



EUROPEAN CENTRAL BANK

EUROSYSTEM

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# **QE and negative interest rates in the recent euro area experience**

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- Options for monetary policy accommodation when the policy interest rate has reached the Effective Lower Bound (ELB)
  1. Forward guidance
  2. QE
  3. Negative interest rates
- Removing the ELB altogether is still a theoretical option
- Euro area experience offers some early lessons on the effectiveness of the first three options

1. Introduction
2. The effects of the APP on asset prices, banks, and the real economy
3. Implications of the negative rate on the deposit facility
4. Concluding remarks (open questions)



The effects of the APP on asset prices, banks, and the real economy

- *“It's a curious experiment, as standard theory makes a pretty clear prediction about its effects: zero” (John Cochrane).*
- *“The problem with QE is it works in practice, but it doesn't work in theory.” (Ben Bernanke)*
- *Asset purchases are ineffective if: “(i) the assets in question are valued only for their pecuniary returns; and (ii) all investors can purchase arbitrary quantities of the same assets at the same (market) prices, with no binding constraints on the positions that any investor can take.” (Michael Woodford)*

## Estimated impact effects on 10y government bond yields\*

in bps, standardized to govt bond purchase of 10% of GDP

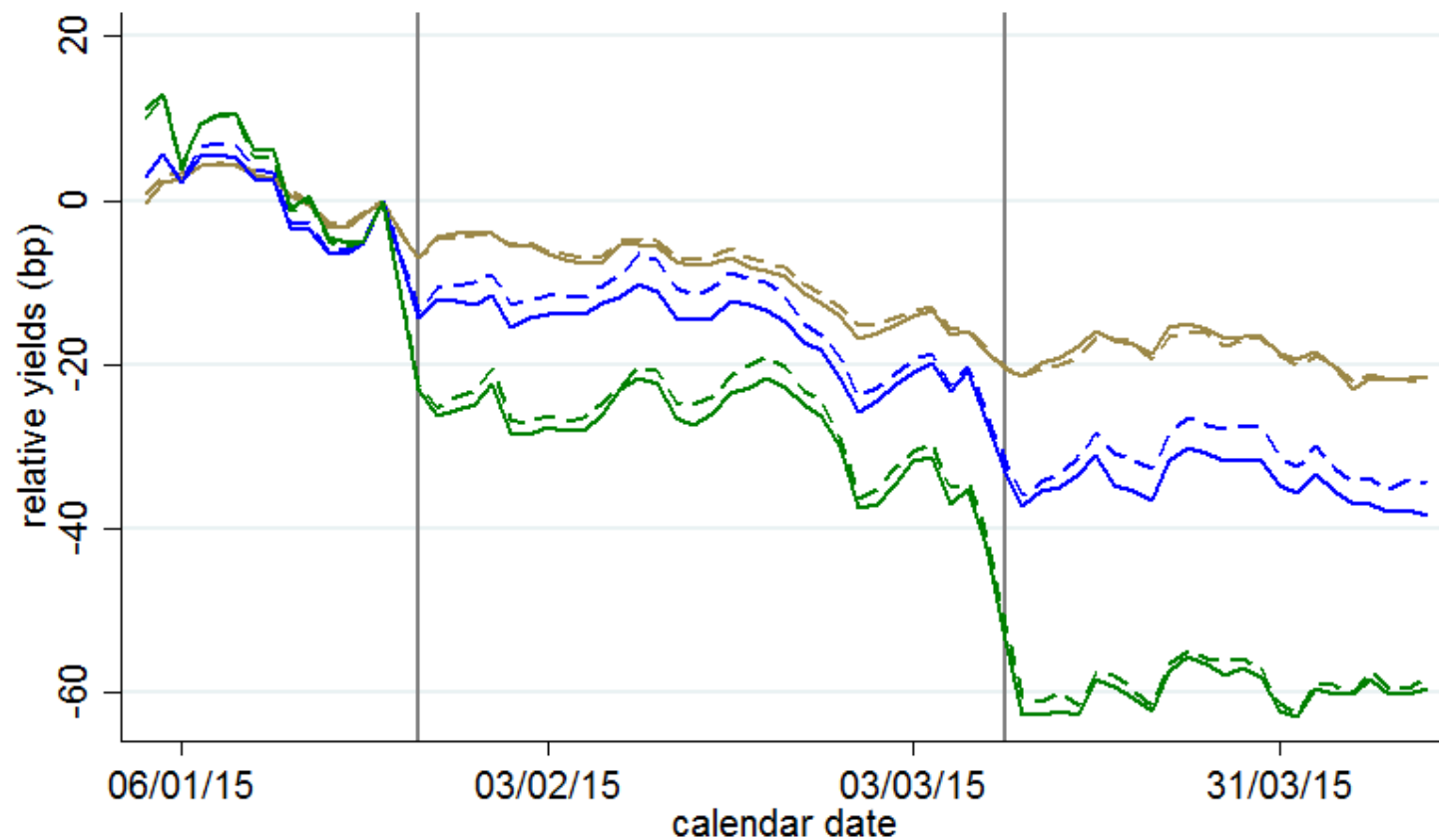
	All QE episodes	Euro area	US			UK	Japan	
		APP <sup>1</sup>	LSAP1	LSAP2	MEP	APF1	CME+	QQE
Size (% of GDP)		11%	12%	4%	3%	14%	21%	23%
Median	53	45	76	45	60	67	11	20
Range	10-175	27-64	32-175	33-138	23-175	34-107	10-12	14-26

- Median effect is to reduce 10y yields by 53 bps
- Important (and difficult) to identify surprise component
- Effects may be larger under distressed financial markets
- Median APP effects somewhat smaller than other QE episodes

\* Based on results from 25 studies

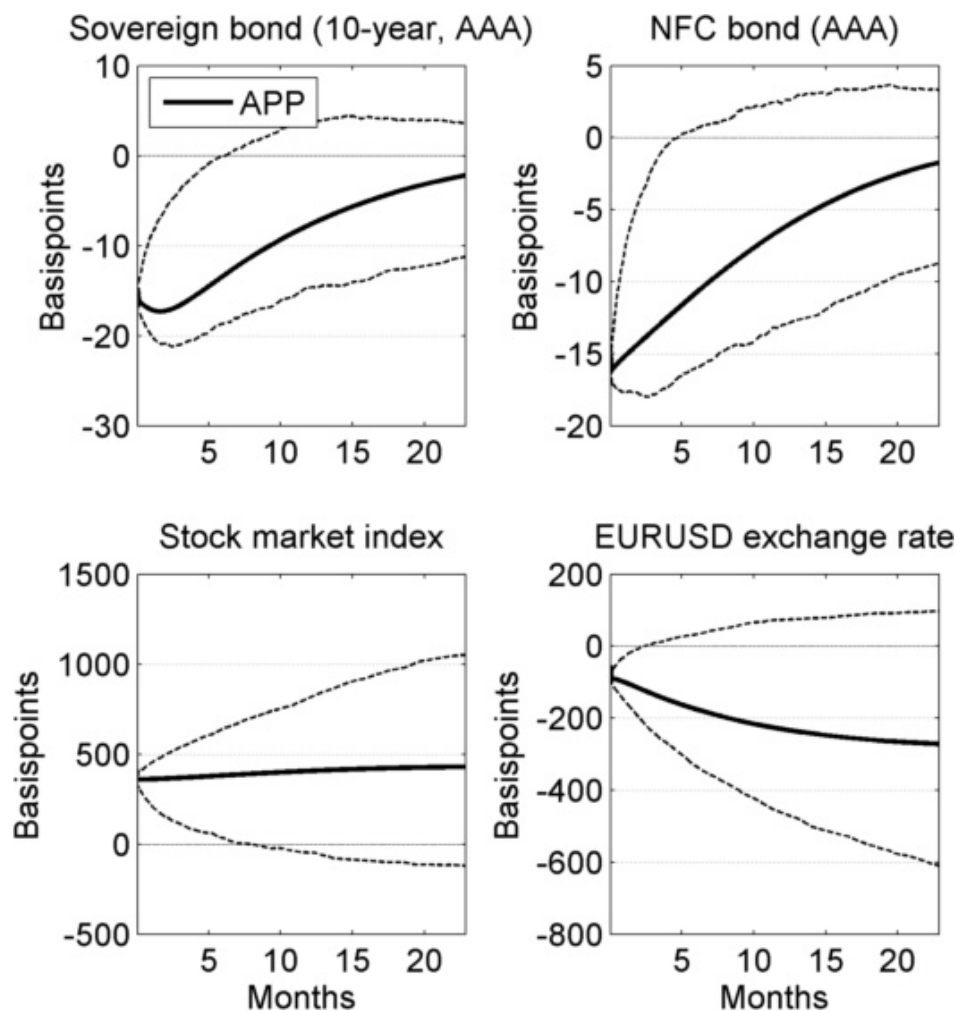
<sup>1</sup> Includes: Altavilla, Carboni and Motto (2015); [Andrade](#) et al. (2015); De Santis (2016)

# APP impact on yields



# 1. Does QE affect asset prices persistently?

## Asset prices after a surprise APP announcement

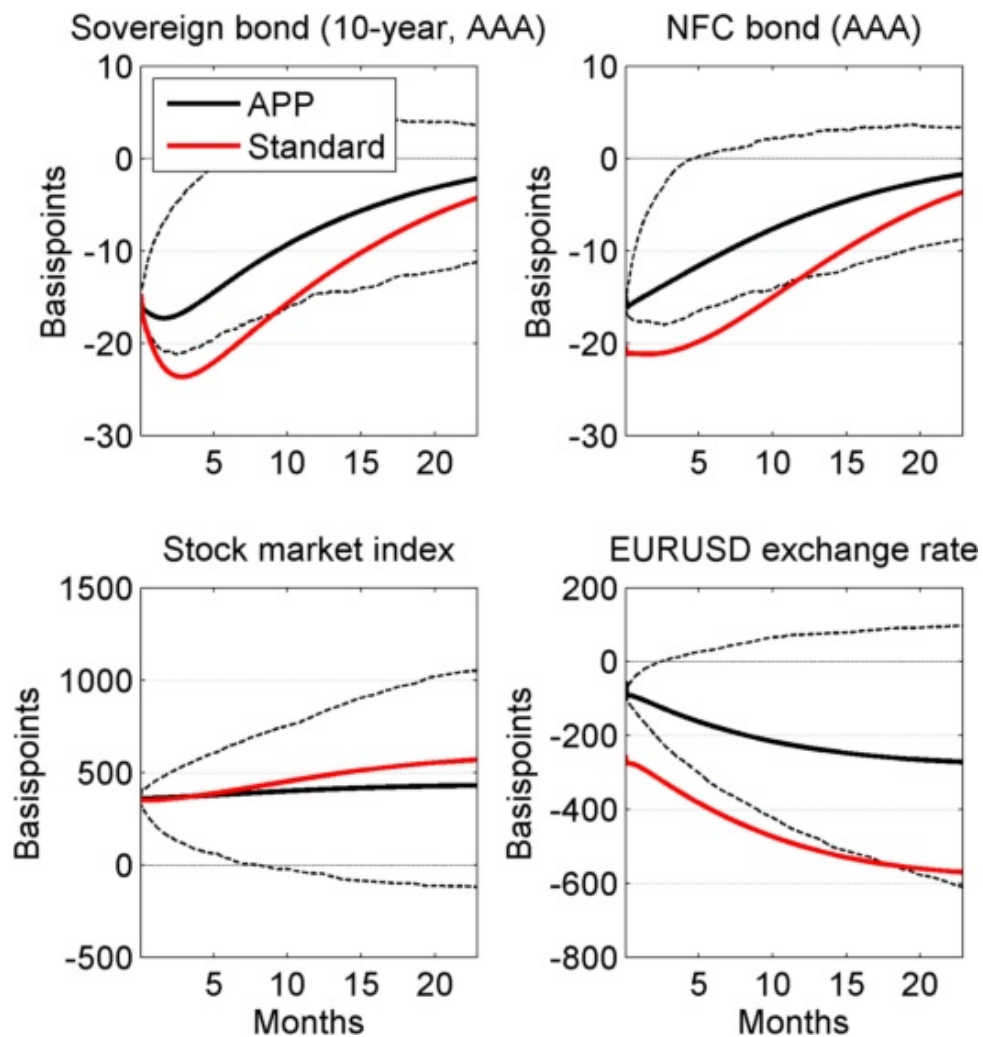


- Based on a daily VAR model estimated over the 2013-2015 sample.
- The figures show the average dynamics of the variables following 25 APP news, with 95% confidence bands.
- Methodology utilizes information inherent in intraday financial market surprises around APP announcements (see also Gertler-Karadi, 2015, *American Economic Journal: Macroeconomics*)



# 1. Does QE affect asset prices persistently?

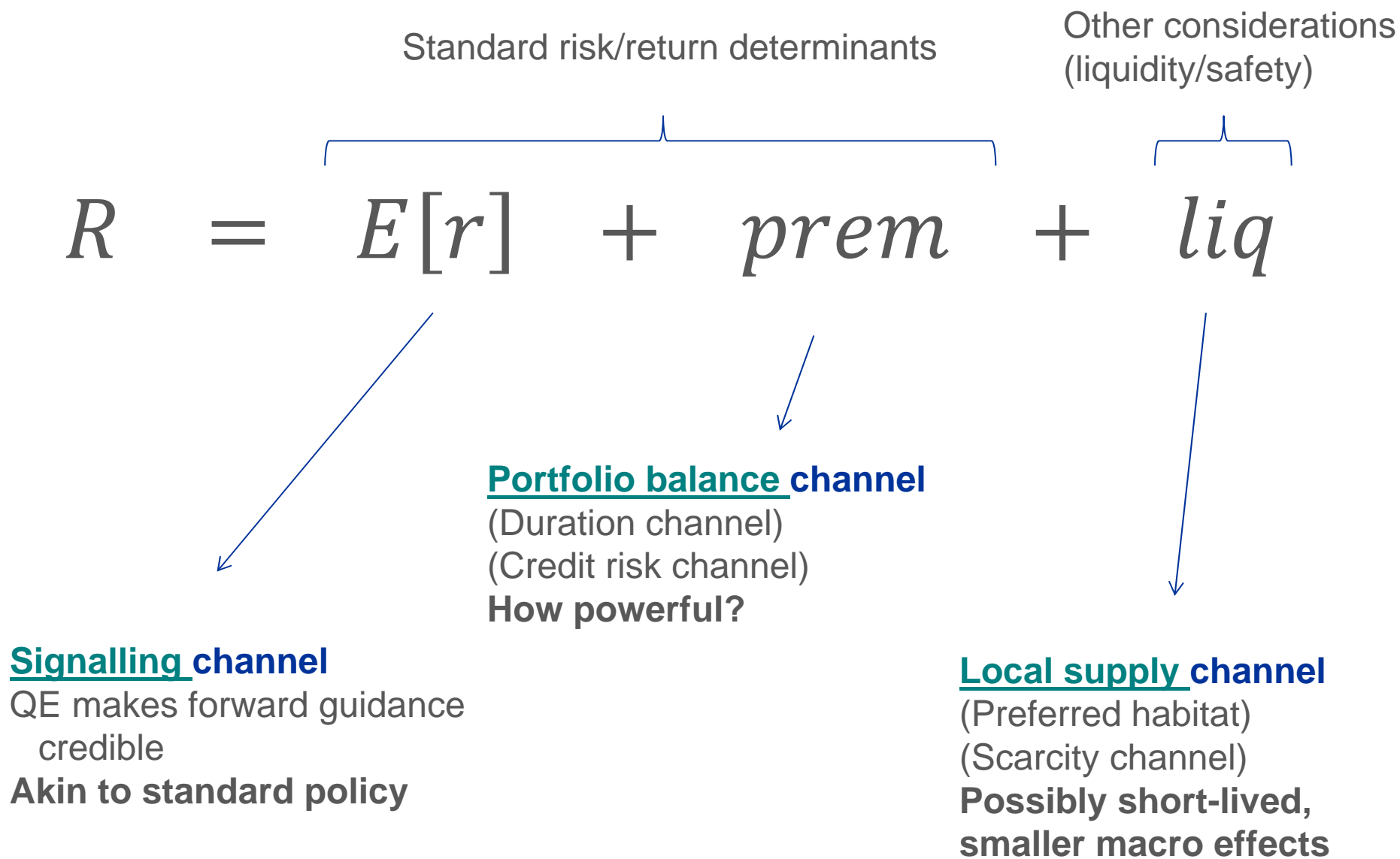
## Surprise announcements: APP vs. standard



Based on a daily VAR model estimated over the 2013-2015 sample.

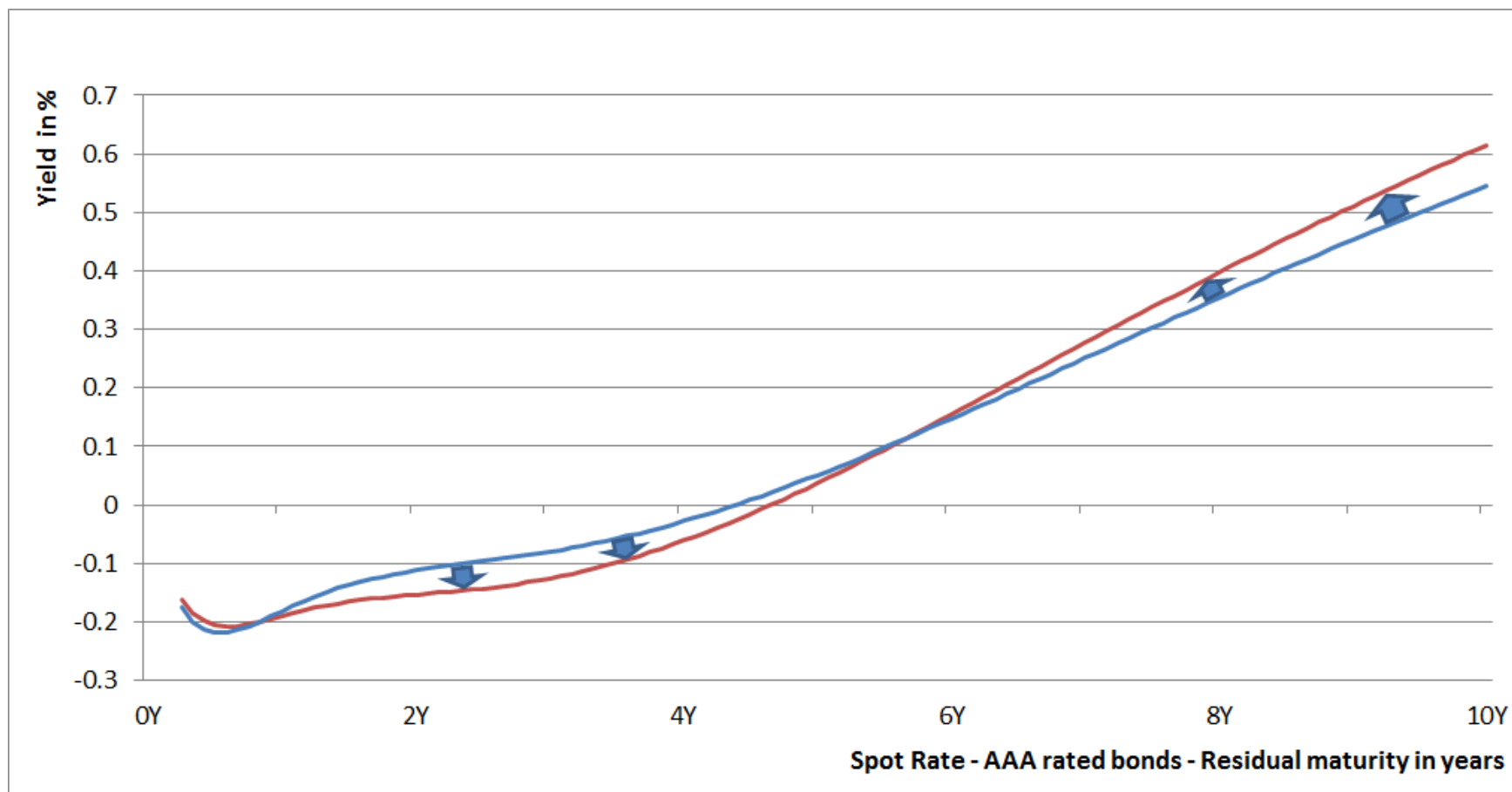
The figures compare the forecasted dynamics following APP news to the dynamics following a standard policy announcement.

## What are the transmission channels?



## The signalling channel

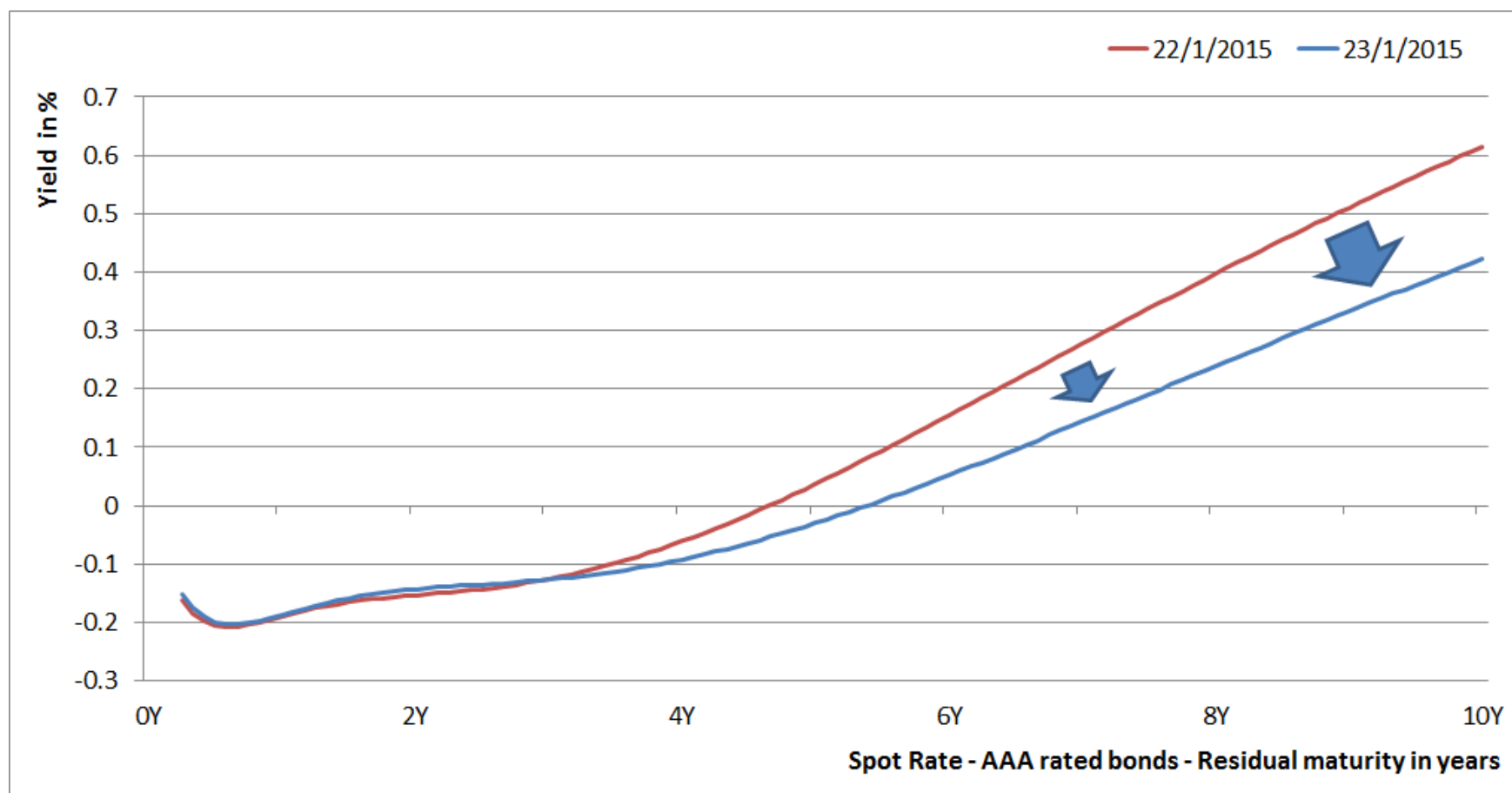
- **QE gives credibility to the promise to be more dovish** than usual **in the future**
  - a theoretical mechanism: slower exit to avoid large balance sheet losses



- [\[BACK\]](#)

## Portfolio balance (and signalling) in the euro area

- A generalized form of credit easing
  - QE increases the risk-bearing capacity of leverage-constrained institutions and lowers *all* risk premia (for given risk); effects from purchases of any risky asset

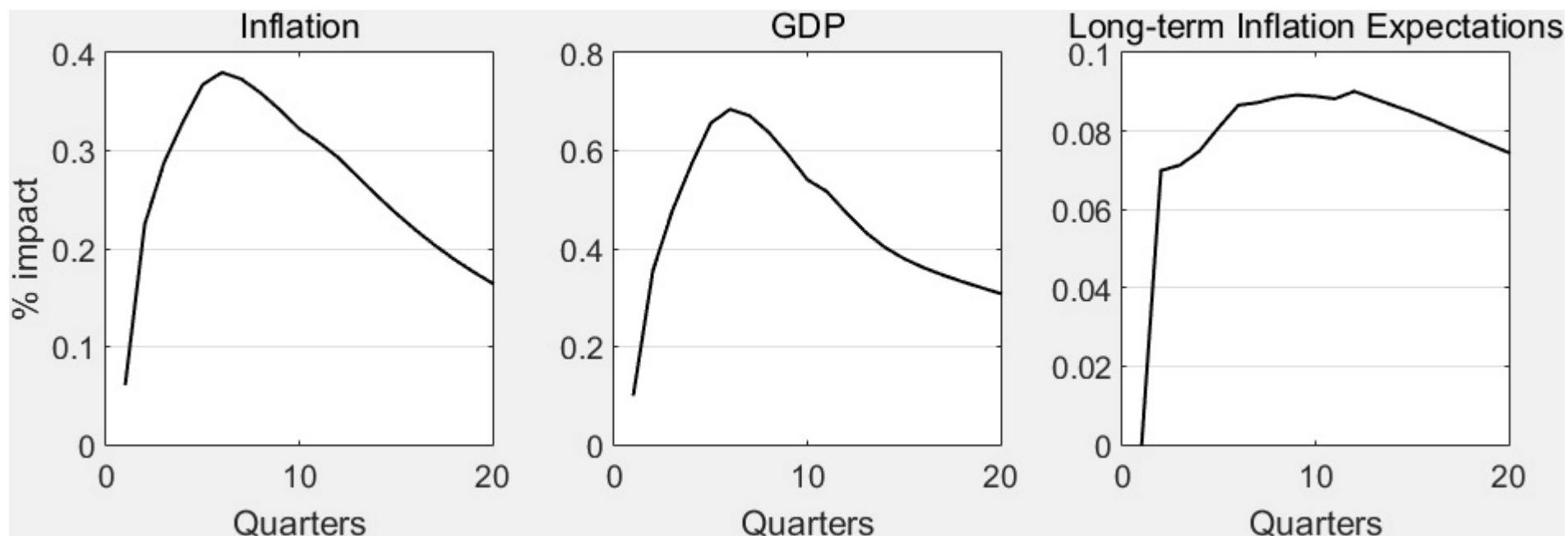


## How large are the macro effects?

- Asset price reactions suggests that APP had expansionary effects through usual transmission channels
- Precise estimates of macro effects are model-dependent
- Some model-based implications (Andrade et al, 2016):
  - APP 2015 produced inflation/GDP effects roughly equivalent to a 1 pp cut in MRO
  - Peak effect after 6 quarters
  - [Re-anchoring](#) of long-term inflation expectations accounts for large fraction of macro impact

## The re-anchoring effect of the APP

- SPF 5-year ahead inflation expectations increased by 9bps between 2015Q1 and 2015Q3 (from 1.77 to 1.86%)



Based on a macro-model including the signalling and portfolio balance channels (see Andrade et al, 2016)

## Concerns on the effectiveness of QE

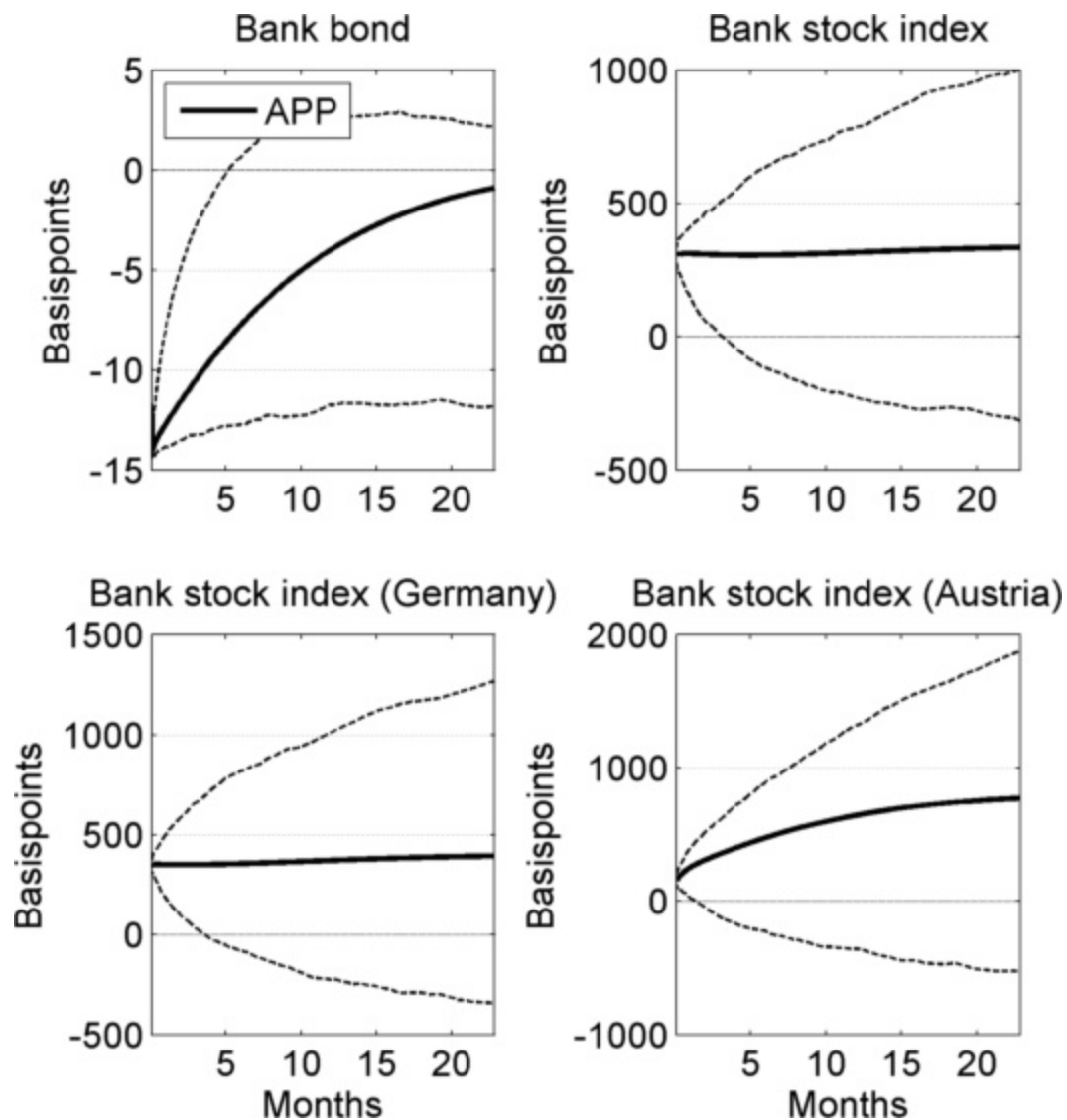
- Signalling channel is bounded by the effective lower bound
  - signals can extend further out into the future
- Effects of portfolio balance channel proportional to size of premia
  - Reduced premia/effectiveness can be offset by shift towards purchases of riskier assets: corporate bonds
- Reduced effectiveness can be caused by constraints
  - Like lower bound: proximity of bound can generate a deflationary bias
- Reduced effectiveness may be due to strategic issuers' behaviour
  - Issuers may reintroduce duration/credit risk in the market

## Potential risks for financial stability

- QE can strengthen banks' risk-taking channel
  - “Excess” risk taking more likely: the longer the recession (and low yields); for undercapitalized/more highly leveraged institutions
  - Solid bank structure is key
  - Bank profitability is also affected
- But QE also has beneficial effects on financial stability
  - improved economic conditions reduce credit risk
  - higher inflation rates help households, firms and governments deleveraging
  - direct capital relief (“stealth recapitalization”) to banks
- Asset prices provide market-based estimate of net effects on banks



## The impact of an APP announcement on banks



Based on a daily VAR model estimated over the 2013-2015 sample.

The figures show the average dynamics of the variables following 25 APP news, with 95% confidence bands

## Effects on banks

Banks' equity price reactions January 21-23, 2015

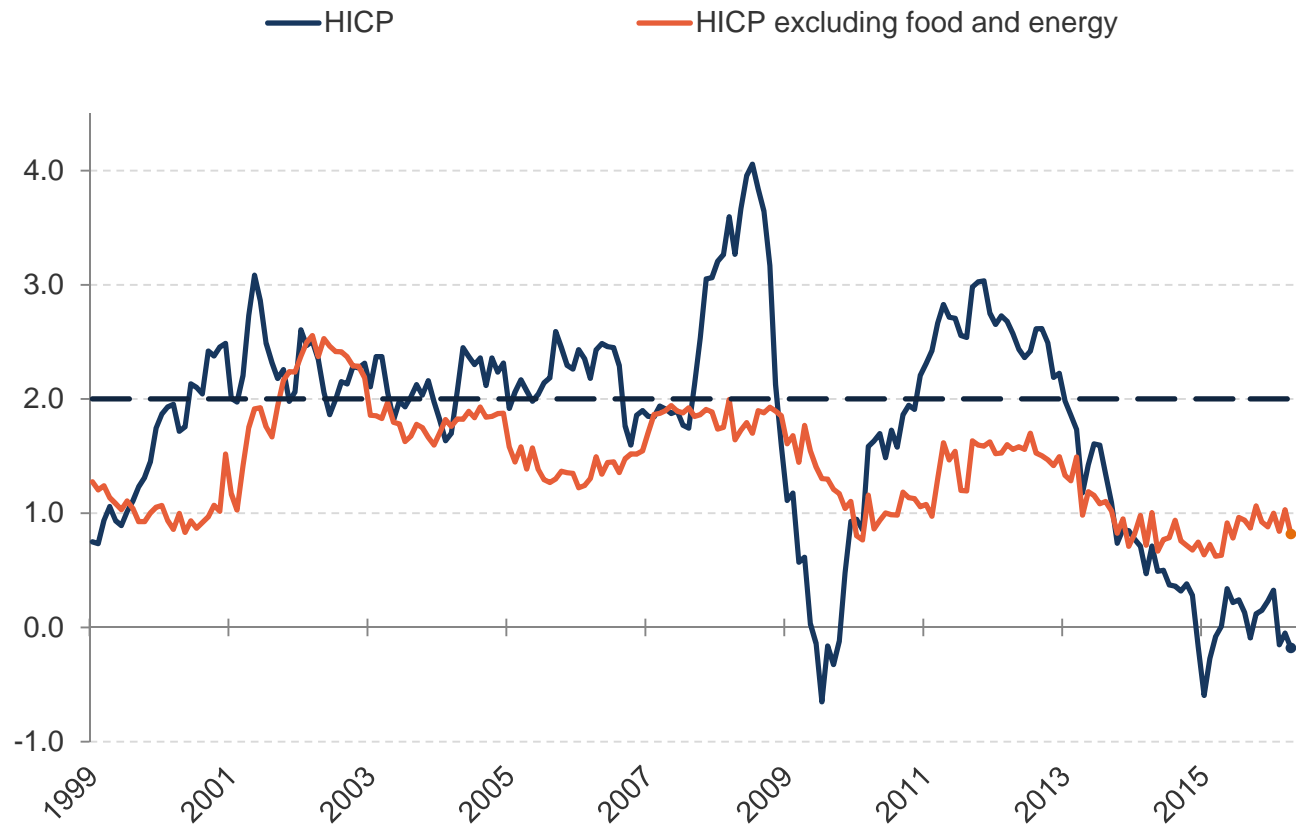
	(1)	(2)	(3)
constant	2.55*** (4.38)	2.09*** (3.81)	1.74*** (3.21)
$\Delta$ yield	15.67*** (4.61)	9.12*** (2.83)	8.76*** (2.76)
$\Delta$ SM	0.39*** (2.88)	0.80*** (3.96)	0.77*** (4.54)
EA bank (d) exposure		-2.23*** (-3.65)	-2.56*** (-4.69) 0.06*** (2.73)
Adj. $R^2$	0.09	0.19	0.26
No. Obs.	150	150	120

*(White robust t-statistics)*

## Implications of the negative rate on the deposit facility

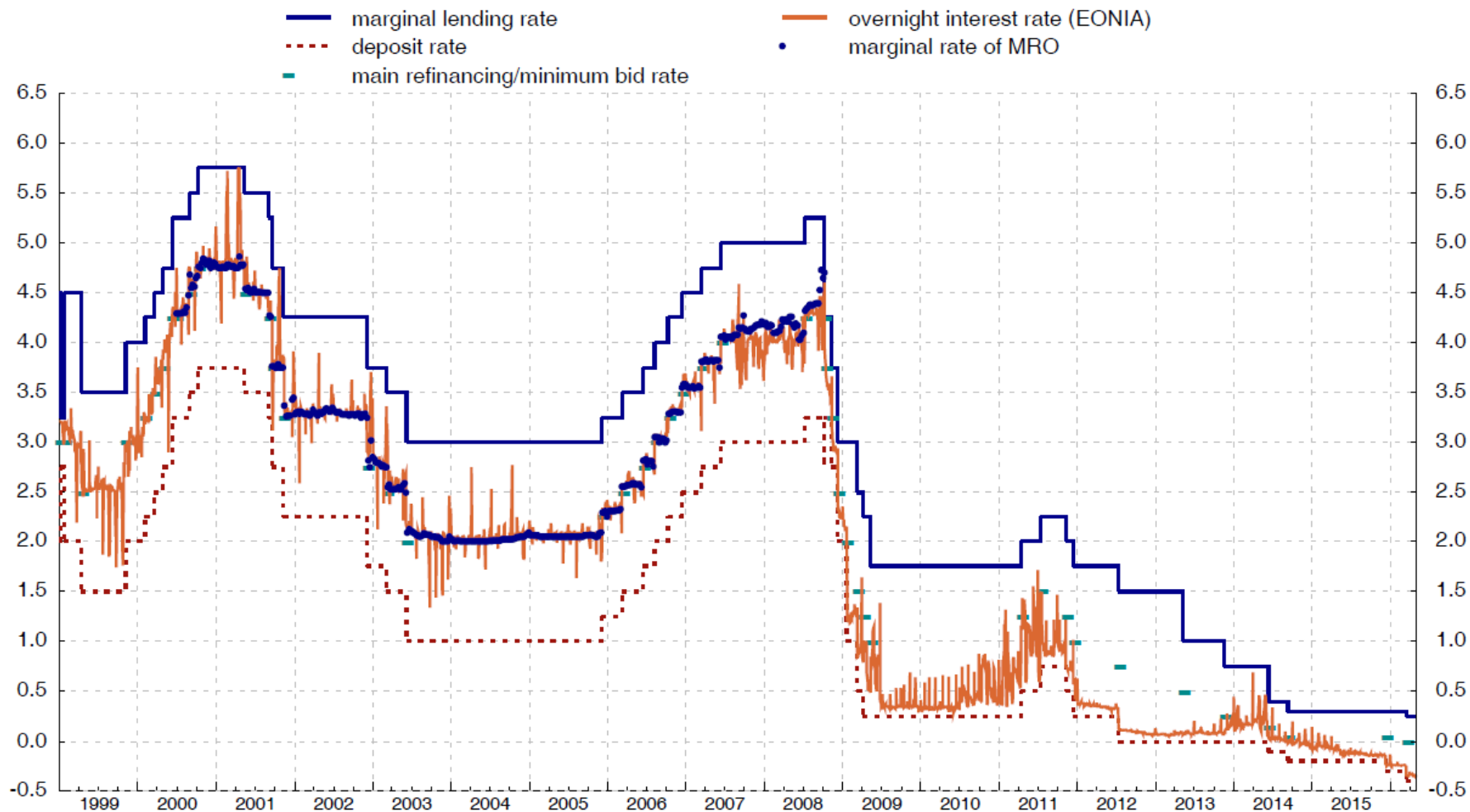
# Headline inflation at very low levels

## HICP and HICP excluding energy and food (annual percentage changes)



Source: Eurostat and ECB calculations.  
Note: Latest observations are for April 2016 (flash estimates).

# ECB interest rates and money market rates



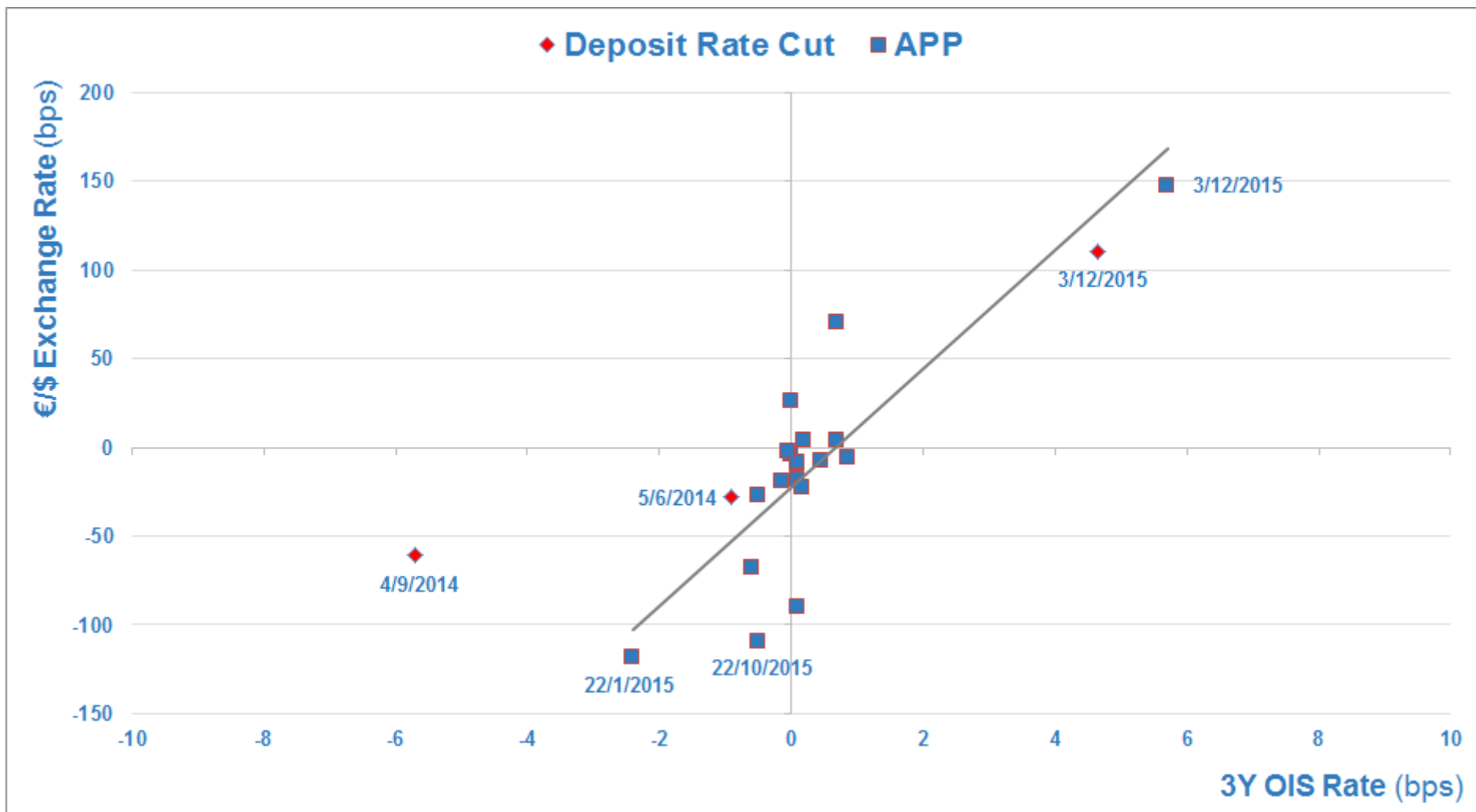
Note: The rate for main refinancing operations is the rate applicable to fixed rate tenders for operations settled before 28 June 2000. Thereafter, the rate reflects the minimum bid rate applicable to variable rate tenders. On 8 October 2008 the ECB announced that, starting from the operation to be settled on 15 October, the weekly main refinancing operations would be carried out through a fixed rate tender procedure with full allotment at the interest rate on the main refinancing operations. This change overrode the previous decision (made on the same day) to cut by 50 basis points the minimum bid rate on the main refinancing operations conducted as variable rate tenders.

Source: ECB.

## Implications of a negative DFR

- Negative DFR vs. negative MRO
  - DFR effects through width of the corridor
  - Excess liquidity and the impact on EONIA and market rates
- Risk of financial disintermediation
- Macroeconomic effects: How do the effects of reductions in the DFR compare to standard reductions in the MRO?
  - DFR more powerful, if it relaxes the perceived lower bound on interest rates
  - Banks' reaction to fall in interest margin: more risk taking? less competition?
- Evidence of nonlinearities?

## The impact of DFR changes and the APP on the exchange rate



[\[BACK\]](#)

## Concluding remarks

- The APP program produced persistent effects on asset prices and is supporting the recovery and a faster return to price stability
- The introduction of a negative DFR also contributed to flatten the yield curve; effects through the exchange rate
- Open questions:
  - Optimal timing of lowering DFR vis-à-vis implementing QE
  - When do risks of disintermediation become large
  - Interactions with financial stability