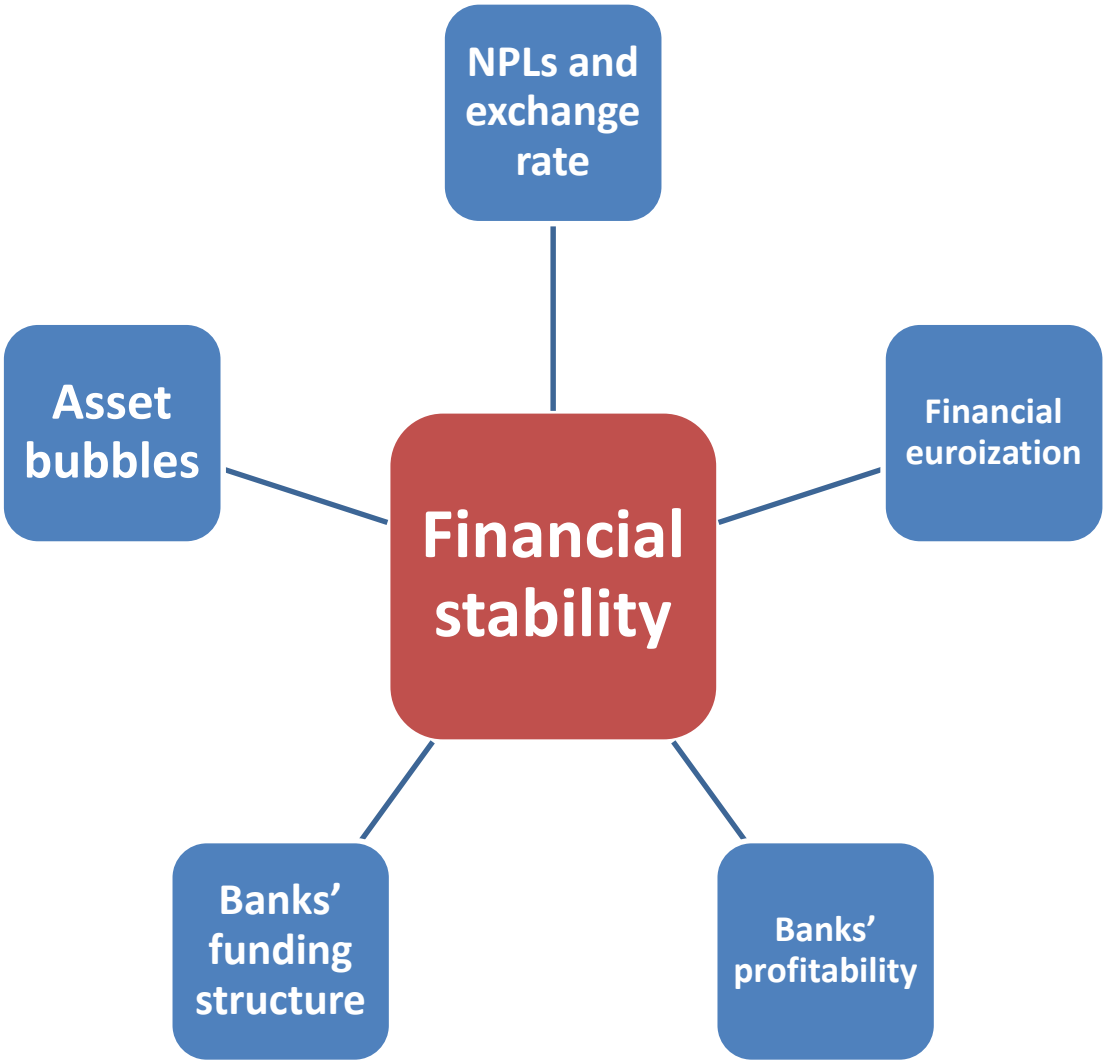
III. THE IMPAIRMENT IN THE TRANSMISSION MECHANISM (iii)

The banking lending channel and the exchange rate channel in an euroized economy



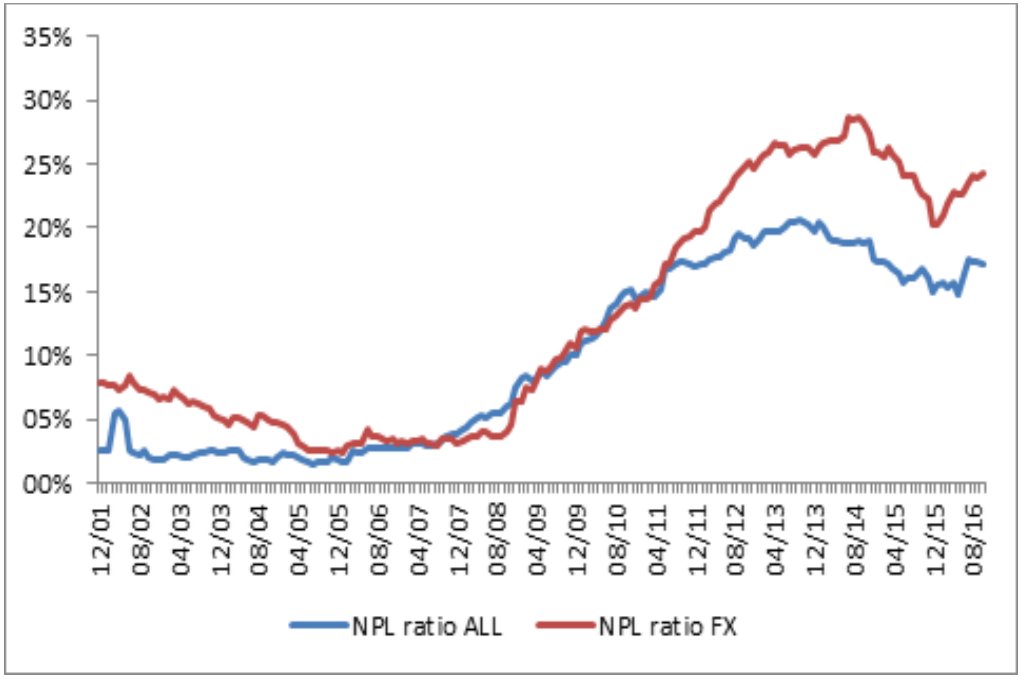
CONTENT

IV. FINANCIAL STABILITY (i)



IV. FINANCIAL STABILITY (ii)

Euroization, the effective lower bound and NPL: the case of Albania

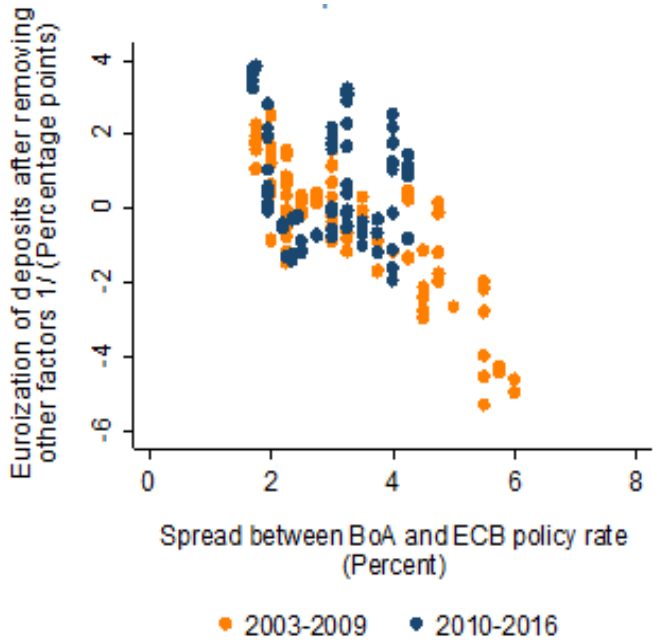


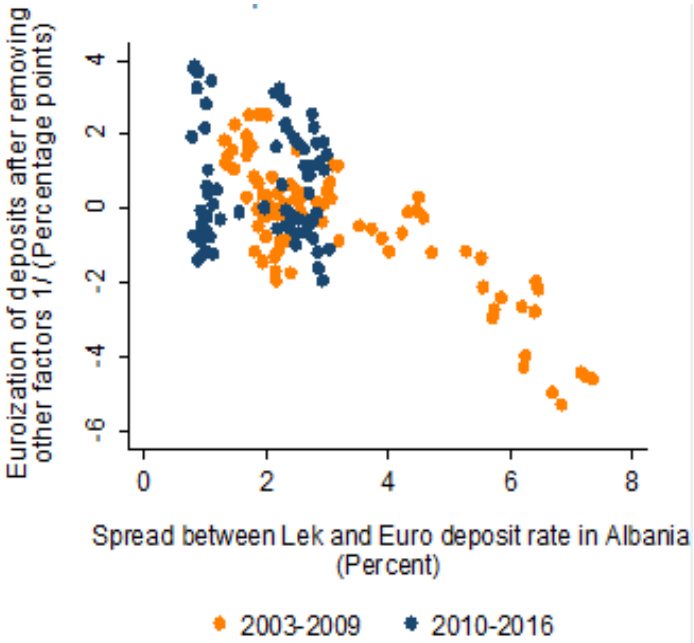
10% depreciation → 3.1% NPL in one year

10% depreciation → 2.1% NPL in two years

IV. FINANCIAL STABILITY (iii)

Interest rate differential and deposit euroization: the case of Albania

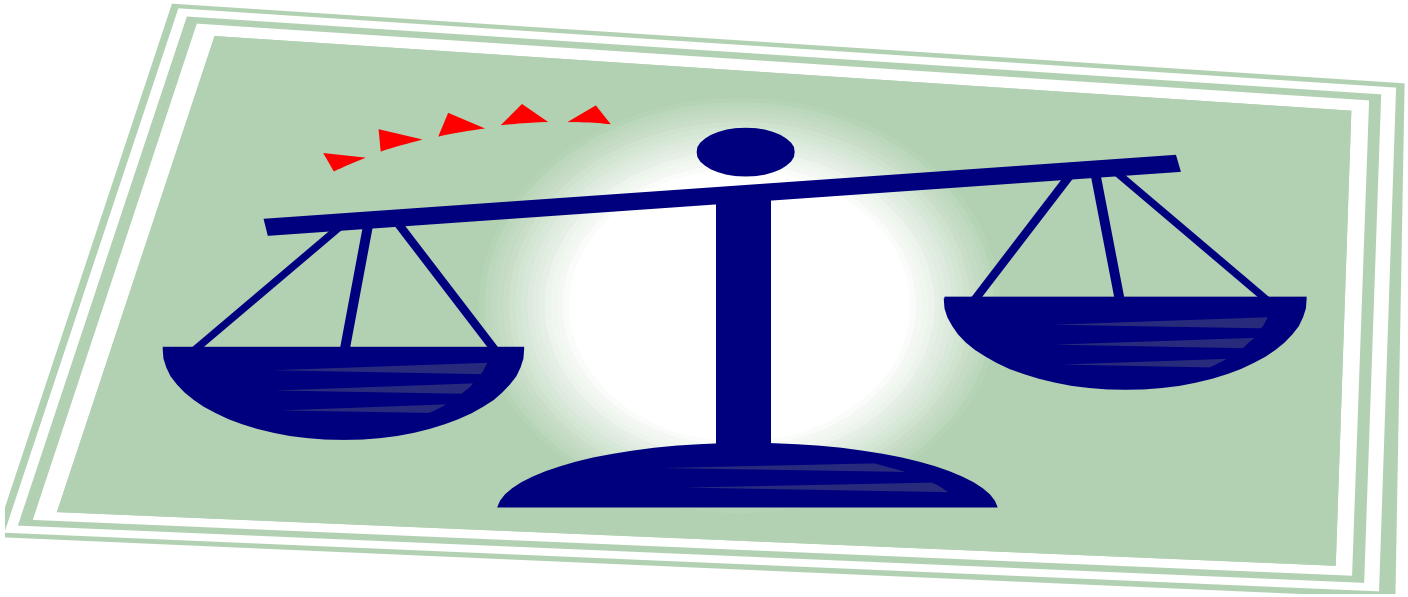




Sources: IMF, estimates.
1/ Regression residual of ratio FX-to-total deposit on inflation, openness, depreciation and Min. var. portfolio.

IV. FINANCIAL STABILITY (iv)

The effective lower bound and banks' profitability

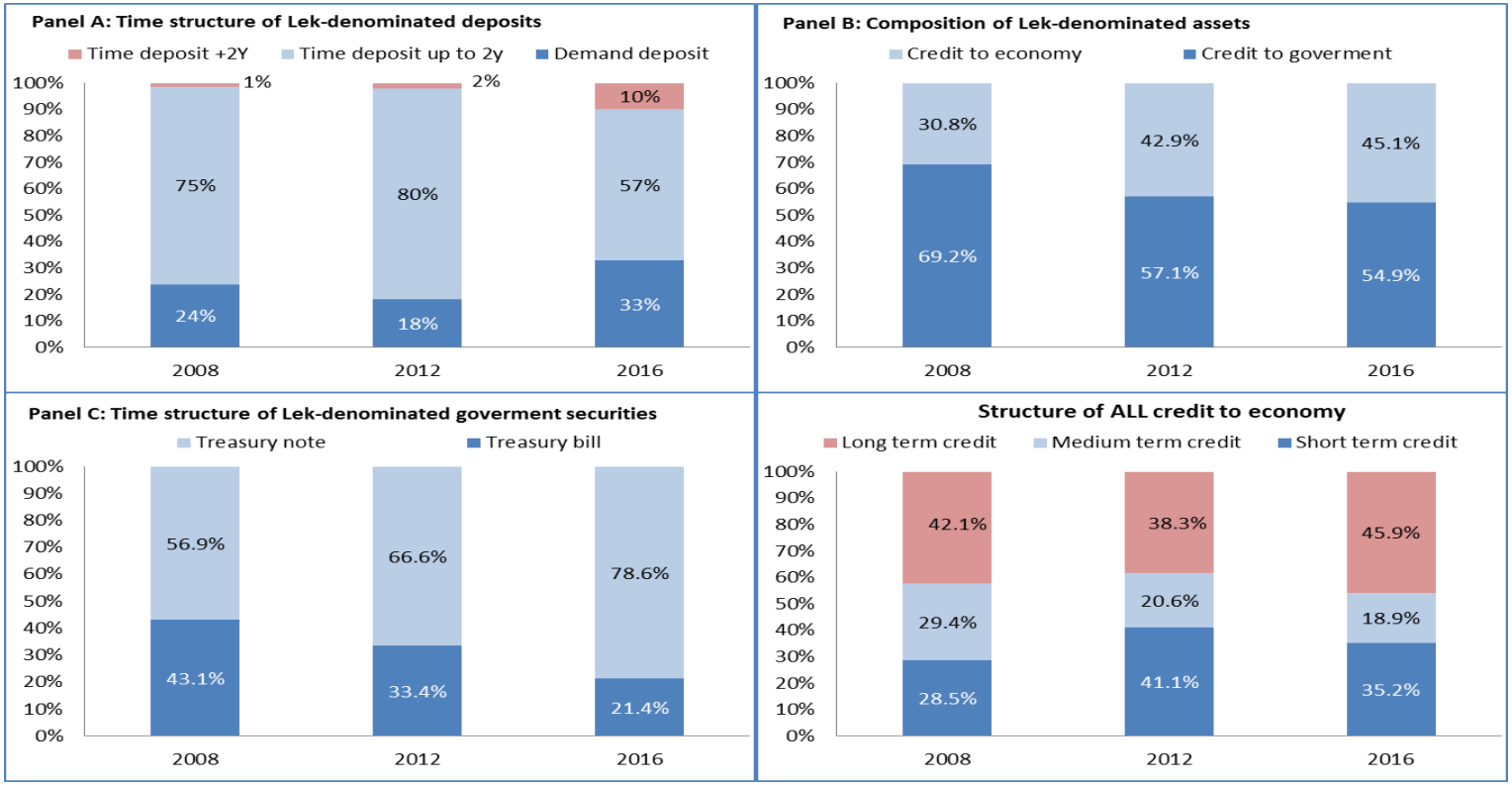


- net interest income

+ lower NPL;
+ greater loan demand;
+ higher non-interest income

IV. FINANCIAL STABILITY (v)

The effective lower bound and banks' funding structure: the case of Albania



CONTENT

V. OTHER FACTORS (i)

- **There can be other adverse, unintended consequences of low policy rates that do not affect the effectiveness transmission mechanism or do not raise financial stability risks**
- **They may derive from other objectives the central banks are legally mandated to pursue**
- **These additional consequences may also take peculiar forms in transition economies with high euroization (e.g. promote fixed-capital formation, promote market development, etc)**

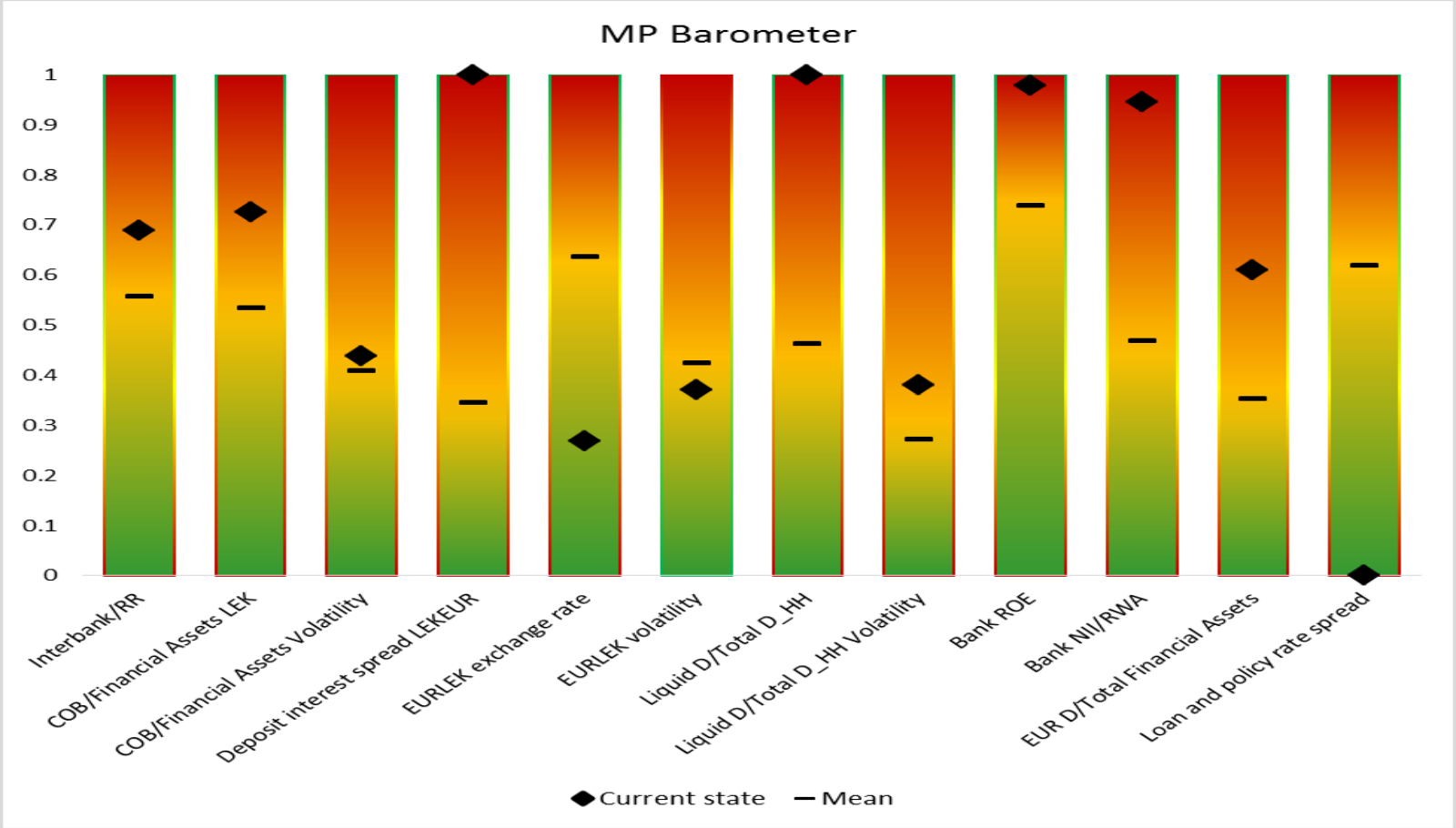
Effect on savings

Credit allocation

CONTENT

VI. THE MONITORING FRAMEWORK

The Barometer: An example of monitoring framework



CONTENT

VII. CONCLUSIONS (i)

General considerations

- The technical lower bound can be quantitatively estimated on the basis of the currency carry costs relative to account holding costs;
- The ELB does not coincide with the technical lower bound. There are several reasons why central banks may not wish to lower rates to the theoretical minimum;
- The ELB depends not only by the structural features of the economy and of the financial system but also on how central banks interpret the trade-off between the effects of different available options and the relative merits of different policy tools;
- The ELB may change over time not only because economic agents adapt but also because policy options vary and the case for low policy rates may become more compelling after alternative non conventional tools have been used.
- The ELB varies from country to country, it requires policy judgement aided by a well-established monitoring framework

VII. CONCLUSIONS (ii)

The case of Albania

- The single most important factor influencing the ELB is the ER;
- The monitoring framework provided evidence of initial:
  - Disintermediation;
  - Deterioration of banks' funding profile;
  - Lower banking profitability;
  - Increased demand of large denomination banknotes
  - Higher euroization and risk of large-scale portfolio shift;
- Continuous effectiveness of transmission mechanism and ER stability led to the conclusion that there would have been scope for lowering rates if needed;
- The evidence of growing risks however also suggested that the room was overall limited.

National Bank of Serbia

Conduct of monetary policy with financial stability issues and challenging environment – Case of Serbia

Branislav Zoroja, gen. manager
Monetary Operations Department

Negative Euro Area Interest Rates and Spillovers on Western Balkan Central Bank Policies and Instruments

4-5 May 2017, Tirana, Albania

Opinions expressed in the presentation by the author do not necessarily reflect the official viewpoint of the National Bank of Serbia.

Content

- IT framework in Serbia
- „Eurisation“ as financial stability issue
- Challenging environment
- Adjusted conduct of monetary policy
- Challenges and perspectives

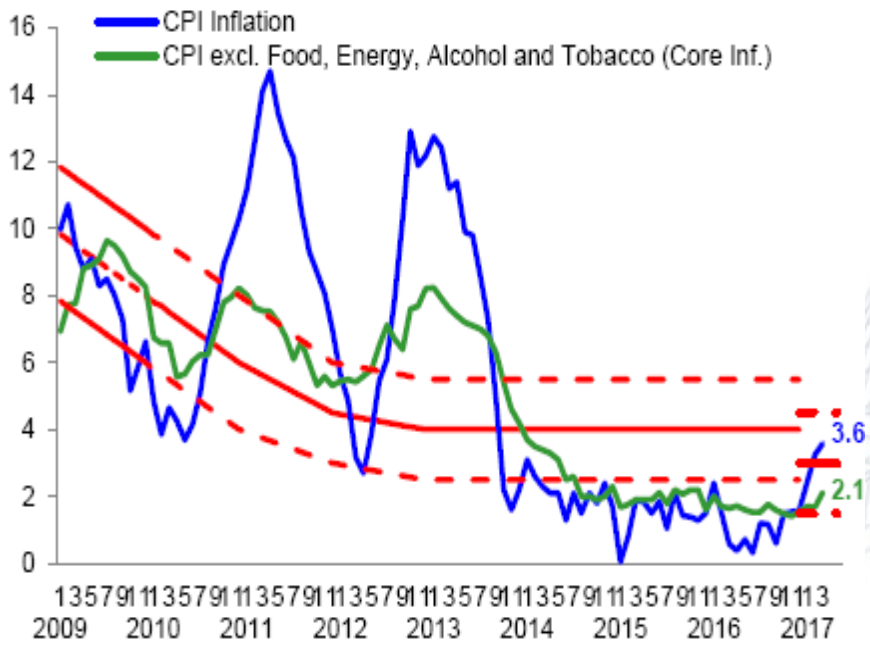
National Bank of Serbia

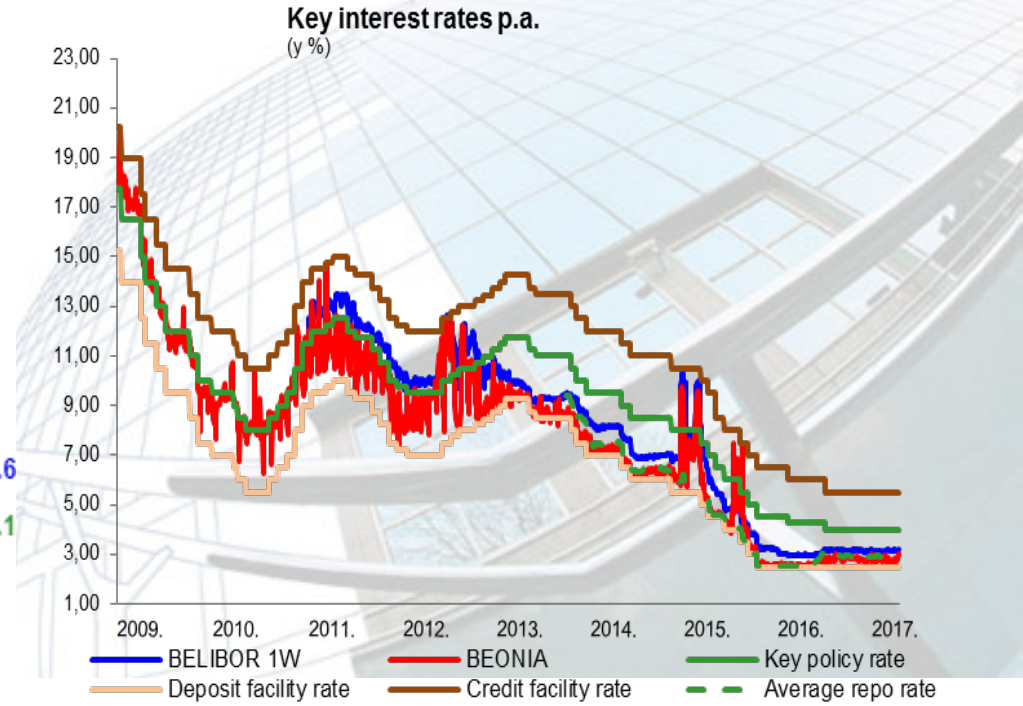
Inflation framework in Serbia

- IT monetary framework NBS adopted 2006, officially from 2009.

Standard measures:

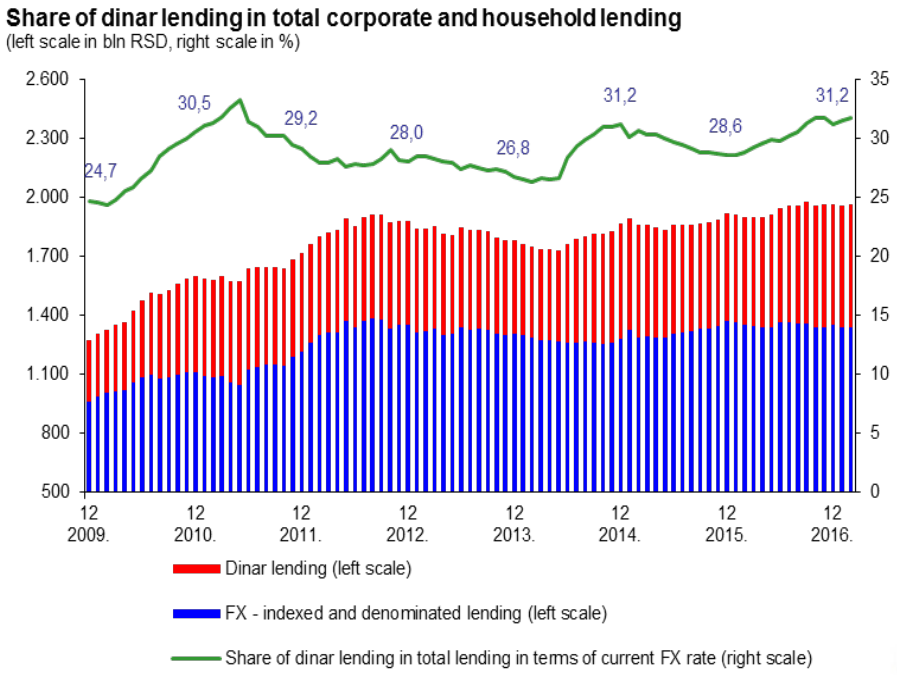
- Key policy rate as a main instrument (in main OMO, currently 1W liquidity absorbing repo);
- Symetrically set interest rate corridor (credit and deposit facility) around key policy rate;
- Required reserve, as important auxiliary monetary and prudential instrument;
- FX Interventions under manage floating ER regime;
- FX swap auctions.

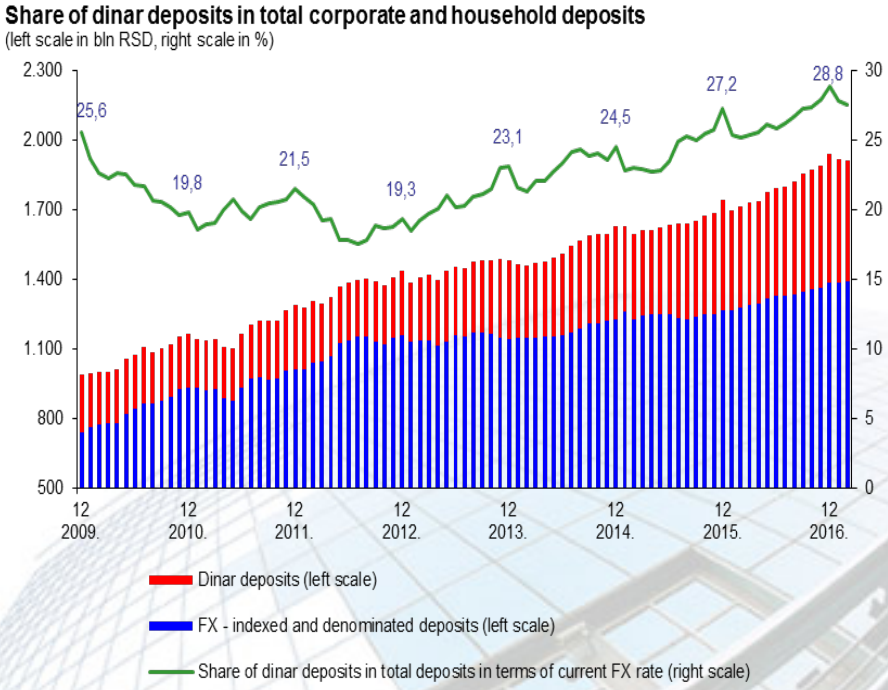




National Bank of Serbia

High Euroisation as financial stability concern (1)





- Historically high level of eurisation.
- Reasons: bad legacy (hiperinflation, sharp ER movements, unfavourable geopolitical developments, no joint approach of economic stakeholders…led to devastation of domestic currency)
- Some improvements visible on deposit side in last several years (low inflation and relative ER stability)

High Euroisation as financial stability concern (2)

- Fx risk transfer led to financial stability risk:
  fx risk → credit risk (NPL) → financial stability risk

- Undermined role of ER as automatic stabilizer

- Limited space for monetary policy

  → higher key policy rates with major changes,
  → interest rate channel vs exchange rate channel,
  → pressures to fx reserves level in depreciation periods,
  → support to credit activity of banks limited.

- Prudential concerns (capital adequacy)
  → When bank capital is expressed in local currency and the bank assets are predominantly fx linked, fx rate movements affect CAR.

Challenging environment

Global capital movements
-focus on ECB & FED monetary policy;

- FED QE exit and increasing rates (portfolio investment);
- ECB negative rates and QE (lending incentive, eased debt servicing).

Some spillovers of euro zone negative rates:
Financial stability issues:

- No risks of excessive risk taking (high NPLs, „safe“ assets available);
- No cash substitution (fx savings has growing tendency);
- No currency substitution;
- Opposite incentives for loan eurisation vs deposit eurisation.

Reserve management issues:

- Security vs negative returns;
- Transfer of costs to central bank;
- Volatility of reserves.

National Bank of Serbia

Adjusted conduct of monetary policy (1)

Monetary instruments are shaped to support domestic currency:

- main OMO backed with IR corridor to steer MM rates
- collateral policy in OMO and credit facilities:
  - only RSD securities accepted.
- required reserves:
  - rates adjusted to promote RSD and long term sources;
  - only RSD RR remunerated;
  - penalty on excessive FX RR alocation (to tackle transfer of costs).

ER policy (high NPLs, public percepcion on fx instabilities, deposit side dinarisation):

- more focus on reducing EUR/RSD volatility;
- NBS interventions on both sides of the market;
- no price making signals.

FX swaps as a supporting instrument:

- important liquidity menagement tool;
- support to overcome trading limits;
- incentive to develop fx swap market, benchmark for pricing.

Challenges

- Time of "global currency wars" reiterates euroisation problems, in Serbia market incentives in front of administrative measures,
- Unilateral euroisation not an option for Serbia, deeuroisation is a marathon not a sprint – key is "deposit deeuroisation",
- Monetary policy credibility: low and stabile inflation over a long period of time,
- Insist on improving macroeconomic fundamentals and structural reforms to build buffer against external shocks.
- Monitoring and estimating capital flows (leading CB actions, dynamics, etc)
- Investing more efforts in improving general financial literacy and education.

National Bank of Serbia

Auxiliary 1: Dinarisation Strategy

The dinarisation strategy from 2012:
- System approach to issue: Memorandum of NBS and Government of RS
- 3-Pillar strategy:

- **The first pillar:** to strengthen the macroeconomic environment (delivering low and stable inflation, stable financial system and sustainable growth)

- **The second pillar:** to promote dinar-denominated instruments and markets (especially dinar bond market and the dinar yield curve).

- **The third pillar:** to promote hedging against the fx risks (especially for non-bank sector) and to discourage further build-up of those risks.