EUROPEAN CENTRAL BANK

EUROSYSTEM

# Negative interest rates: Lessons from the euro area

Jens Eisenschmidt and Frank Smets
European Central Bank

XXI Annual Conference of the Central Bank of Chile

Monetary Policy and Financial Stability: Transmission Mechanisms and Policy Implications

16 November 2017

# Overview

1. Monetary policy background
2. The pass-through of negative rates in the EA: Where is the friction?
3. Banks and negative rates: Theory
4. Banks and negative rates: Data
5. Other transmission channels of negative rates

1 Monetary policy background

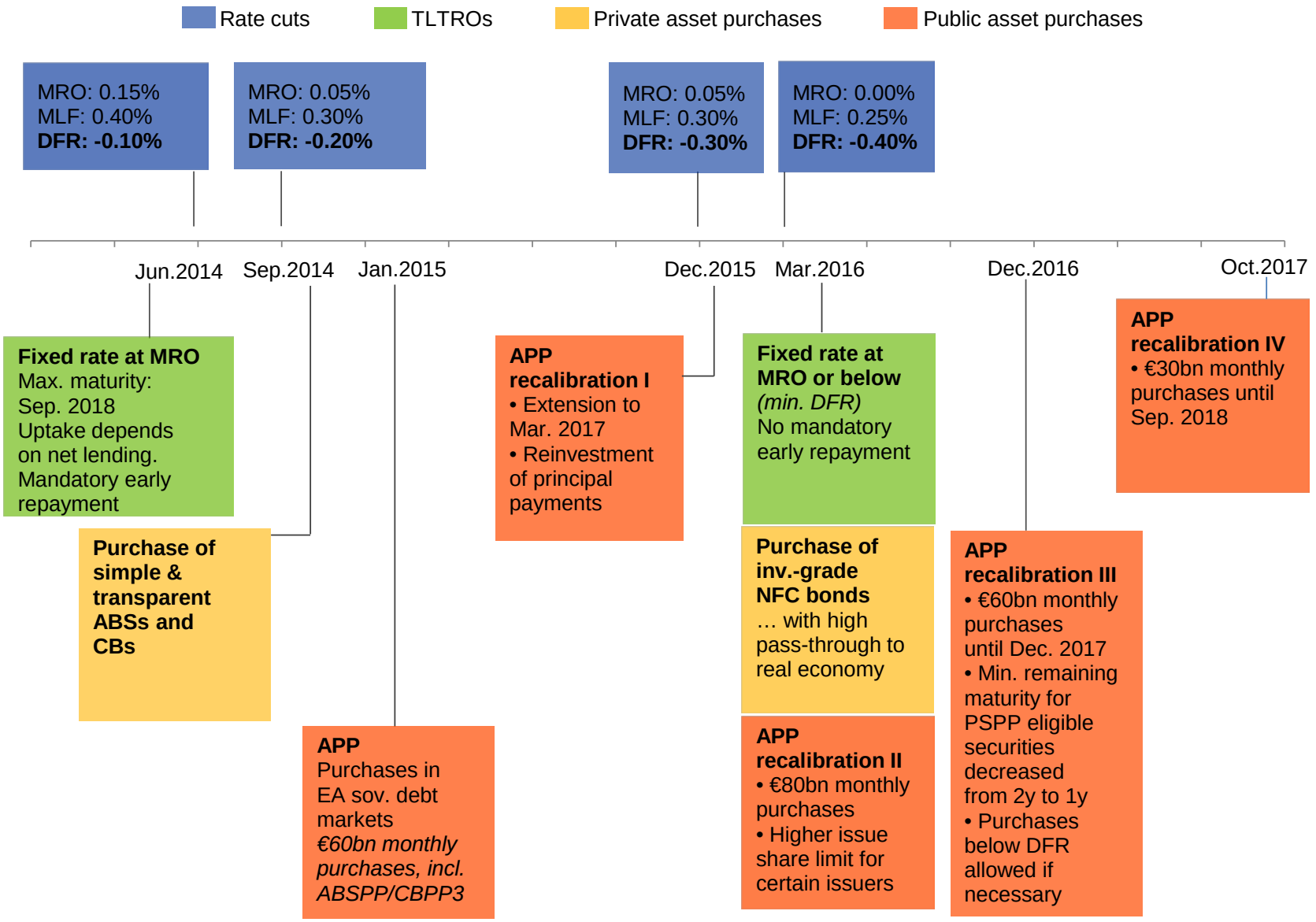
2 The pass-through of negative rates in the EA: Where is the friction?

3 Banks and negative rates: Theory

4 Banks and negative rates: Data

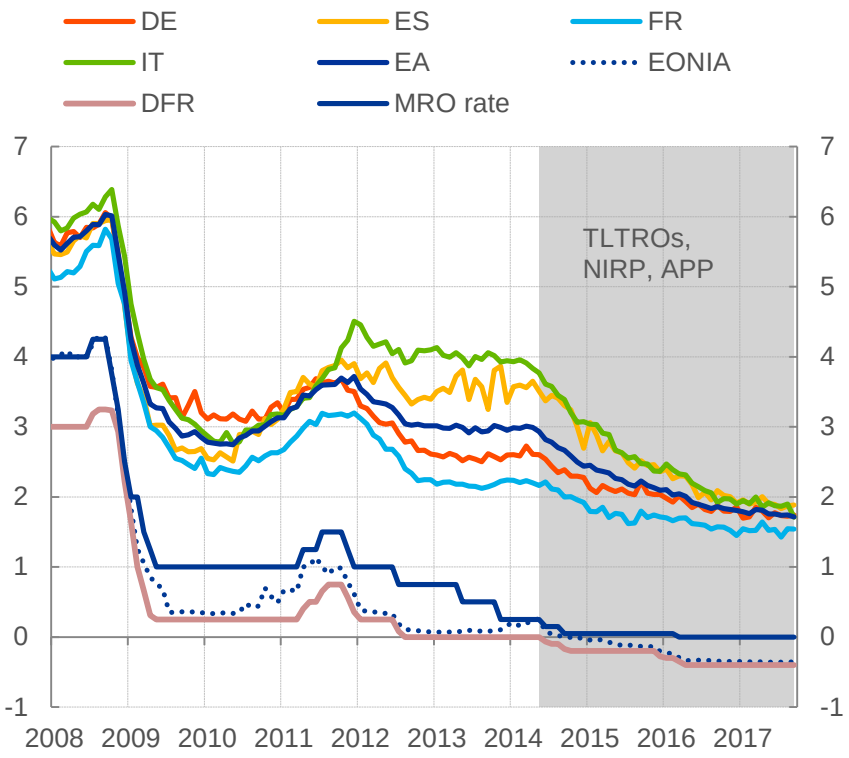
5 Other transmission channels of negative rates

# ECB monetary policy measures since 2014

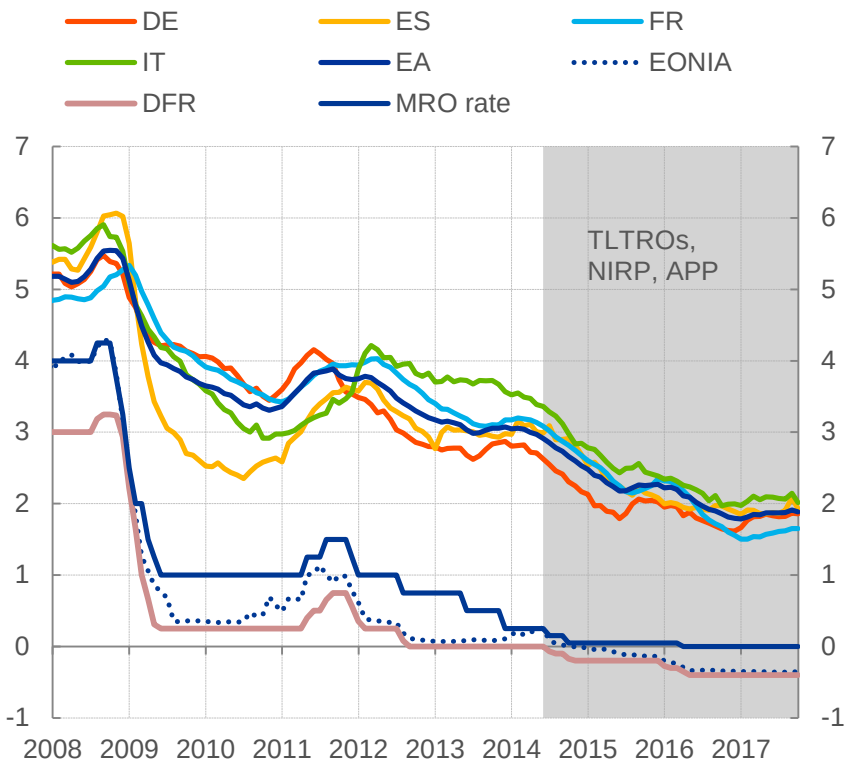


# Bank lending rates

**Composite indicator of the cost of borrowing for NFCs**
*(percentages per annum)*



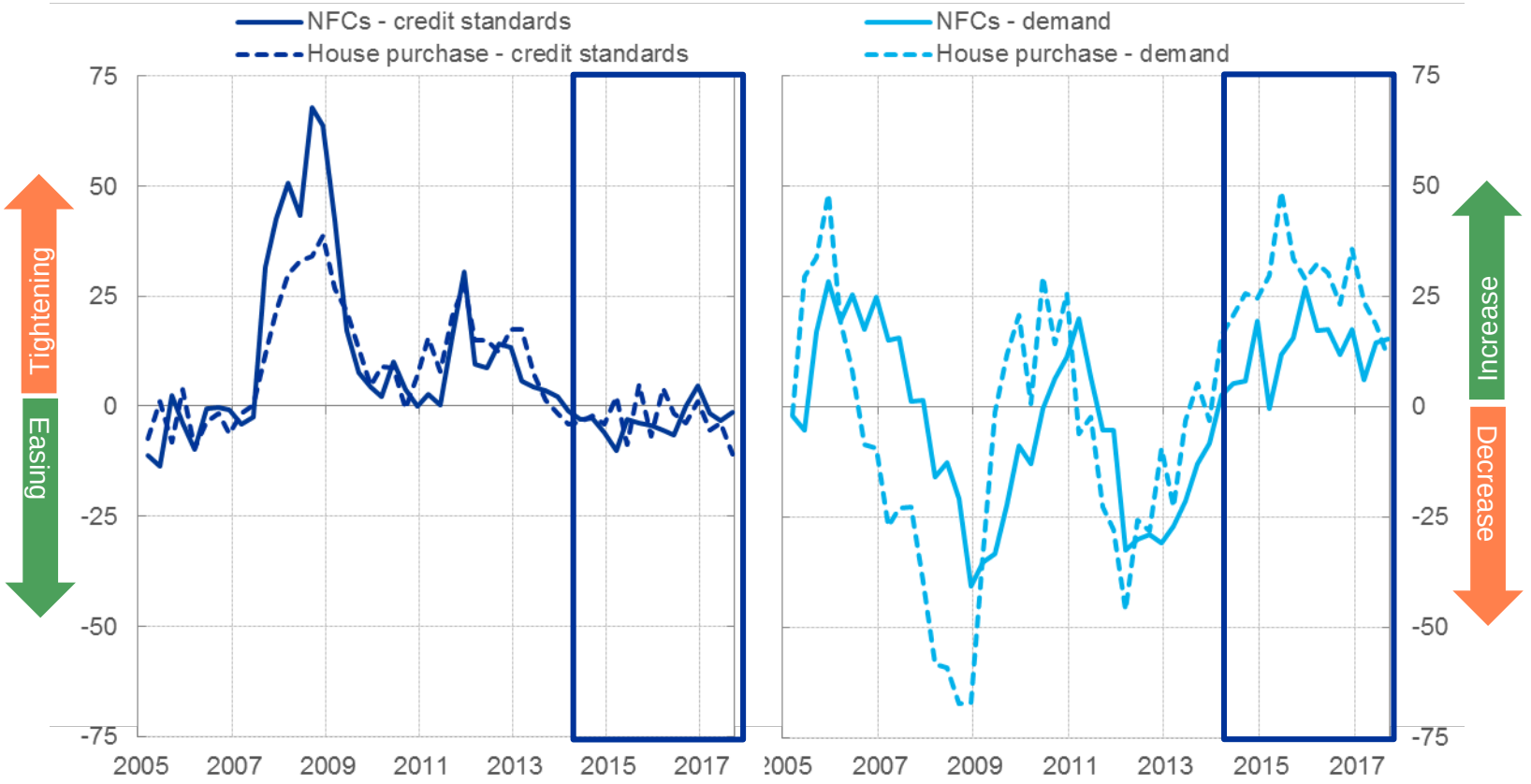

**Composite indicator of the cost of borrowing for HHs**
*(percentages per annum)*




*Source: ECB.*
*Notes: The indicator for the cost of borrowing is calculated by aggregating short- and long- term rates using 24-months moving average of new business volumes.*
*Latest observation: September 2017.*

# Credit standard and loan demand

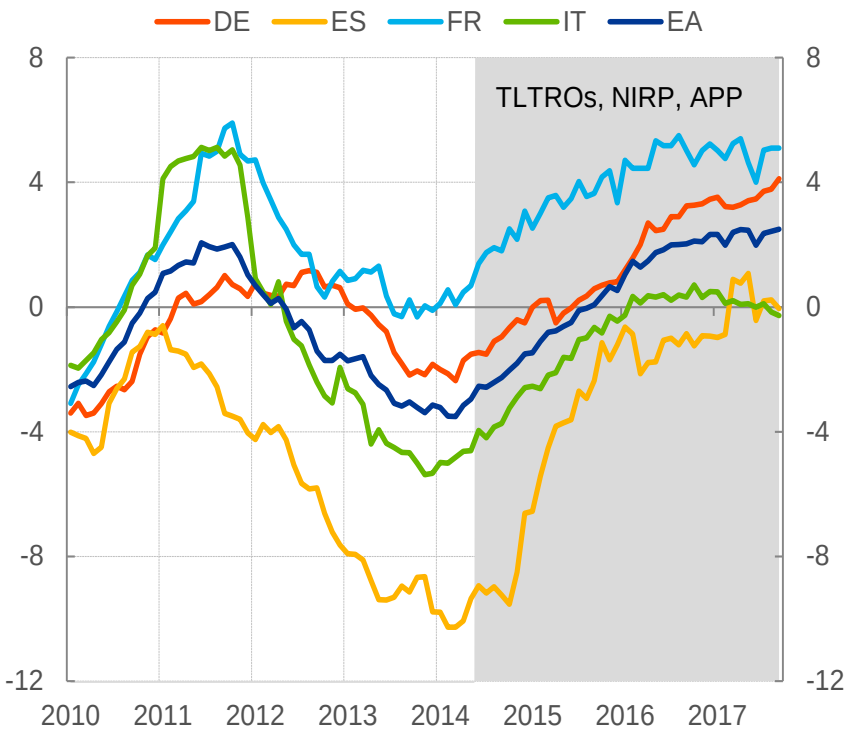
**Net tightening of credit standards and changes in demand for loans – NFCs and households for house purchase**
*(net percentages)*




*Source: ECB (BLS).*
*Latest observation: October 2017 BLS.*

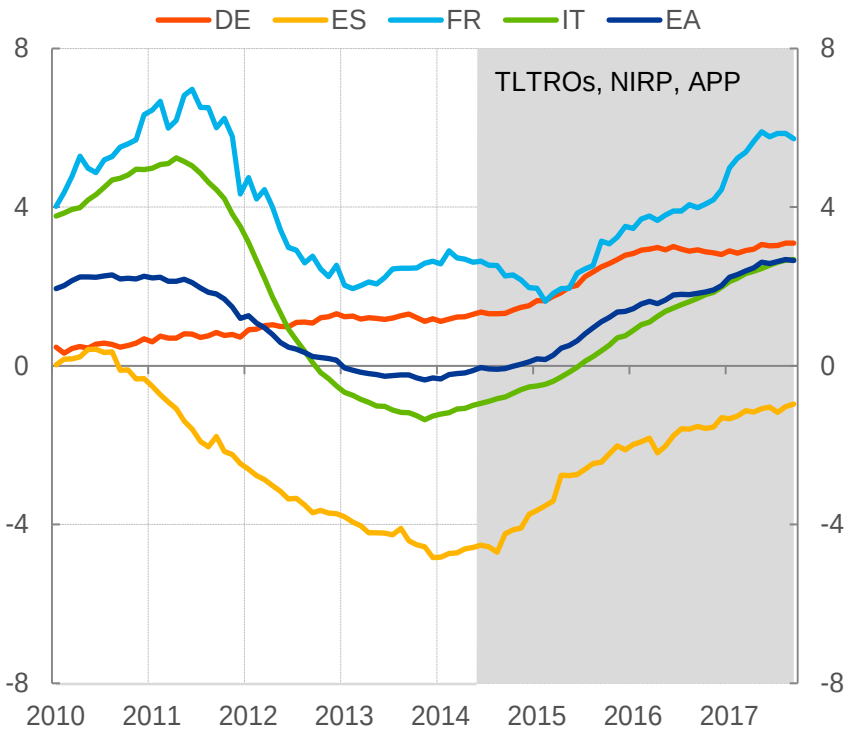
# MFI loans to NFCs and households

**MFI loans to non-financial corporations**
*(annual percentage changes)*




*Source: ECB.*
*Notes: Adjusted loans (i.e. adjusted for sales, securitisation and cash pooling activities).*
*Latest observation: September 2017.*

**MFI loans to households**
*(annual percentage changes)*




*Source: ECB.*
*Notes: Adjusted loans (i.e. adjusted for sales, securitisation and cash pooling activities).*
*Latest observation: September 2017.*

1 Monetary policy background

2 **The pass-through of negative rates in the EA: Where is the friction?**

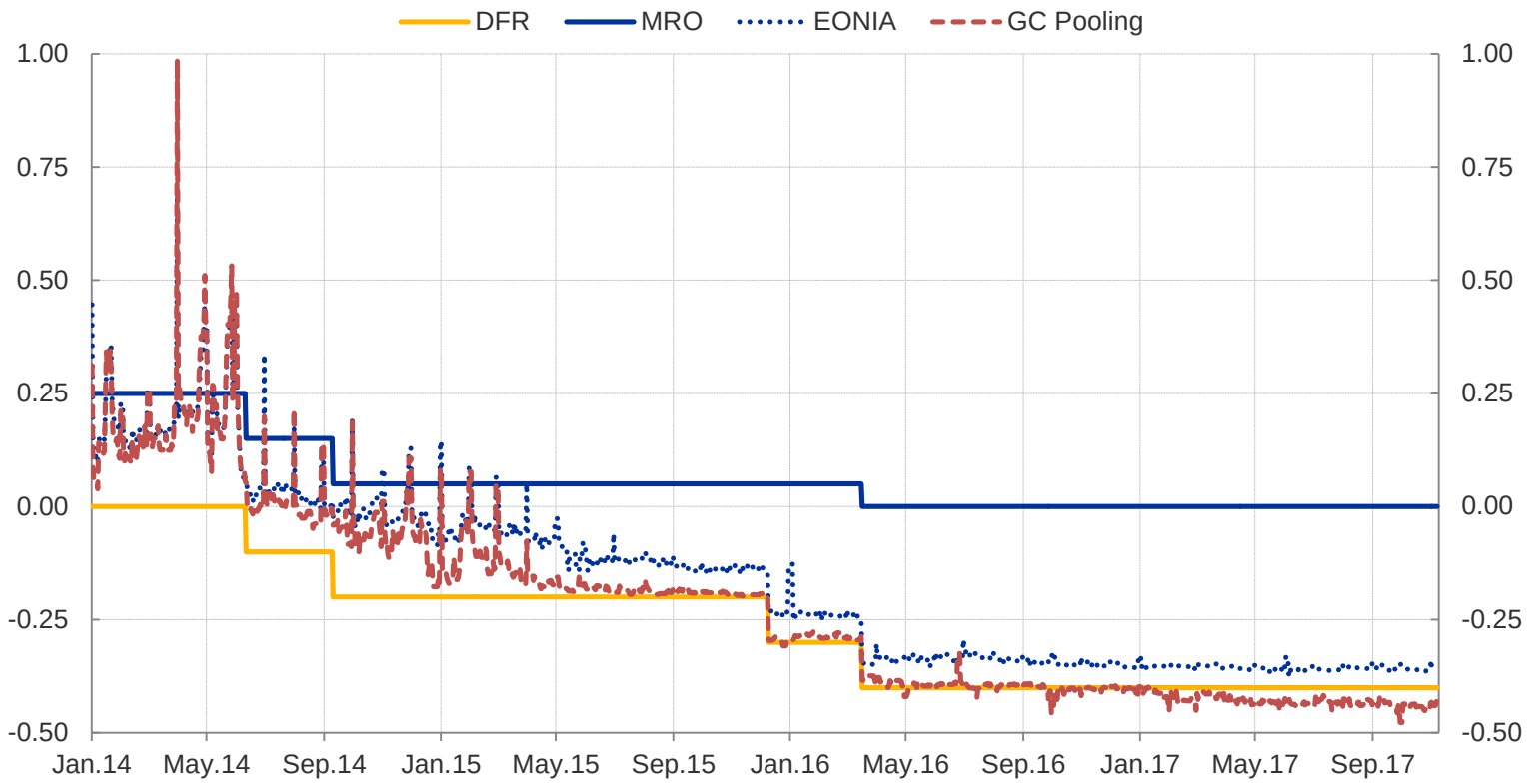
3 Banks and negative rates: Theory

4 Banks and negative rates: Data

5 Other transmission channels of negative rates

## Key policy-controlled interest rates and interbank overnight rates

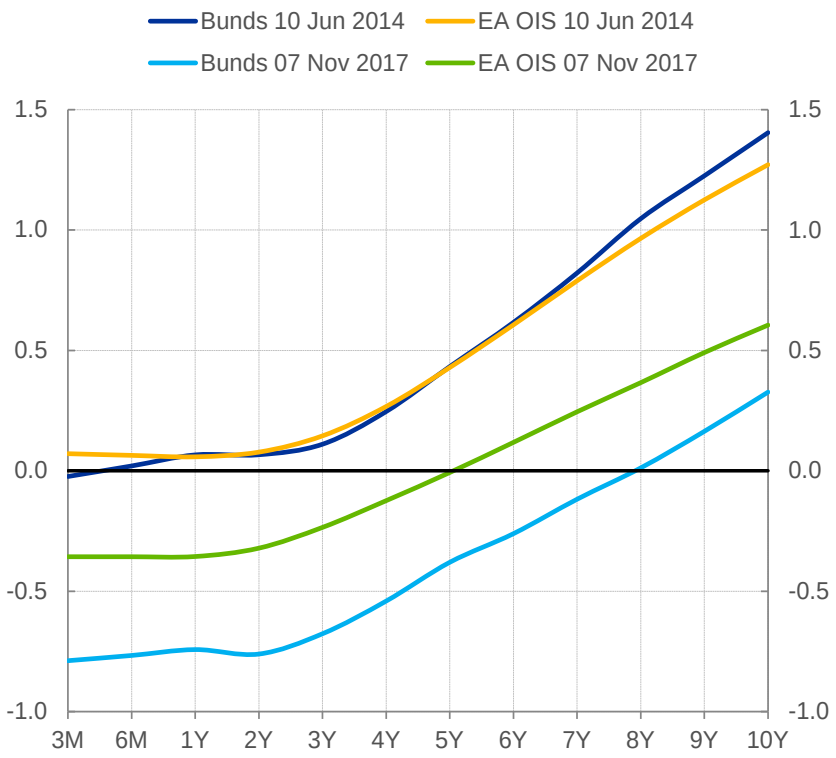
(in percent)




*Source: ECB*
*Last observation: 8 November 2017*

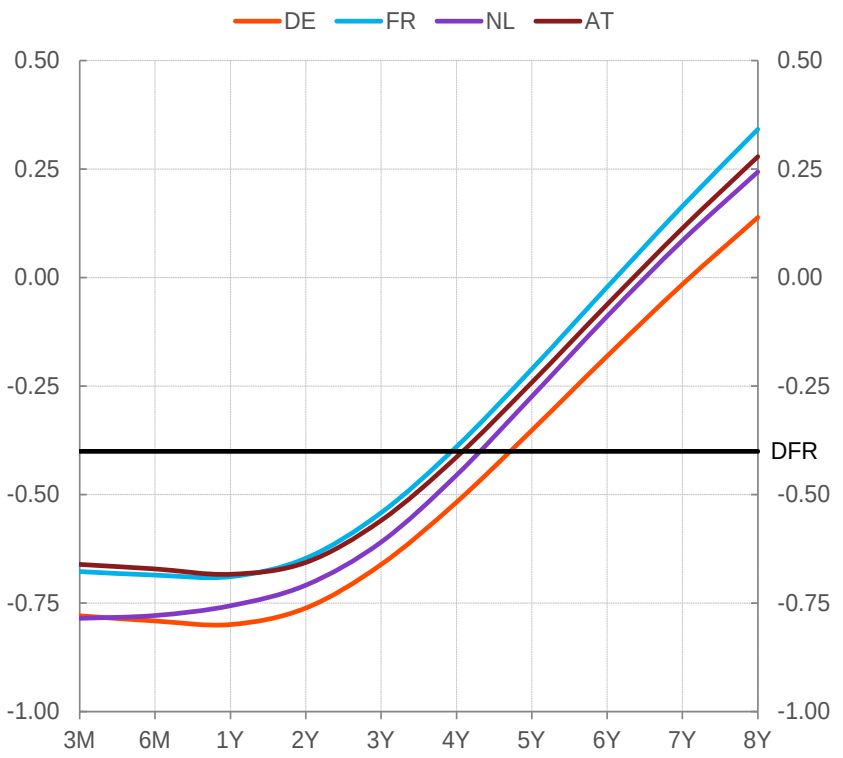
# ALTERNATIVE: Yields in the Euro Area

**Term structure of risk-free rates**
*(in percent)*




*Source: ECB, Deutsche Bundesbank.*

**Term structure of AAA-rated government bonds**
*(zero coupon, in percent)*

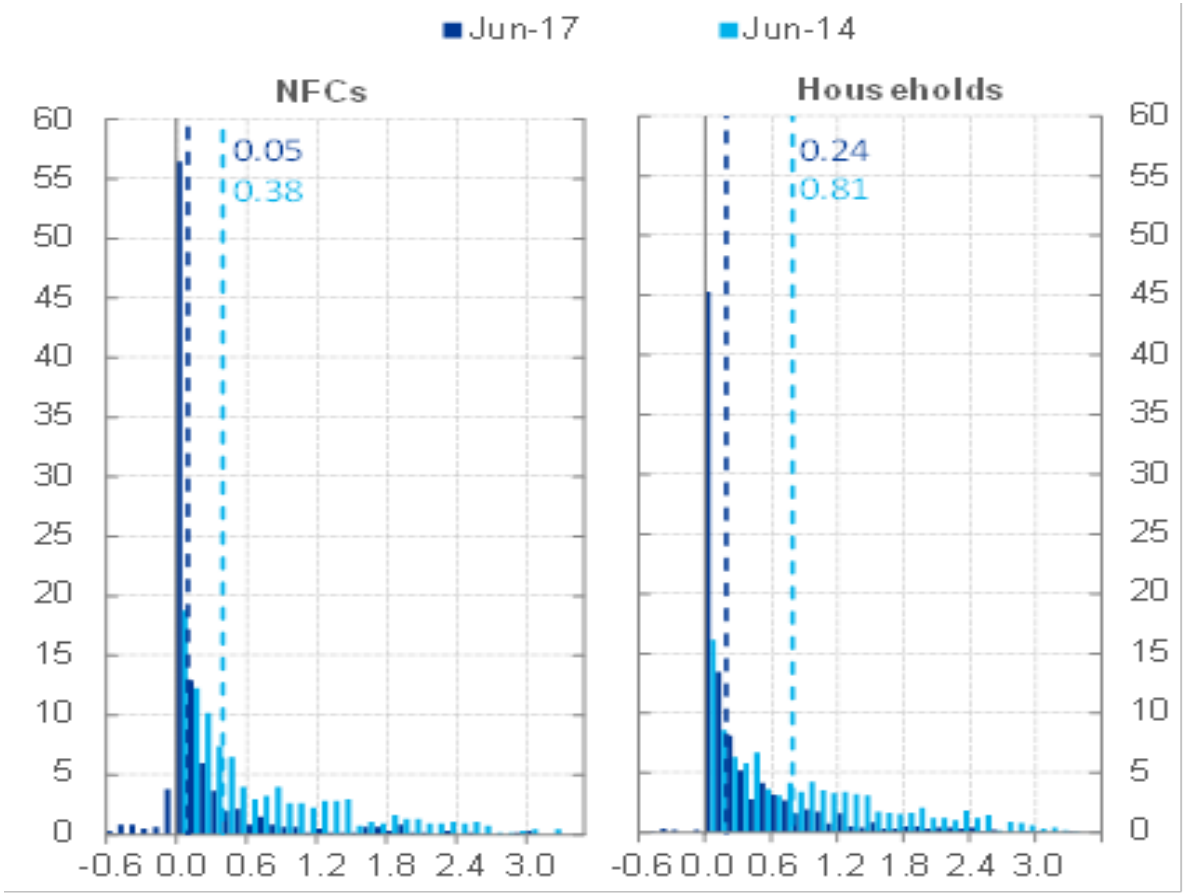



*Source: ECB, National Central Banks.*

# Distribution of remuneration of deposits across banks in the euro area

## Remuneration of deposits of households and NFCs

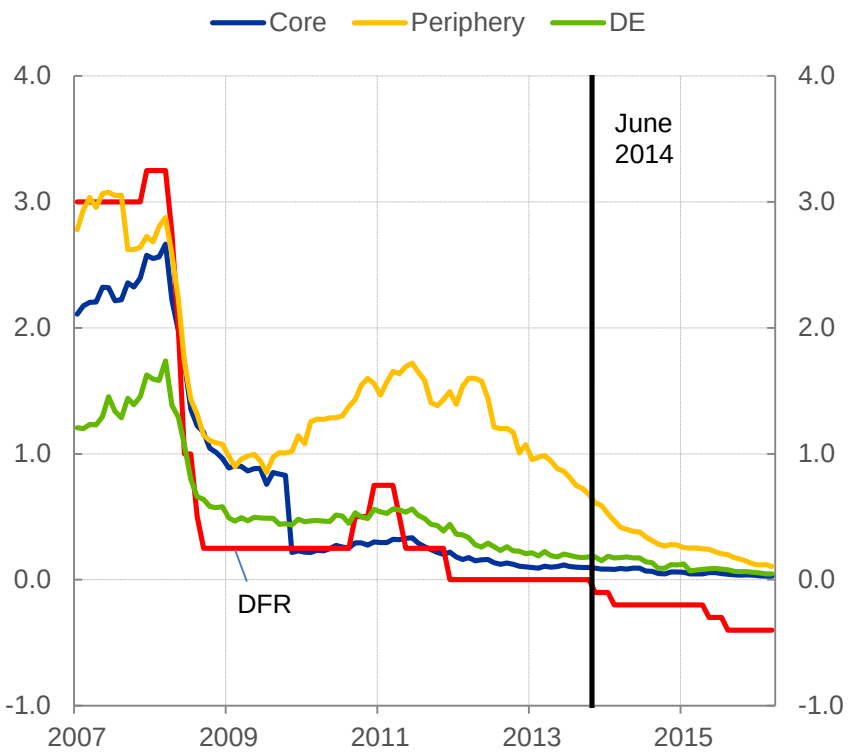
(in percent)




*Source: ECB.*
*Notes: Dashed lines represent mean of distribution.*

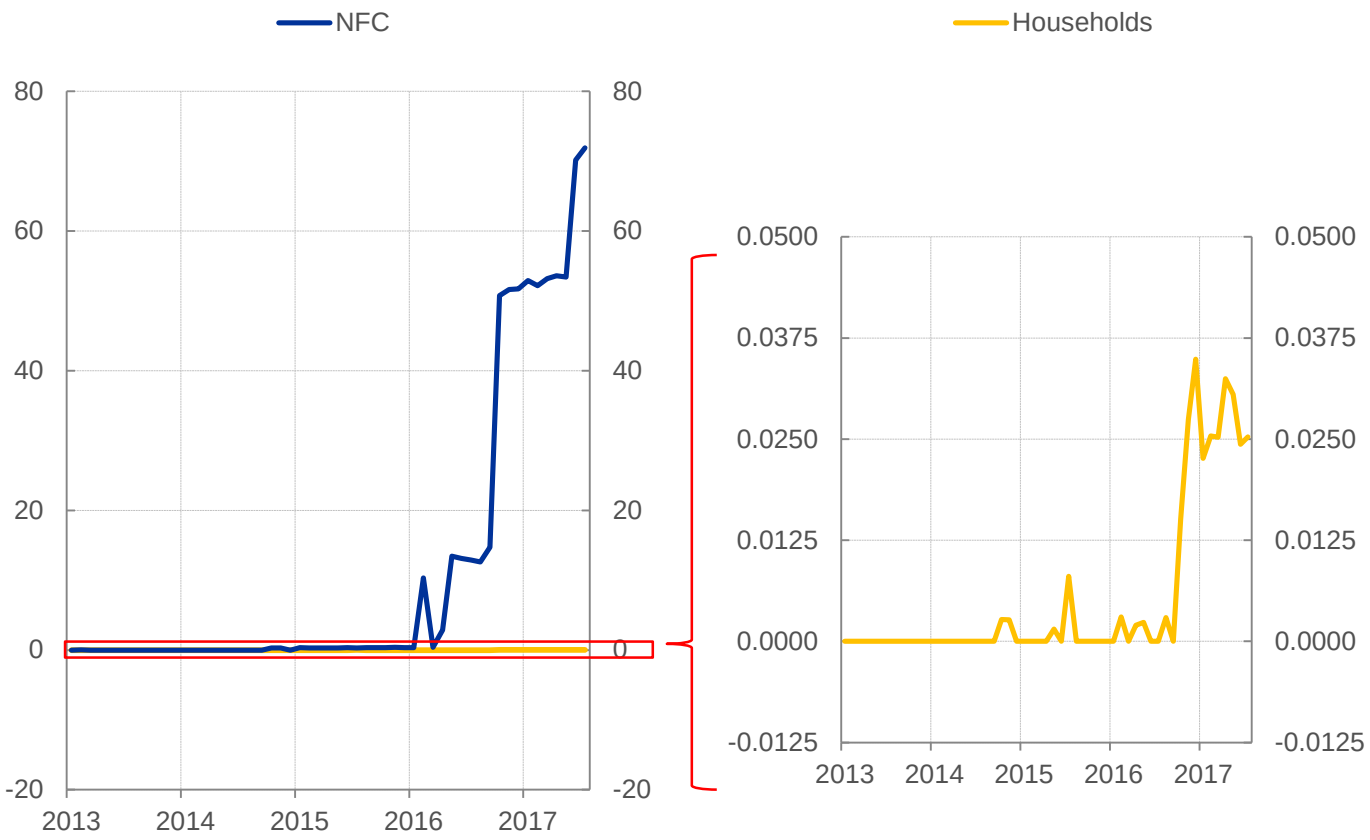
# Bank deposit rates in core and periphery countries

**Bank deposit rates (HH and NFC)**
*(volume weighted average)*




*Source: ECB.*
*Notes: Core countries include AT, BE, DE, EE, FI, FR, LU, LV, MT, NL and SK. Periphery countries include ES, IE, IT, PT and SI. Banks from Greece and Cyprus are excluded. Deposit rates are weighted by their respective deposit volumes.*
*Last observation: October 2016.*

## Share of deposits remunerated below zero
(in percent)




*Source: ECB.*
*Last observation: July 2017*

1 Monetary policy background

2 The pass-through of negative rates in the EA: Where is the friction?

3 **Banks and negative rates: Theory**

4 Banks and negative rates: Data

5 Other transmission channels of negative rates

**Traditional bank lending and risk taking channels (e.g. Gertler and Karadi, 2012, Dell'Arricia et al, 2016):**

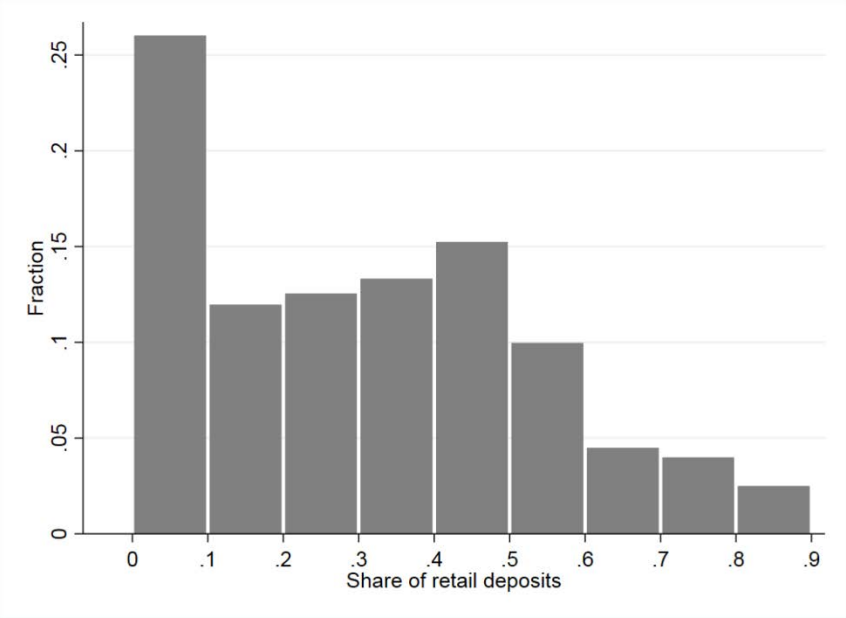
- **Low interest rates spur bank lending and risk taking**
- **This may be boosted by NIRP (e.g. lower franchise value, zero nominal benchmark rate)**

**But "reversal rate" argument (Brunnermeier and Koby, 2017):**

- **Low interest rate margins and profitability due to NIRP tighten capital constraints; may offset the positive impact of higher asset values on those constraints**
- **Strength of countervailing forces will depend on deposit share on the liability side, the interest-rate sensitivity on the asset side (short-term bonds, excess liquidity, prevalence of variable rate loans) and capital position and regulation**

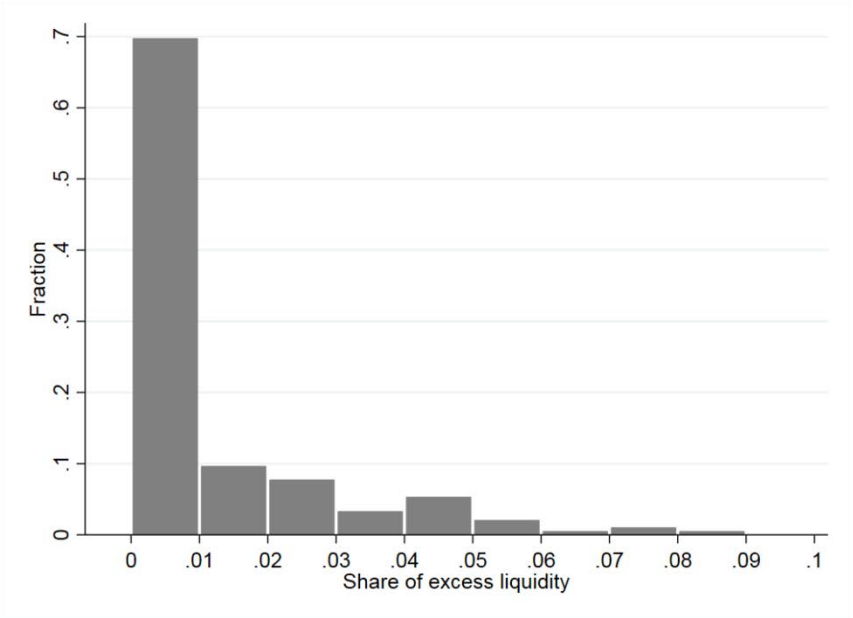
# Distribution of retail deposit and excess liquidity shares across banks

**Share of retail deposits in the balance sheet**
*(all banks excluding Greece and Cyprus)*




*Source: ECB.*
*Notes: Share of retail deposits is calculated as average over the NIRP period (June 2014 to October 2016) across all banks in the sample that report deposits and total assets.*

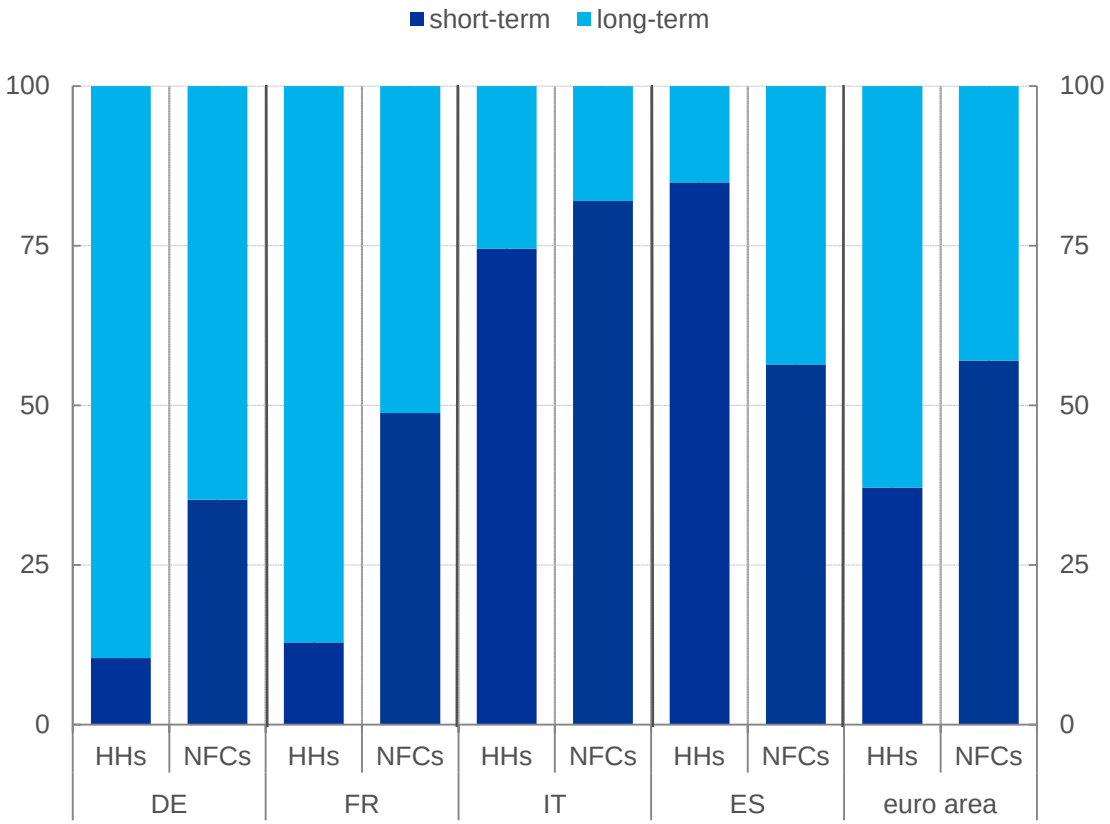
**Share of excess liquidity in the balance sheet**
*(all banks excluding Greece, Cyprus and high-EL banks)*




*Source: ECB.*
*Notes: Share of excess liquidity is calculated as average over the NIRP period (June 2014 to October 2016) across all banks in the sample that report total assets. Banks with an EL share > 0.1 are excluded.*

## Share of household and NFC loans fixed at short- and long-term

(in percent, as of June 2017)




*Source: ECB.*
*Last observation: June 2017.*

1 Monetary policy background

2 The pass-through of negative rates in the EA: Where is the friction?

3 Banks and negative rates: Theory

**4 Banks and negative rates: Data**

5 Other transmission channels of negative rates

# Empirical literature on impact of negative rates on banks

**Demiralp, Eisenschmidt, Vlassopoulos (2017) and Basten and Mariathasan (2017): High-deposit, high excess liquidity (EL) banks lends more.**

**Brauning and Wu (2017): Find evidence that banks significantly increase their lending volume to firms and lower the loan interest rates as a response to an expansionary interest rate shock during NIRP; Also some evidence for higher risk-taking in the NIRP period**

**Albertazzi, Nobili and Signoretti (2017): Find that with unconventional measures lending supply expands by more at banks with more deposit funding.**

**Horvath, Kotlebova and Siranova (2017) fail to find evidence that bank interest rates become less responsive to market rates when market rates become negative.**

**Heider, Saidi, Schepens (2017): Examine syndicated loans in the euro area; High-deposit banks lend less and to more risky borrowers**

**Dataset: IBSI and IMIR**

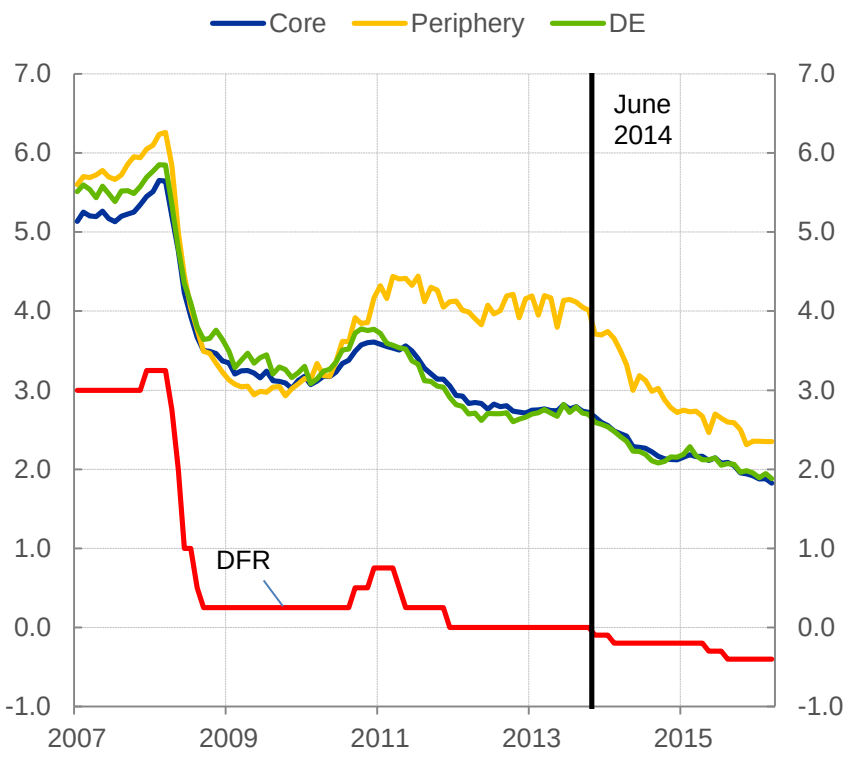
**covering more than 2/3 of EA bank loans, representative sample of 256 EA banks' balance sheets at monthly frequency**

**Findings:**

- **No signs of adverse reaction of banks most exposed to negative rates**
- **If anything we find the opposite**

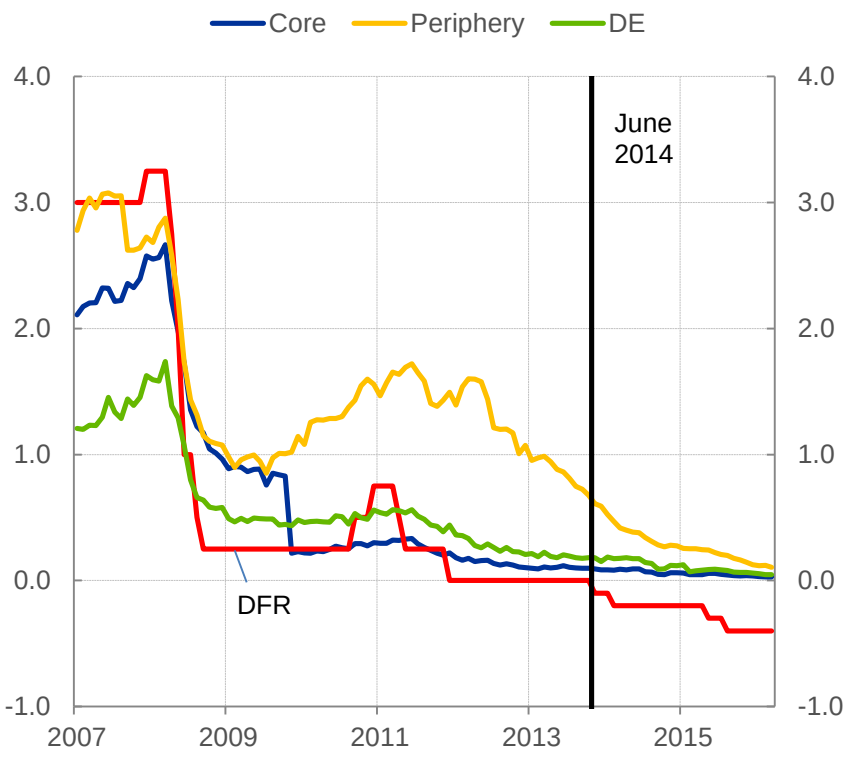
# Bank lending and deposit rates in core and periphery countries

**Bank lending rates (HH and NFC, new business)**
*(volume weighted average)*




*Source: ECB.*
*Notes: Core countries include AT, BE, DE, EE, FI, FR, LU, LV, MT, NL and SK. Periphery countries include ES, IE, IT, PT and SI. Banks from Greece and Cyprus are excluded. Lending rates are weighted by their respective loan volumes.*
*Last observation: October 2016*

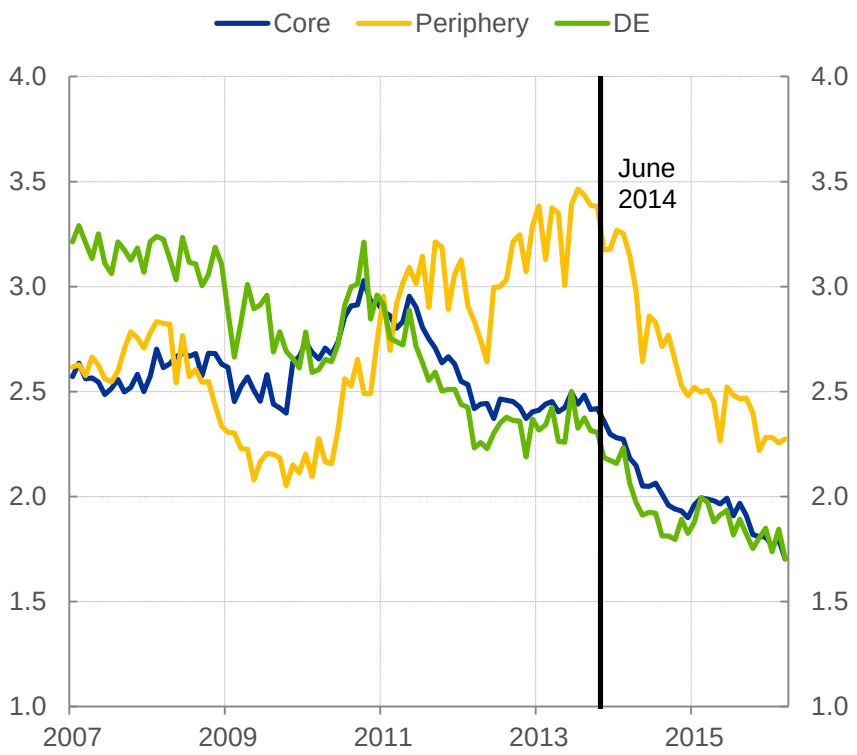
**Bank deposit rates (HH and NFC)**
*(volume weighted average)*




*Source: ECB.*
*Notes: Core countries include AT, BE, DE, EE, FI, FR, LU, LV, MT, NL and SK. Periphery countries include ES, IE, IT, PT and SI. Banks from Greece and Cyprus are excluded. Deposit rates are weighted by their respective deposit volumes.*
*Last observation: October 2016.*

# Bank interest rate margins in core and periphery countries

**Bank interest rate margins**
*(adjusted margin, loan-volume weighted average)*

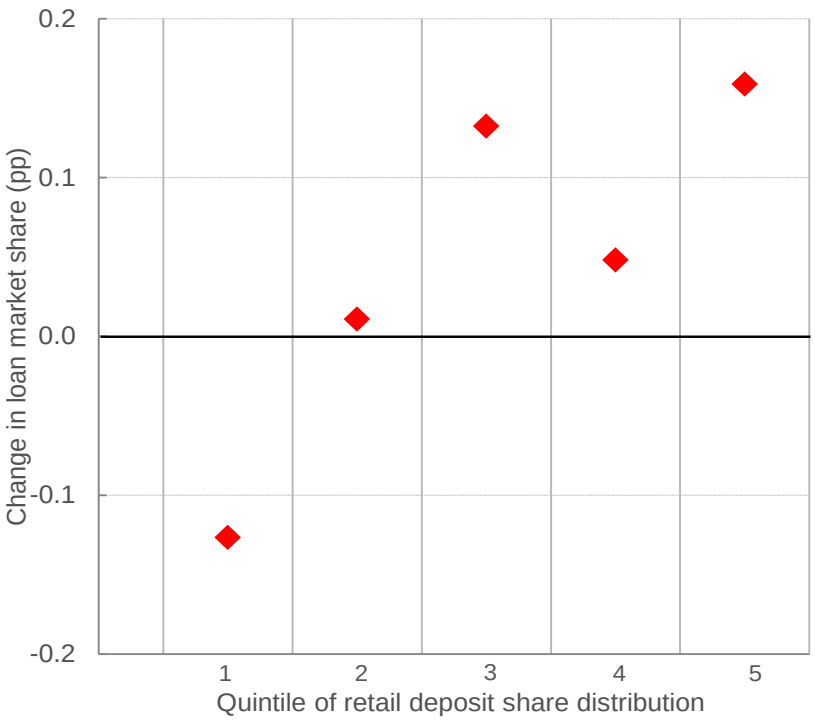



*Source: ECB.*
*Notes: Core countries include AT, BE, DE, EE, FI, FR, LU, LV, MT, NL and SK. Periphery countries include ES, IE, IT, PT and SI. Banks from Greece and Cyprus are excluded. Margin are weighted by the respective bank's loan volumes.*
*Last observation: October 2016*

# Changes in bank lending rates and loan market shares in Germany, NIRP

## Changes in loan market share

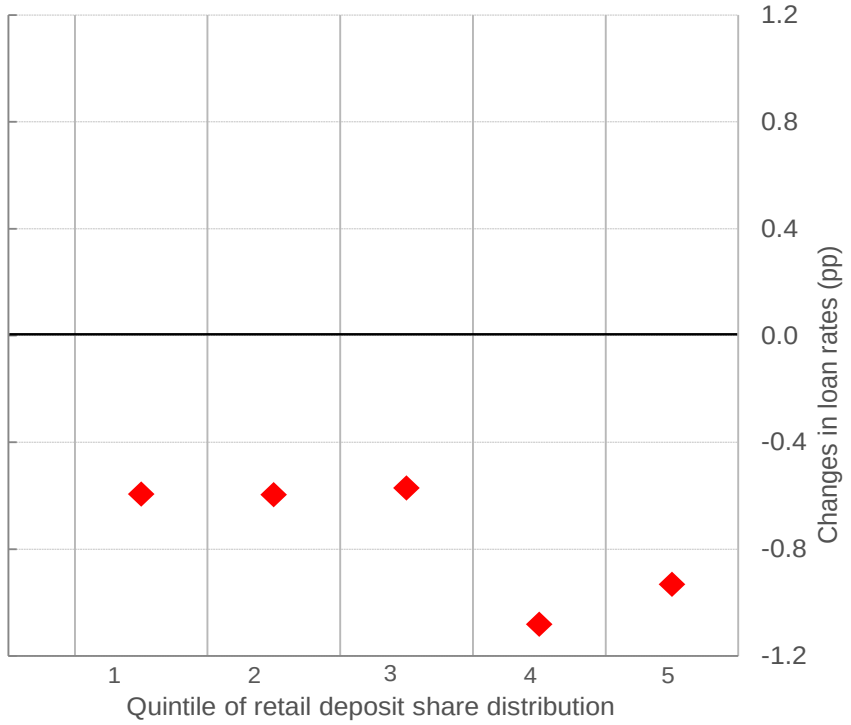
*(German banks, by quintile of retail deposit share distribution; change from June 2014 to October 2016, in percentage points)*




*Source: ECB.*
*Notes: On the basis of 59 German banks that report lending rates and volumes over the entire period. Market share is calculated as share of all loans issued by included banks. Quintiles are formed based on the average retail deposit share of each bank in the year before NIRP (June 2013 to May 2014).*
*Last observation: October 2016*

## Changes in loan rates

*(German banks, by quintile of retail deposit share distribution; change in volume weighted average, in percentage points)*

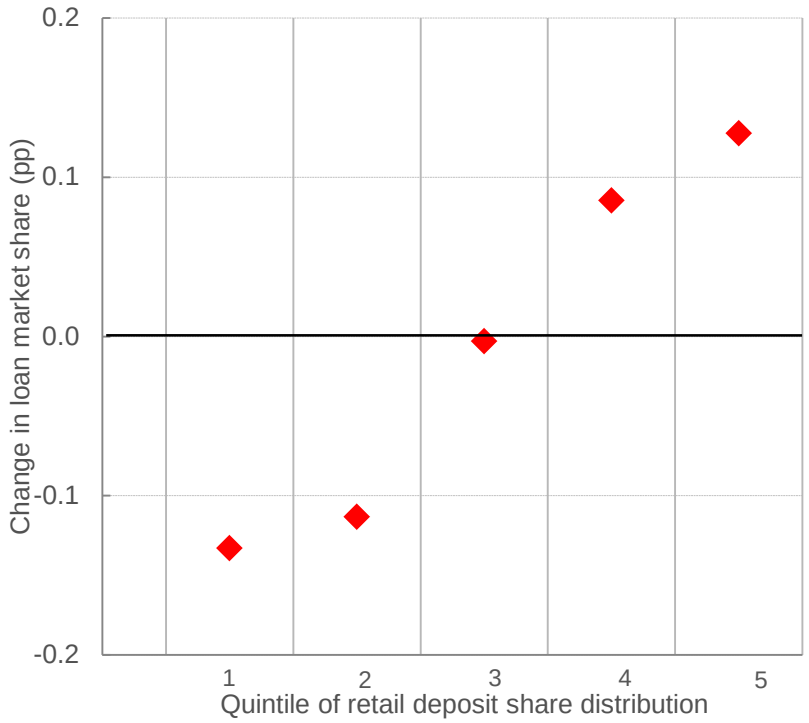



*Source: ECB.*
*Notes: On the basis of 59 German banks that report lending rates and volumes over the entire period. Lending rates are weighted by their respective bank's lending volumes. Quintiles are formed based on the average retail deposit share of each bank in the year before NIRP (June 2013 to May 2014).*
*Last observation: October 2016.*

# Changes in bank lending rates and loan market shares in Germany, pre NIRP

## Changes in loan market share

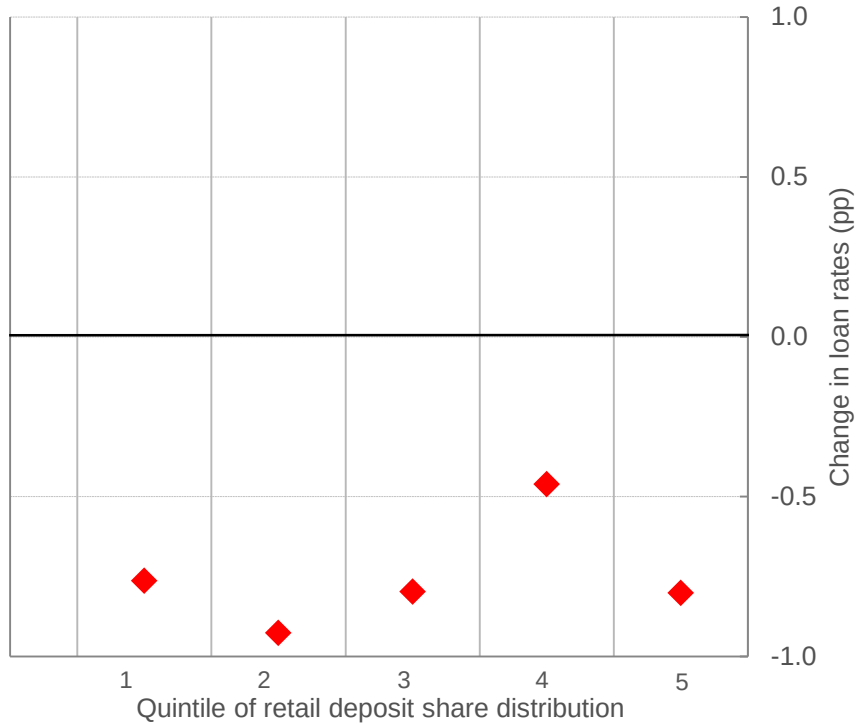
*(German banks, by quintile of retail deposit share distribution; change from February 2012 to June 2014, in percentage points)*




*Source: ECB.*
*Notes: On the basis of 59 German banks that report lending rates and volumes over the entire period. Market share is calculated as share of all loans issued by included banks. Quintiles are formed based on the average retail deposit share of each bank in the year before NIRP (June 2013 to May 2014).*
*Last observation: October 2016*

## Changes in loan rates

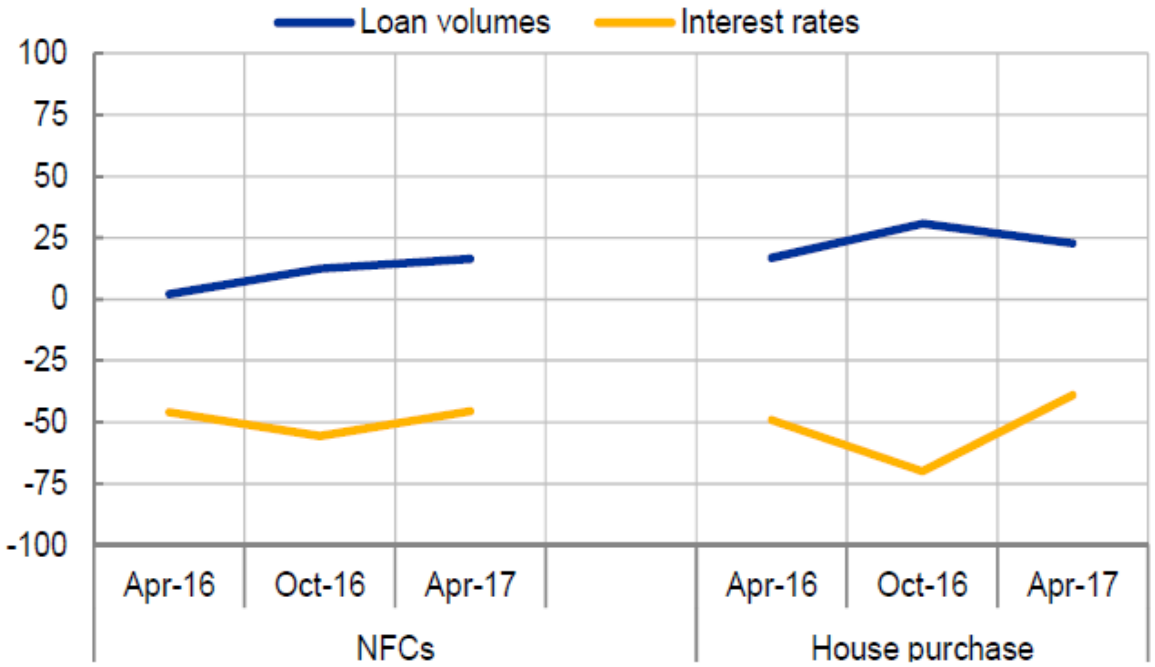
*(German banks, by quintile of retail deposit share distribution; change in volume weighted average, in percentage points)*




*Source: ECB.*
*Notes: On the basis of 59 German banks that report lending rates and volumes over the entire period. Lending rates are weighted by their respective bank's lending volumes. Quintiles are formed based on the average retail deposit share of each bank in the year before NIRP (June 2013 to May 2014).*
*Last observation: October 2016.*

## Impact of negative deposit facility rate on lending

(net percentages, over the past six months)




Sources: BLS.
Notes: Net percentages of banks reporting that the negative DFR had a positive impact on lending volumes and a negative impact on interest rates.

1 Monetary policy background

2 The pass-through of negative rates in the EA: Where is the friction?

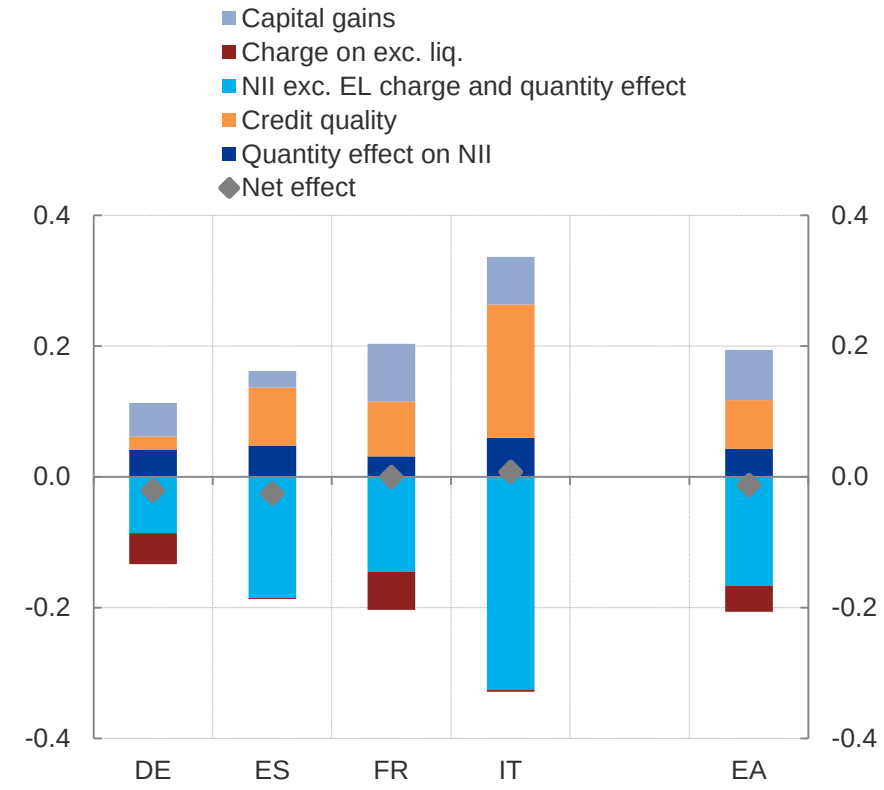
3 Banks and negative rates: Theory

4 Banks and negative rates: Data

**5 Other transmission channels of negative rates**

# Decomposition of the impact of monetary easing on bank return on assets

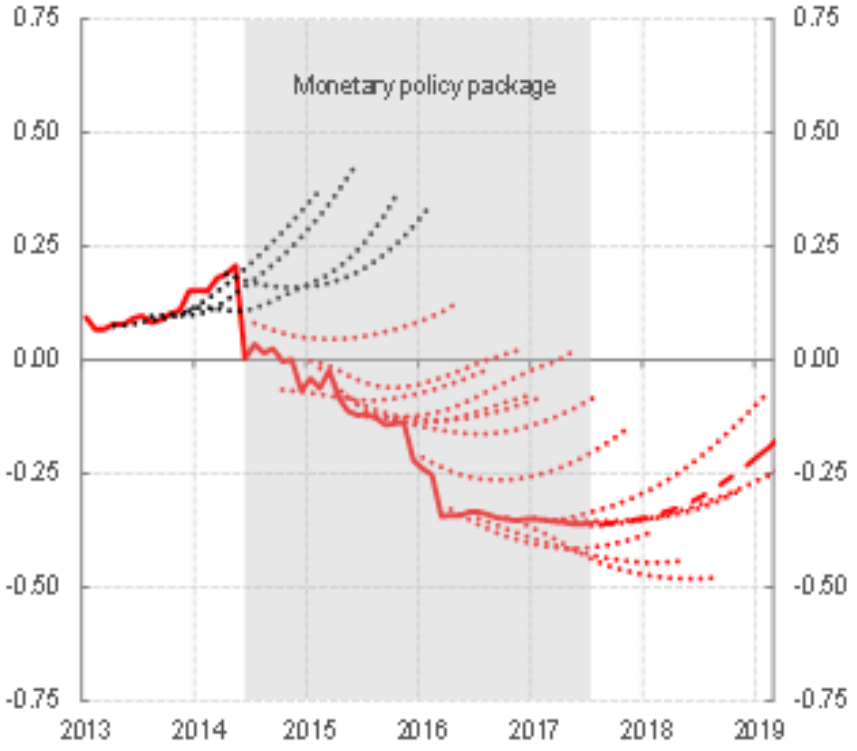
**Monetary policy and bank profitability**
*(contribution to ROA, percentage points)*




*Source: Altavilla, C., Andreeva, D., Boucinha, M. and Holton, S., "Monetary policy, credit institutions and the bank lending channel in the euro area", ECB Occasional Paper Series, forthcoming.*
*Notes: NII stands for net interest income and EL for excess liquidity. The impact of monetary policy on bond yields and the respective effect on lending rates and volumes is consistent with the Eurosystem macroeconomic projections. The impact on interest rates is reflected in new business volumes and in the outstanding amount of variable rate instruments inlcuding loans, deposits, debt securities held and issued by banks. Due to the low level of interest rates, it is assumed that banks only benefit from lower interest rates on long-term deposits. The assessment of capital gains takes into account detailed data on the maturity, counterparty country and accounting portfolio of securities held by banks, as published by the EBA.. Details on channels of transmission can be found in Altavilla, Boucinha, Peydro' (2017) Monetary policy and bank profitability in a low interest rate environment, ECB Working paper N.2015.*

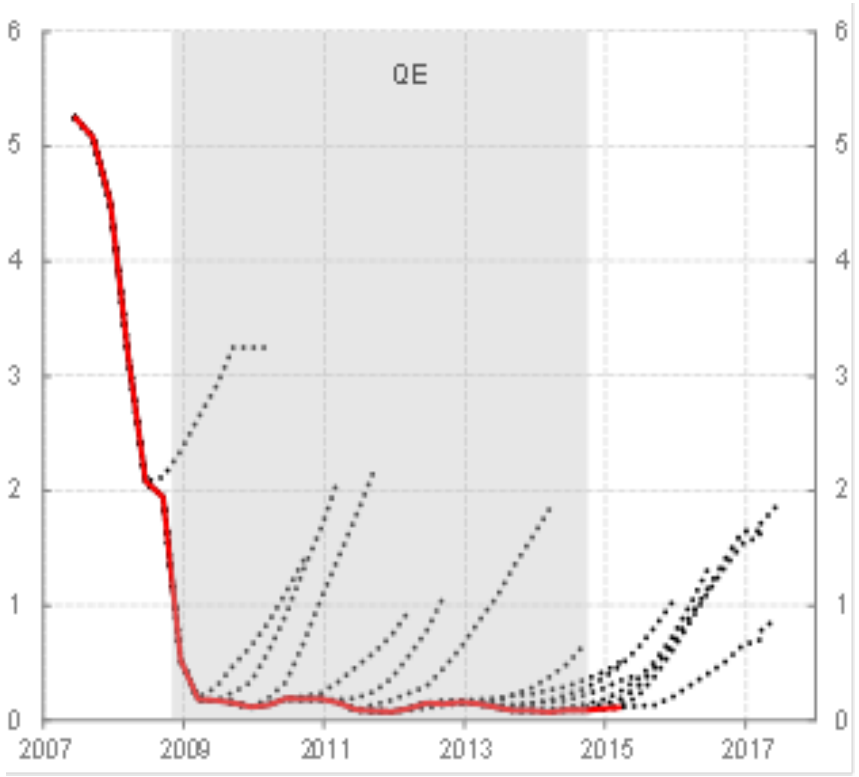
# Forward curves during periods of non-conventional monetary policy

## EA




*Sources: Bloomberg, ECB calculations.*
*Notes: Evolution of the OIS forward curve from pre-NIRP (black-dotted lines) to post-NIRP (red-dotted lines) period. Latest observation :18 July 2017.*

## US

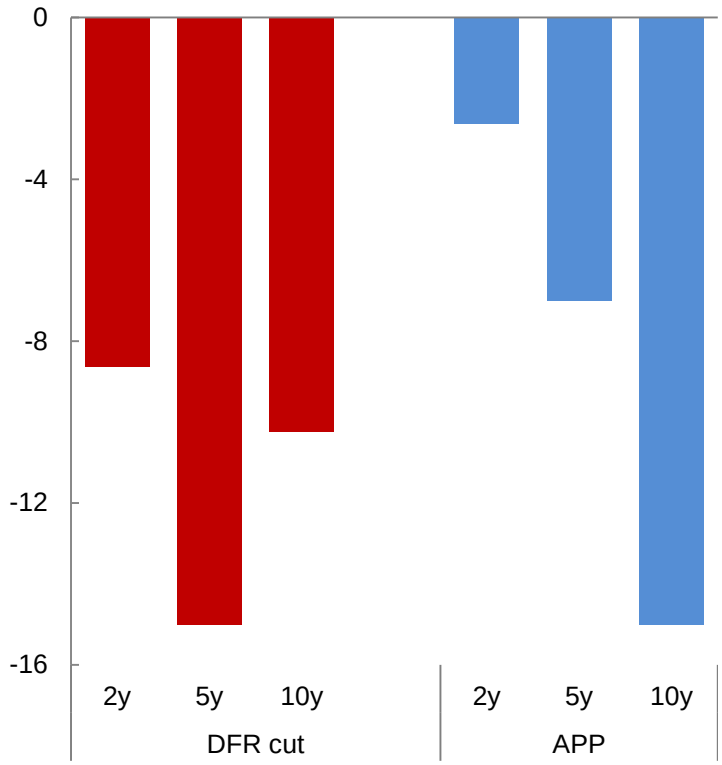



*Source: Bloomberg.*
*Notes: Evolution of Federal Funds Rate futures curves.*

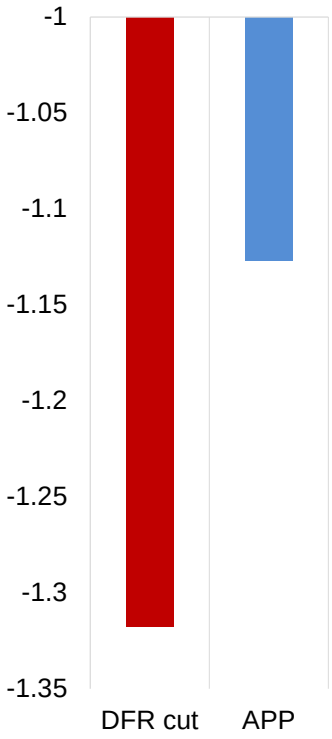
# APP and NIRP are complements: act on different yield curve sectors

## EA

### Impact on term structure *(in bps)*



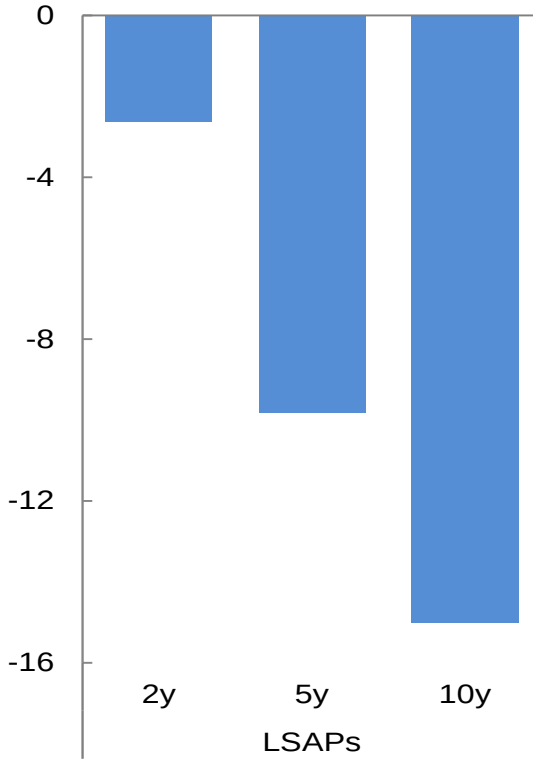

### Impact on USD/€ *(in %)*




*Sources: Bloomberg, ECB calculations.*
*Notes: Two-day change in the EA sovereign curve in response to news associated with a 10bp DFR cut (left) and a 300bn APP announcement (rhs).*

## US

### Impact on term structure *(in bps)*




*Source: Swanson (2017), "Measuring the effects of reserve forward guidance and asset purchases on financial markets", NBER.*
*Notes: Estimated impact on US Treasury yields from LSAP-related announcements.*

# Conclusions

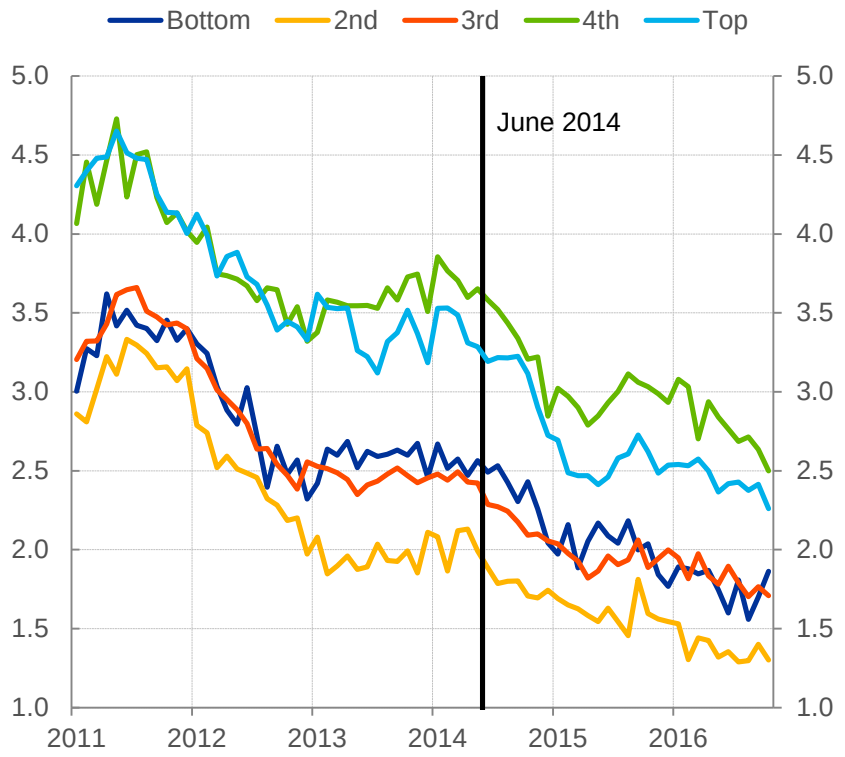
- **Friction associated with negative rates: HH deposits floored at zero**
- **No sign of a reversal rate in the EA so far**
- **Overall, experience with negative rates in conjunction with the APP and TLTROs has been very positive in the EA.**

# Thank you

# Background

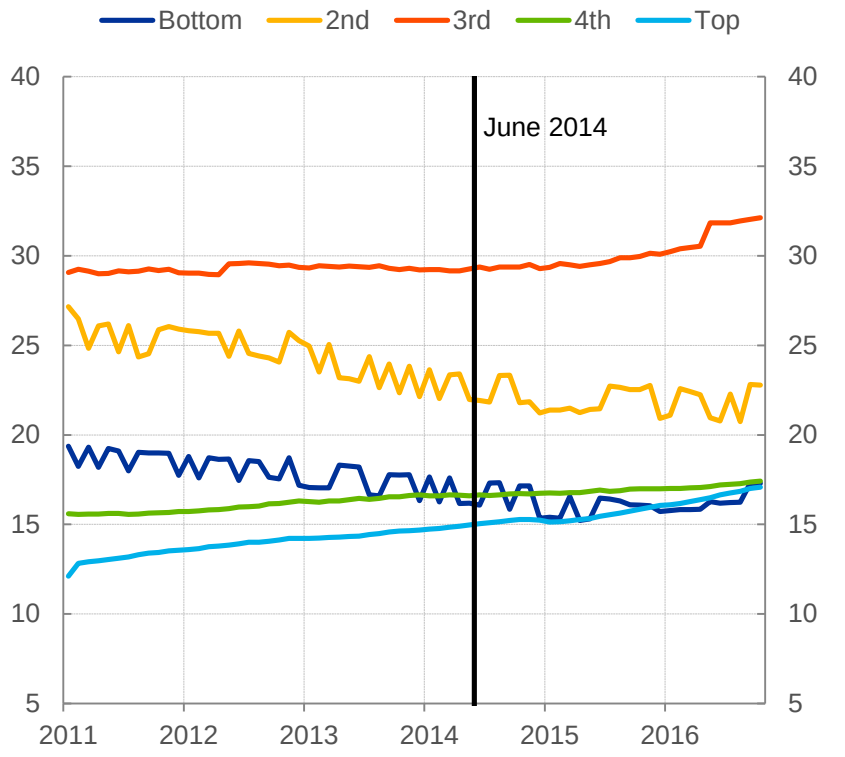
# Bank lending rates and lending volumes in Germany

**Bank lending rates (HH and NFC, new business), Germany**
*(volume weighted average, by quintile of retail deposit share distribution)*




*Source: ECB.*
*Notes: On the basis of 59 German banks that report lending rates and volumes over the entire period. Lending rates are weighted by their respective loan volumes. Quintiles are formed based on the average retail deposit share of each bank in the year before NIRP (June 2013 to May 2014).*
*Last observation: October 2016*

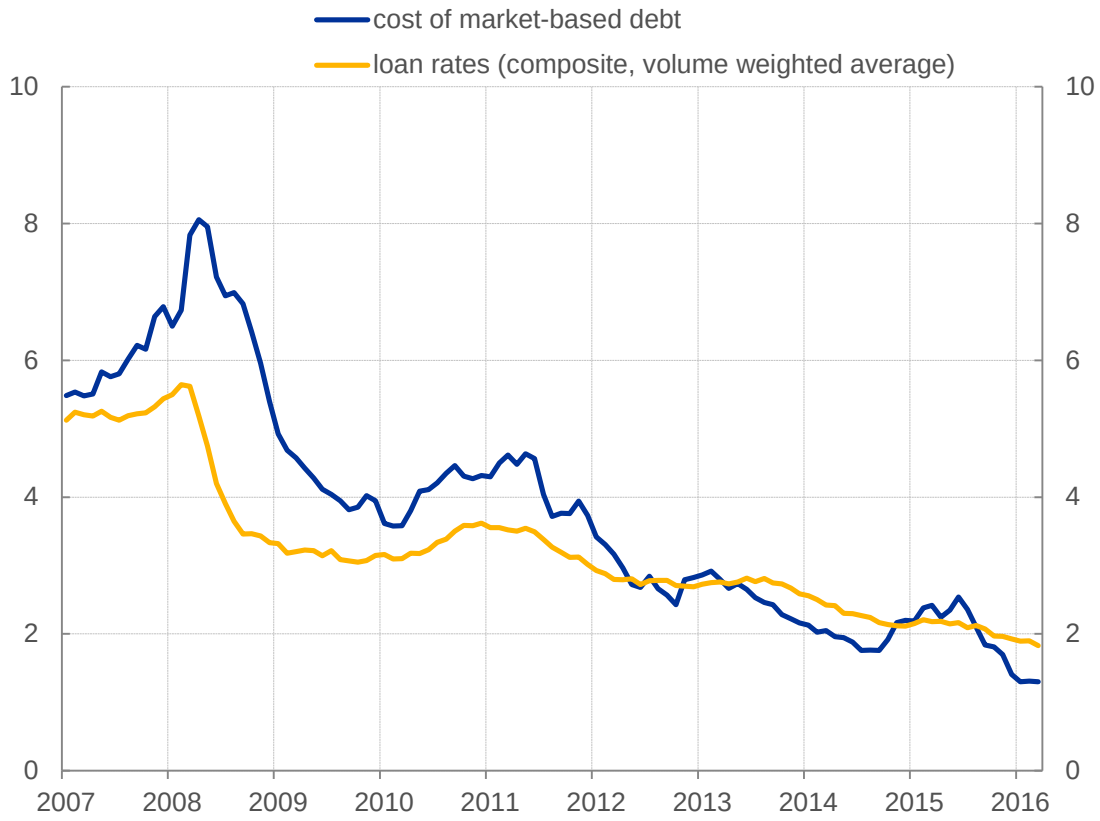
**Bank lending volumes (HH and NFC), Germany**
*(mean, by quintile of retail deposit share distribution, in EUR bn)*




*Source: ECB.*
*Notes: On the basis of 59 German banks that report lending rates and volumes over the entire period. Quintiles are formed based on the average retail deposit share of each bank in the year before NIRP (June 2013 to May 2014).*
*Last observation: October 2016.*

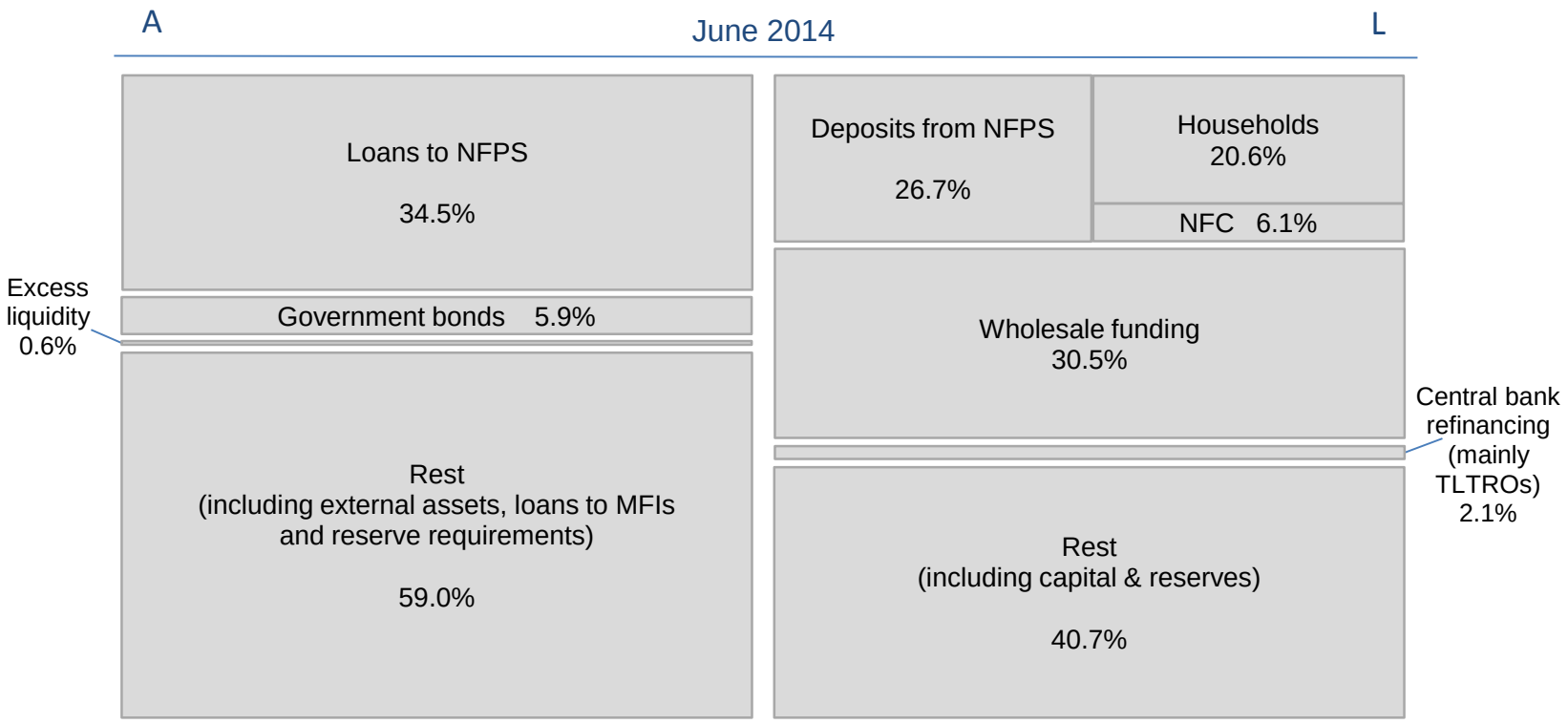
## Cost of market-based debt and lending rates for NFCs

(in percent)




*Sources: Merrill Lynch and ECB calculations.*
*Last observation: October 2016*

# Total euro area balance sheet: June 2014




*Source: ECB.*