Monetary policy transmission mechanisms

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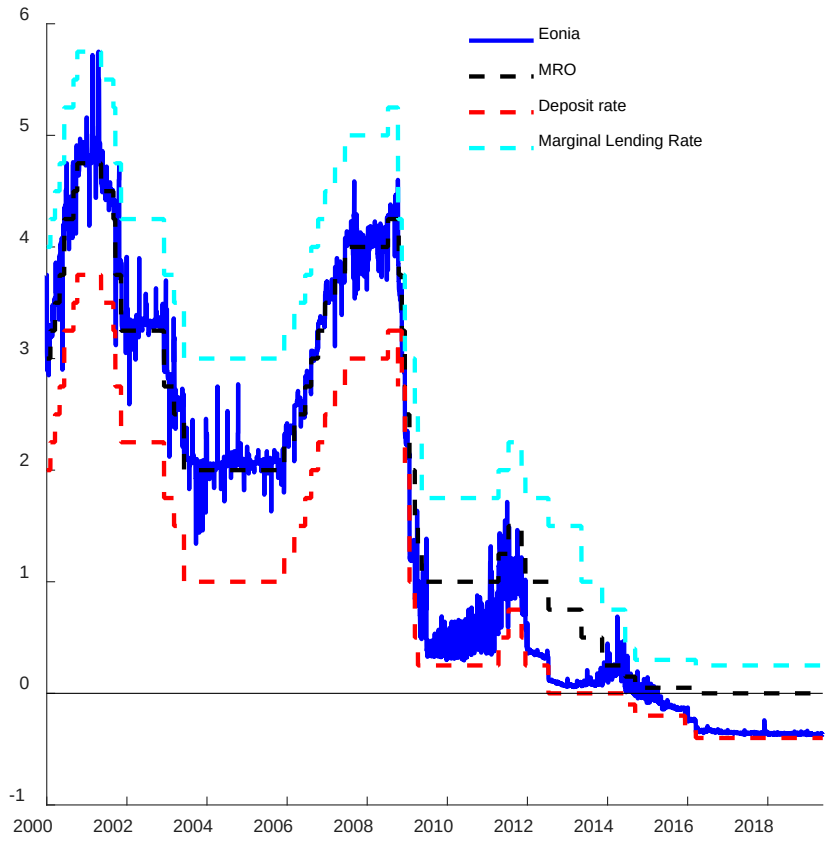
European Central Bank

13th ECB Central Banking Seminar: Monetary policy in the euro area
Frankfurt am Main, 1 to 5 July 2019

Interest rate corridor and excess liquidity

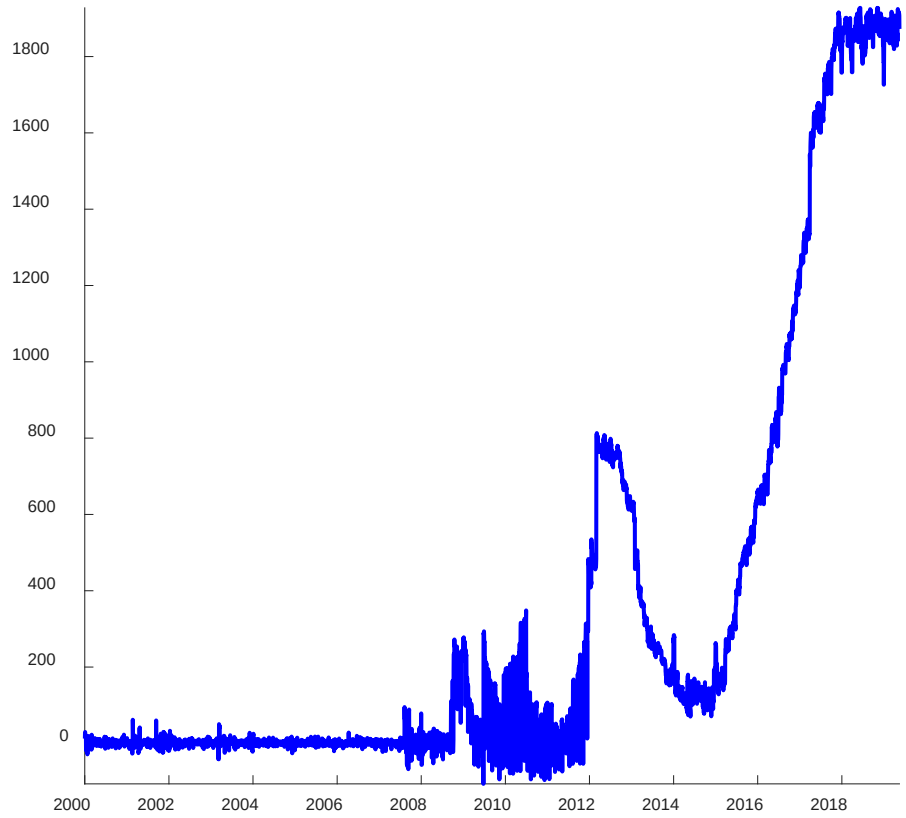
Interest rate corridor



Source: ECB.

Excess Liquidity

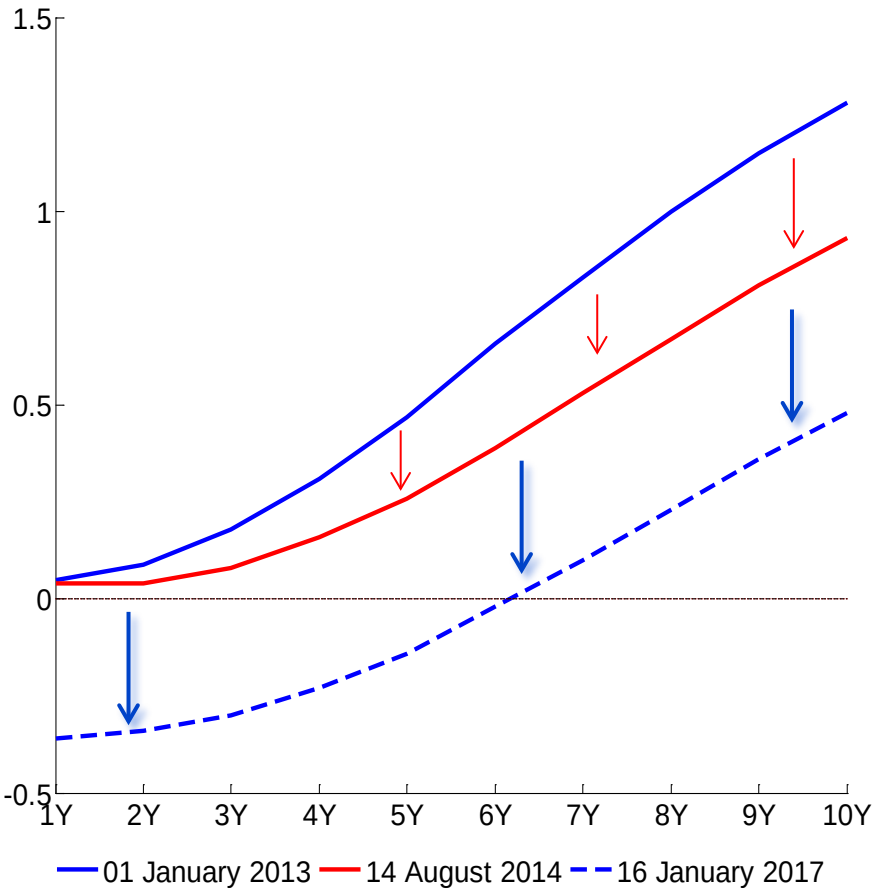
(Current Account + Deposit Facilities - Reserve requirements)



Source: ECB.

Channels of transmission

Term structure of OIS yields at different dates (percentages per annum)



Source: Thomson Reuters, Bloomberg and ECB calculations.

Channels of Transmission

Standards Measures (interest rate)

Interest rate,
Confidence,
Exchange Rate,
Expectations

Non-Standards Measures (QE, NIRP, TLTRO, FG)

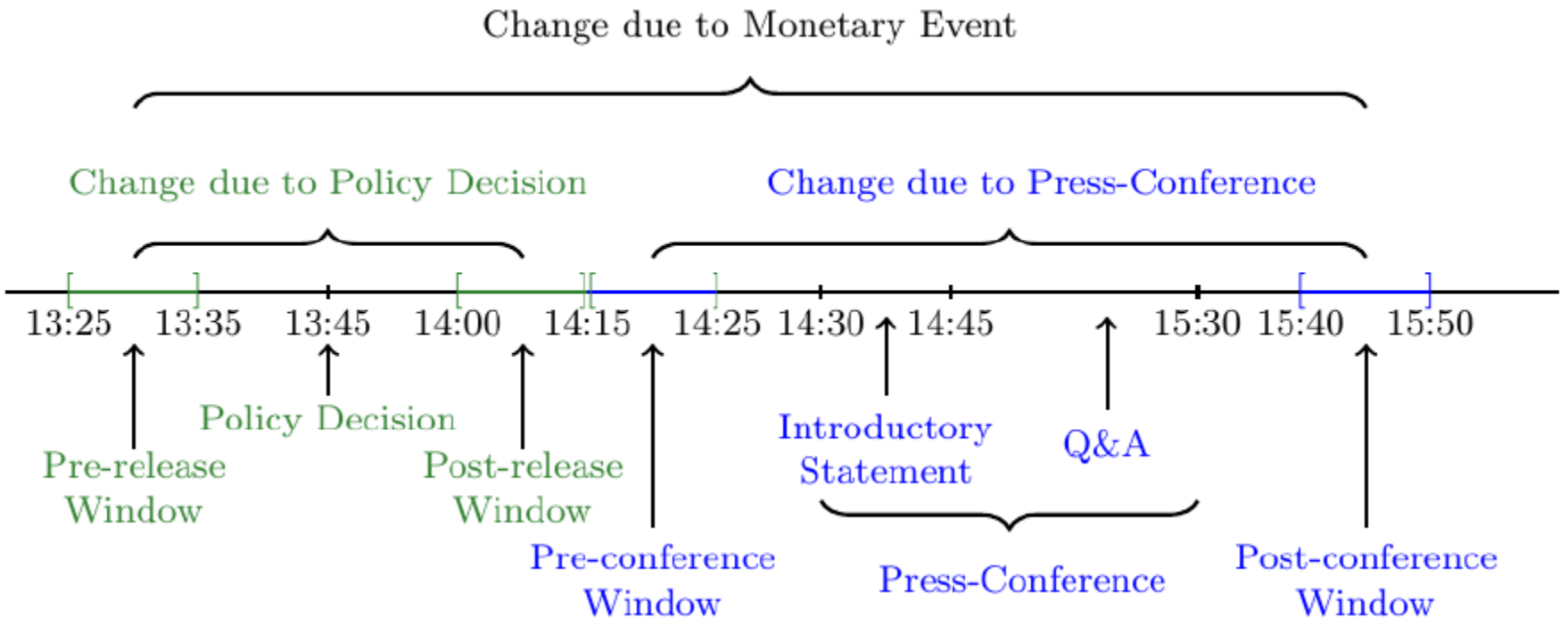
Signalling
Direct pass-through
Portfolio rebalance
Risk-taking, Deposit channel

New Policy instruments and toolkit
Challenges to monetary policy normalisation

High-frequency database – Governing Council dates

Euro Area Monetary Policy Database (EA-MPD): High-frequency database that covers all official policy actions across different maturities (for several asset classes).

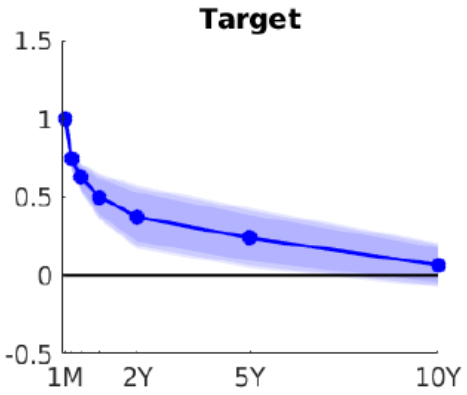
Available on-line: https://www.ecb.europa.eu/pub/pdf/annex/Dataset_EA-MPD.xlsx



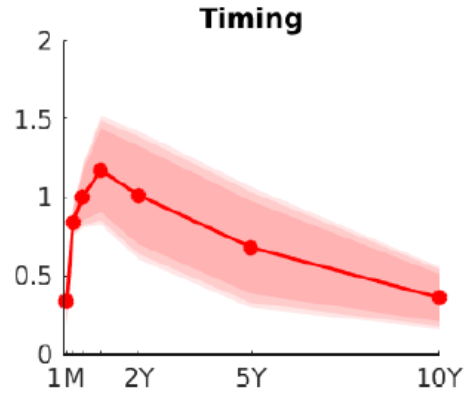
Altavilla, Brugnolini, Gürkaynak, Motto, Ragusa (2019) "Measuring euro area monetary policy," ECB WP 2281

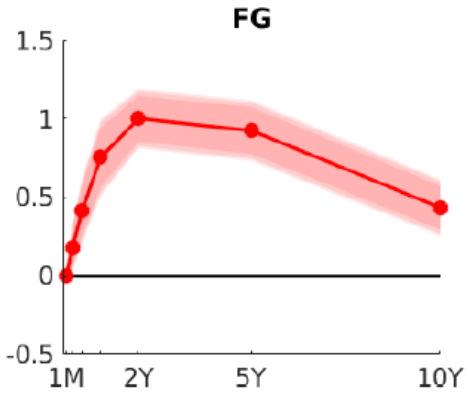
The Footprint of monetary policy measures

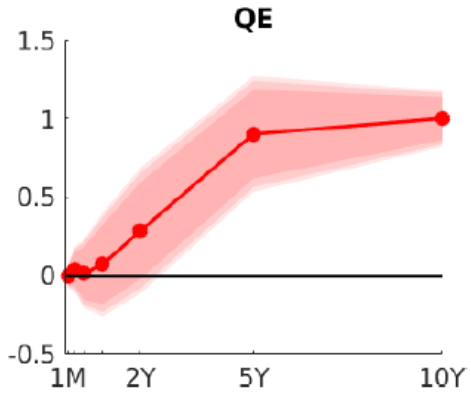
Press Release Window



Press Conference Window







Altavilla, Brugnolini, Gürkaynak, Motto, Ragusa (2019) "Measuring euro area monetary policy," ECB WP 2281

Outline

- The transmission of standard measures
- The transmission of non-standard measures
  - APP
  - NIRP
  - TLTRO
- Impact on GDP and Inflation
- Conclusions

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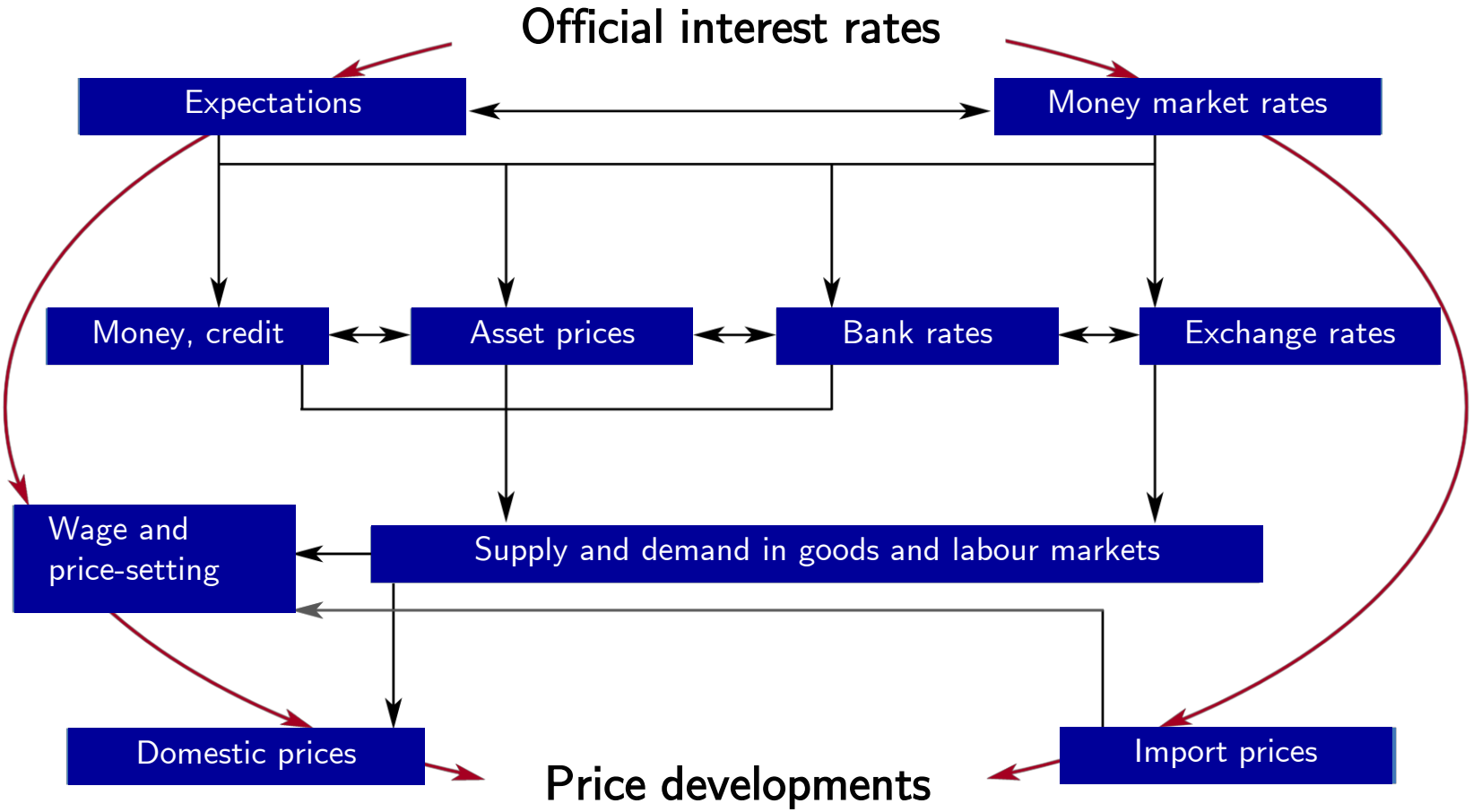
Transmission mechanism – How interest rates affect prices



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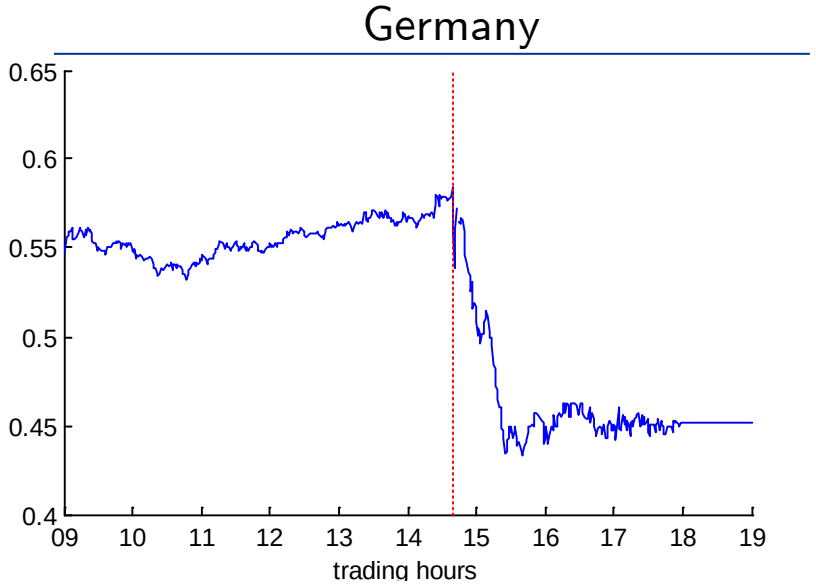
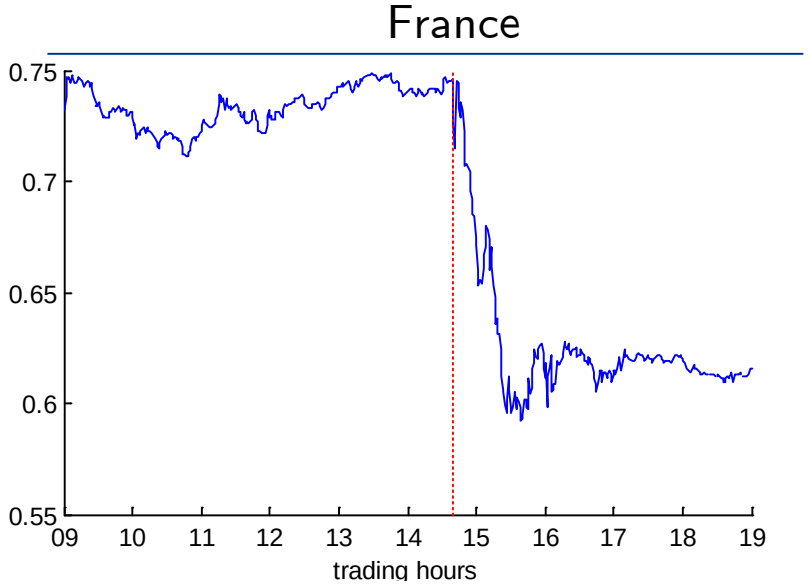
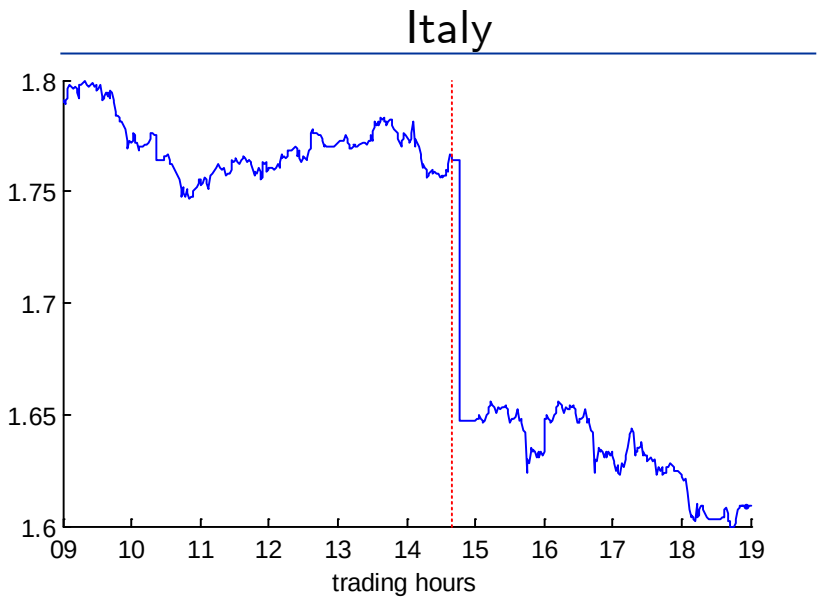
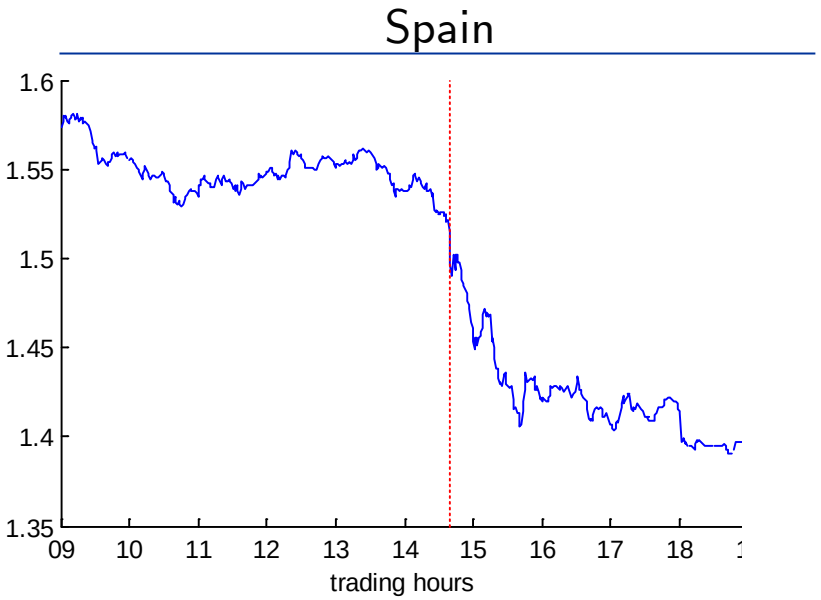
APP announcement: intraday data, 10-year yields



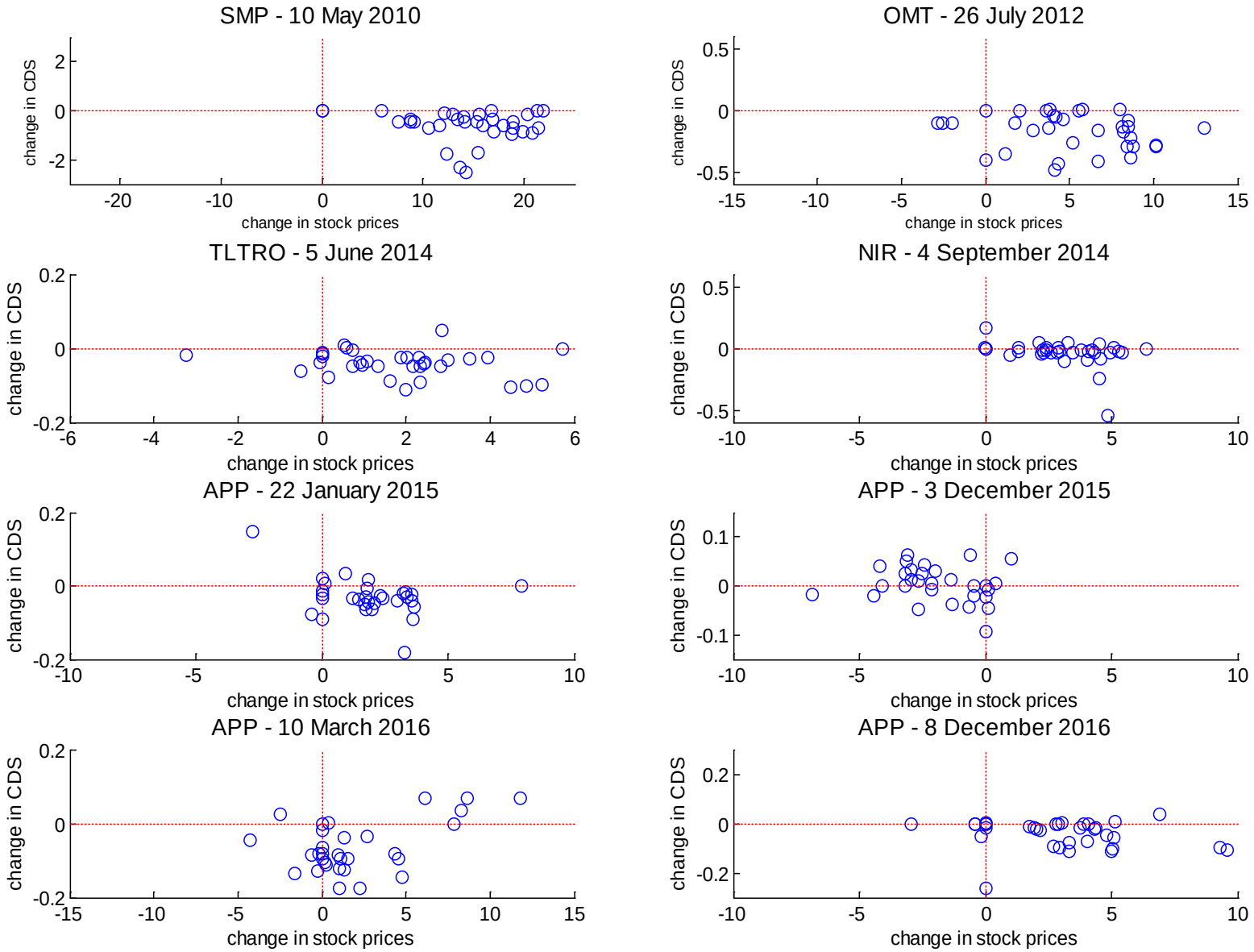






Altavilla, Carboni, Motto, 2015. "Asset purchase programmes and financial markets: lessons from the euro area," *ECB WP*

Monetary policy announcement – high frequency effect on banks

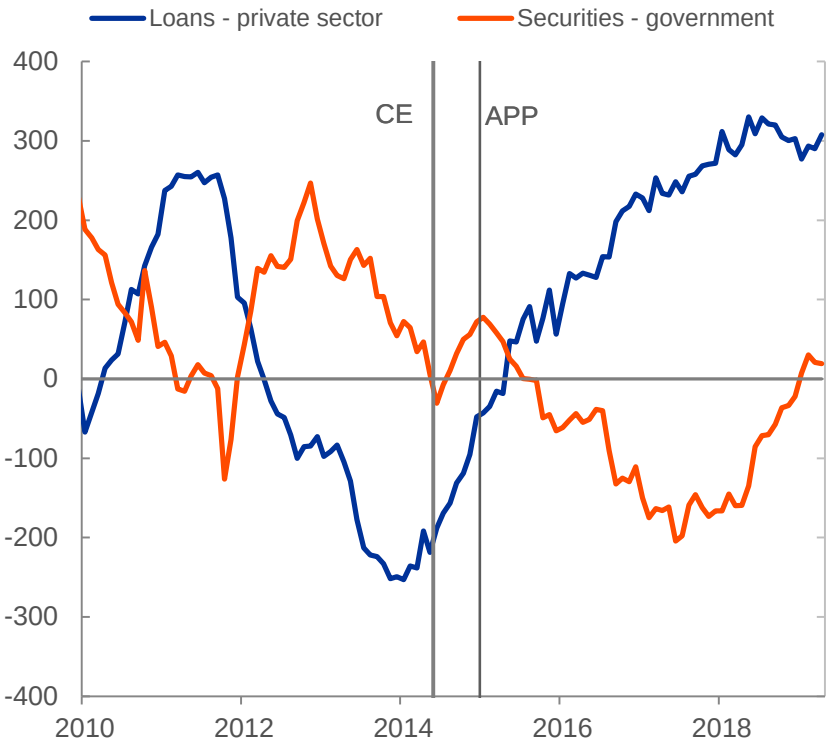


Altavilla Carlo & Miguel Boucinha & José-Luis Peydró, 2018. "Monetary policy and bank profitability in a low interest rate environment," *Economic Policy*, vol. 33(96), pages 531-586.

Sovereign Holdings by banks

Developments in main bank credit components in the euro area

(12-month flows in EUR bn, nsa)

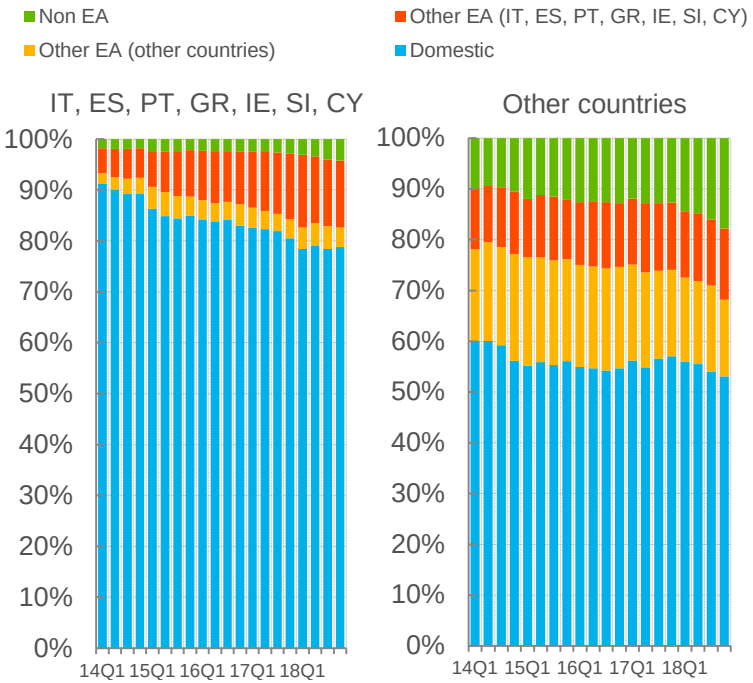


Source: ECB.

Notes: Loans to private sector exclude interbank and CCP loans. Latest observation: April 2019.

Composition of euro area credit institutions' sovereign bond portfolios

(share of each group of issuer, percentage points)



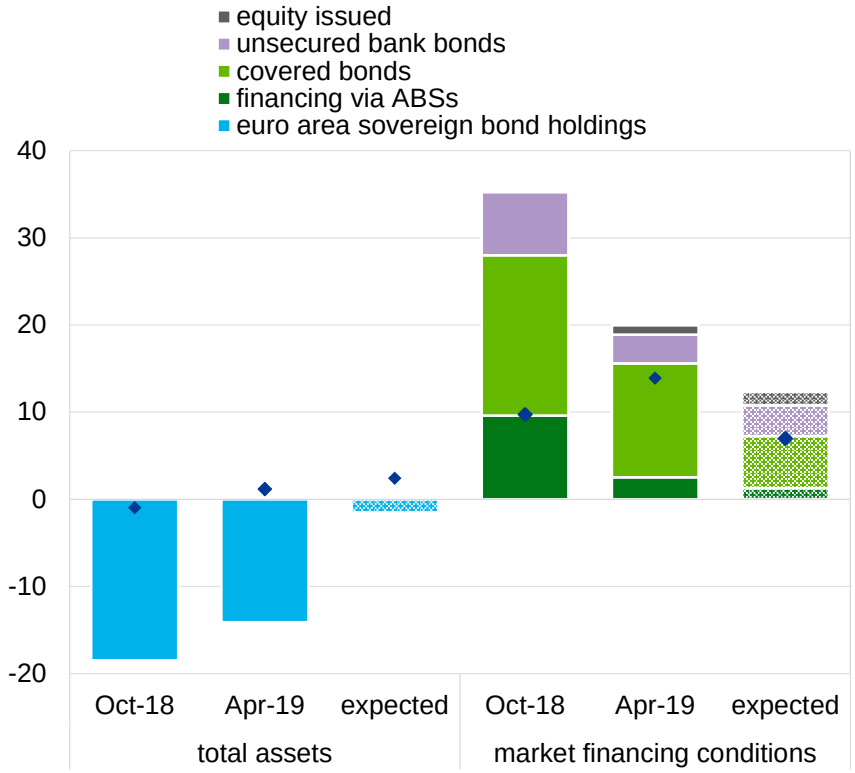
Source: ECB.

Notes: Holdings of bonds issued by general governments resident in the euro area. Latest observation: 2018Q4

Evidence from the Bank Lending Survey

Impact of the APP on euro area banks' assets and market financing conditions

(net percentages of banks)

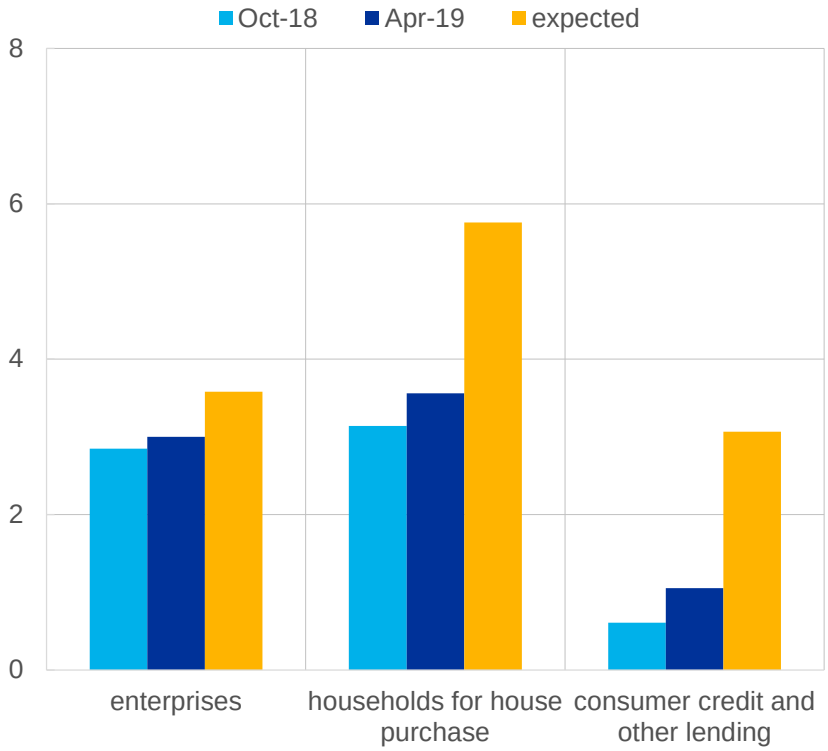


Source: ECB. Bank lending survey (BLS)

Notes: The net percentages are defined as the difference between the sum of the percentages for "increased/improved considerably" and "increased/improved somewhat" and the sum of the percentages for "decreased/deteriorated somewhat" and "decreased/deteriorated considerably". The periods in the legend refer to the respective BLS survey rounds. "Expected" denotes expectations indicated by banks in the current round.

Impact of the APP on bank lending volumes

(net percentages of banks)



Source: ECB. Bank lending survey (BLS).

Notes: The net percentages are defined as the difference between the sum of the percentages for "increased considerably" and "increased somewhat" and the sum of the percentages for "decreased somewhat" and "decreased considerably". The periods in the legend refer to the respective BLS survey rounds. "Expected" denotes expectations indicated by banks in the current round.

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Transmission channels of NIRP

Transmission Channels

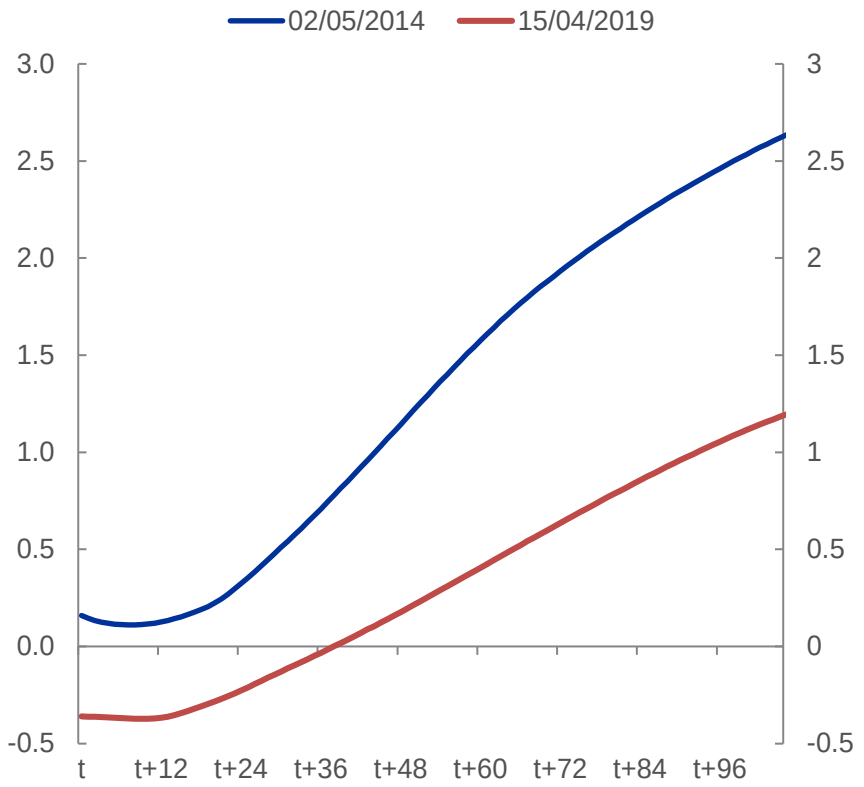
1. **Removal of non-negativity restriction**
   NIRP not only shifts down short rates to negative territory, but also keeps open expectations of possible further rate cuts. As a result, the forward curve becomes flatter and monetary accommodation propagates over the entire term structure.

2. **Demand of long-term assets**
   The incentive for investors to move to longer dated assets increases the demand for these securities relative to their supply. This ultimately exerts an extra downward pressure on the term premium, which compensates investors for the risk of holding bonds with longer duration.

3. **Portfolio rebalancing channel**
   The attempt by individual banks to escape the charge results in balance sheet adjustments, whereby banks react to the mechanical absorption of their excess liquidity by creating new (riskier) loans or by purchasing securities.

Eonia forward curve

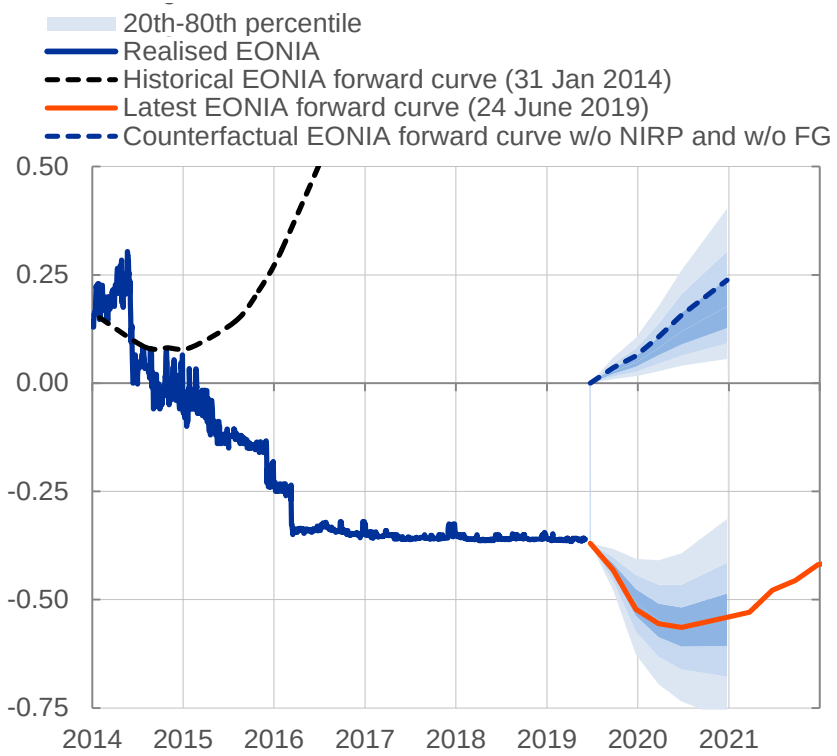
(percentages per annum)



Source: Thomson Reuters, Bloomberg and ECB calculations. Note: x-axis reports months.

An identification strategy

Expectations of future short-term rates observed and counterfactual
(percentages per annum)



Sources: Rostagno, Altavilla, Carboni, Lemke, Motto, Saint-Guilhem, Yiangou (2019).
Notes: Evolution of the OIS forward curve from pre-policy package (black-dotted line) to post-policy package (red line), together with risk neutral option-implied distributions (Euribor 3m – spread adjusted), as well as a shifted counterfactual forward curve (blue-dotted line) and its risk-neutral option-implied distribution. The counterfactual distribution and forward curve is constructed by anchoring the current distribution at zero and subsequently assuming that w/o FG and w/o NIRP, all probability mass that is observed below zero after shifting would proportionally re-distribute to and above zero.

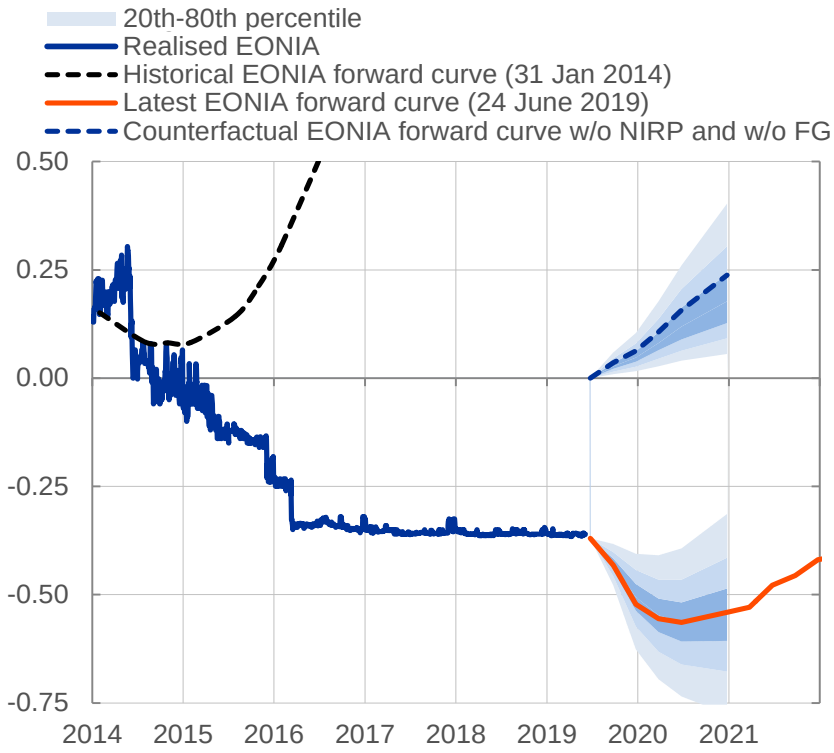
Four instruments

- TLTRO (Targeted longer-term refinancing operations): to influence banks' lending rates by compressing the cost components of loan creation
- Negative rate policy: to pin down the level of the term structure of interest rates
- Purchases of securities issued by public and private institutions: to control the slope of the term structure of interest rates
- Forward guidance: to orient expectations of the purchase and rate policies

Large impact of combined rate policies (NIRP and forward guidance)

Expectations of future short-term rates observed and counterfactual

(percentages per annum)



Sources: Rostagno, Altavilla, Carboni, Lemke, Motto, Saint-Guilhem, Yiangou (2019).
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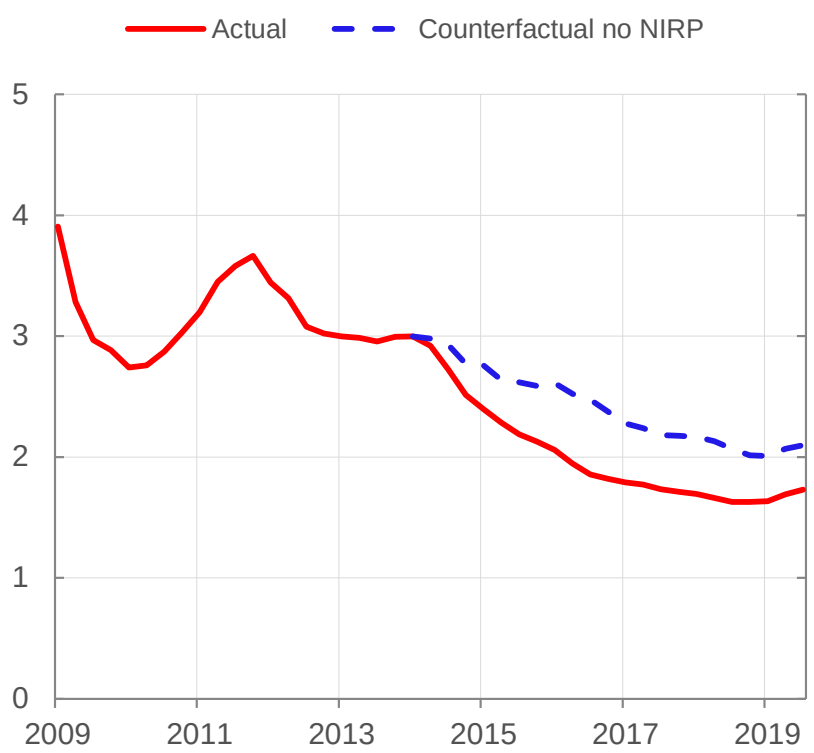
Lending rates to NFCs, actual and counterfactual under no NIRP

(percentages per annum)

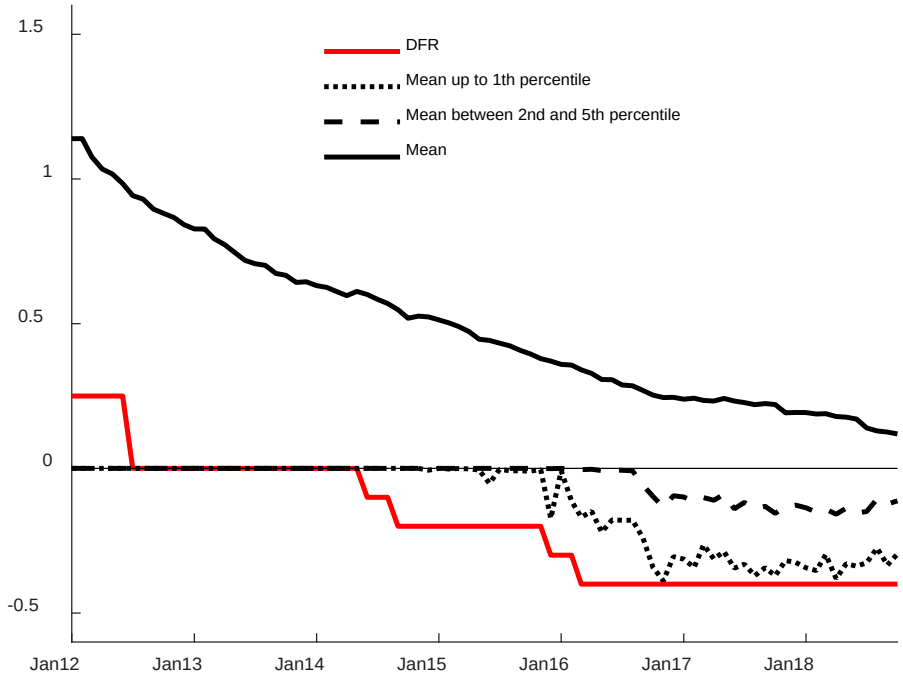


Source: Rostagno, Altavilla, Carboni, Lemke, Motto, Saint-Guilhem, Yiangou (2019).
Notes: The counterfactual path for lending rates to NFCs under no-NIRP is given by the forecast of a BVAR model conditional on the no-NIRP path for forward rates depicted on the LHS chart.
Latest observation: April 2019.

The lending channel

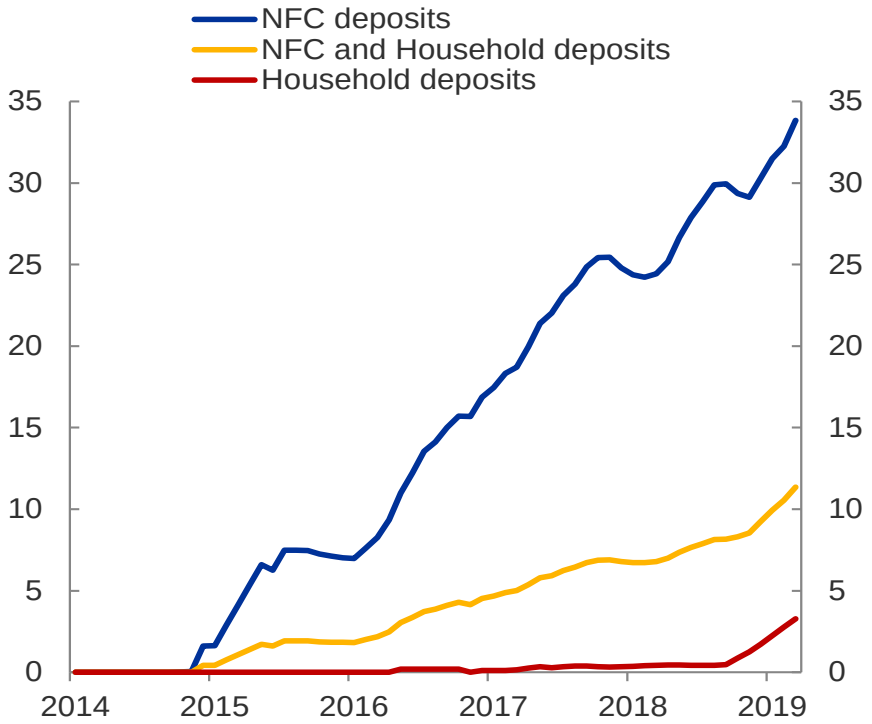
Stock of Deposits

(percentage points)



Share of outstanding deposits with negative interest rates in non-vulnerable countries

(6-month averages; percent)

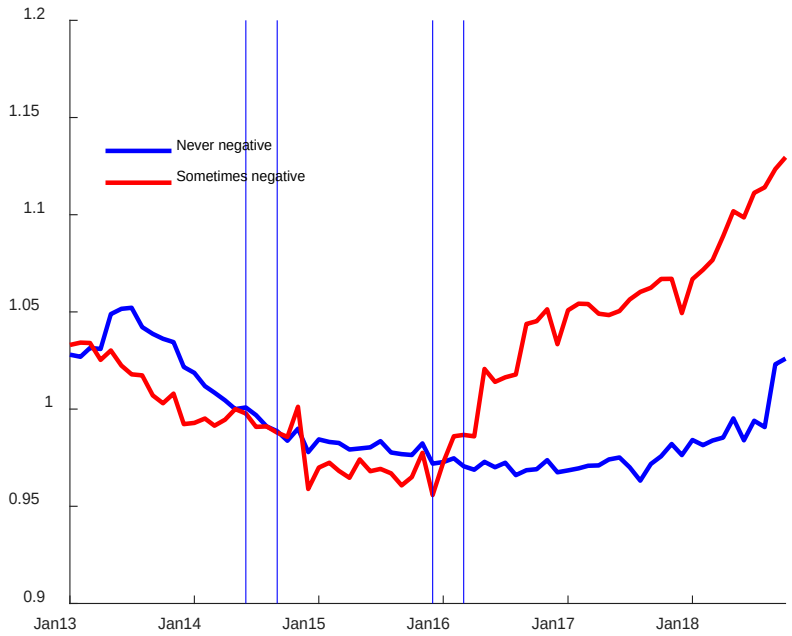


Sources: Altavilla, Burlon, Giannetti, Holton, 2019. "Is there a zero lower bound? The effects of negative policy rates on banks and firms," Working Paper Series 2289, European Central Bank.

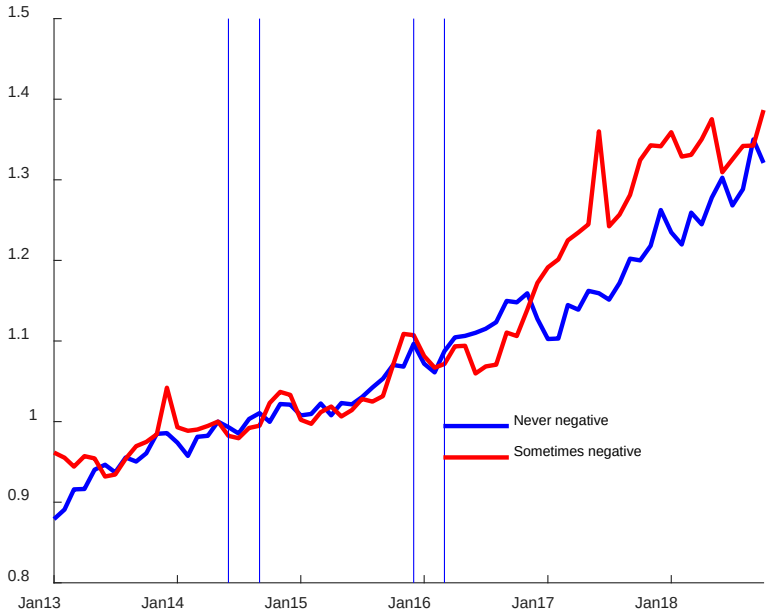
Notes: Deposit rates on outstanding amounts are reported by individual banks for each of the available product categories, weighted by outstanding amounts in March 2019. Household deposits include deposits from private households (S.14 ESA 2010) and deposits from non-profit institutions serving households (S.15). Non-vulnerable countries exclude IT, ES, PT, GR, IE, SI, CY. Latest observation: March 2019.

The lending channel

Lending volumes
(level; 1=May 2014)



Deposit volumes
(level; 100=May 2014)



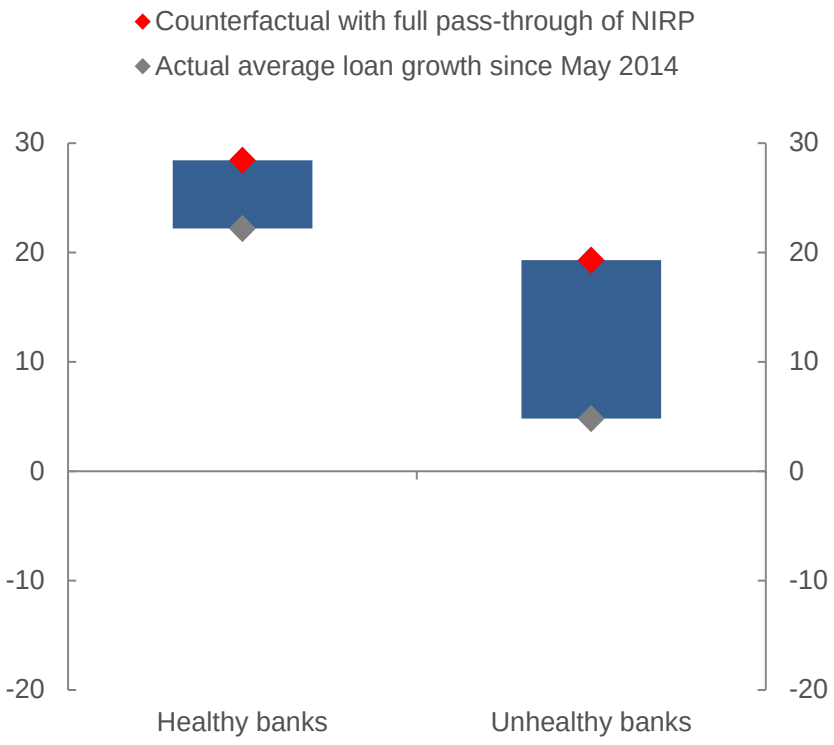
Source: Altavilla, Burlon, Giannetti, Holton, 2019. "Is there a zero lower bound? The effects of negative policy rates on banks and firms," Working Paper Series 2289, European Central Bank

Notes: Total lending (left) and total deposits (right) of banks that never charge negative deposit rates as opposed to banks that do offer negative deposit rates. Total volumes for the two categories are normalized to the level in May 2014. The blue vertical lines indicate the four episodes of DFR cuts below zero.

The corporate channel of monetary policy

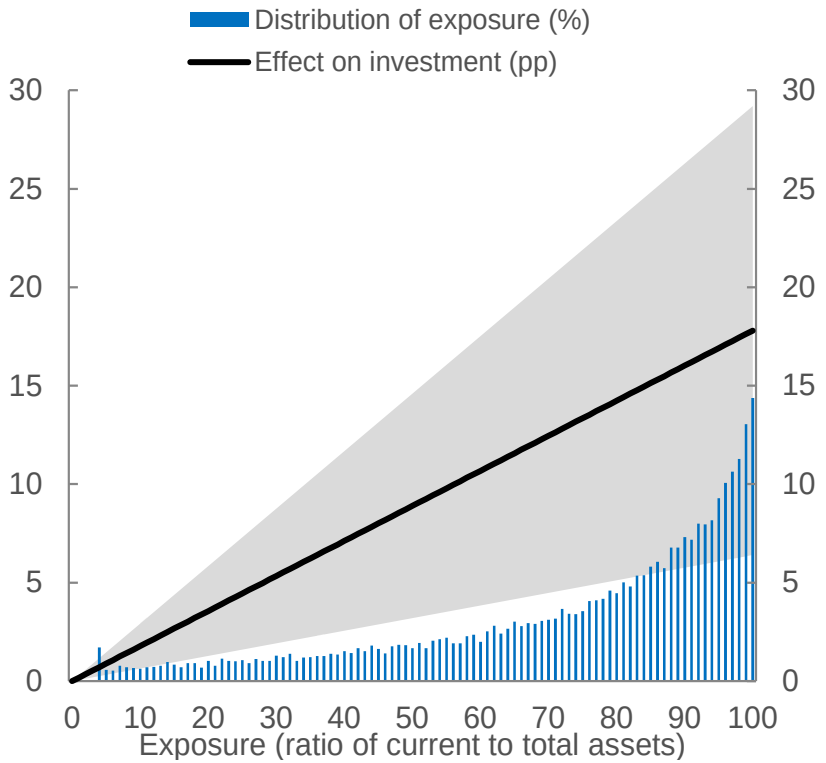
NIRP and the credit channel

(annual percentage changes; percentage points)



NIRP and the corporate channel

(percentages; percentage points)



Source: Altavilla, Burlon, Giannetti, Holton, 2019. "Is there a zero lower bound? The effects of negative policy rates on banks and firms," ECB WP 2289.

Notes: LHS:Bank health is proxied by the level of NPL. Healthy banks belong to the percentiles between the 20th and the 50th of the NPL ratio distribution (average NPL ratio: 4%). Unhealthy banks belong to the percentiles between the 50th and the 80th of the NPL ratio distribution (average NPL ratio: 9%). The counterfactual is computed assuming that both groups of banks do not have any outstanding NPL. RHS: Exposure to NIRP is measured by the ratio of current assets to total assets (a proxy for bank deposits) of firms that are connected to banks charging negative rates.

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Transmission channels of TLTRO

Transmission Channels

1. Direct pass-through channel (for bidders)

   The substitution of more expensive financing with TLTROs will decrease the average funding costs of banks borrowing from the TLTROs.

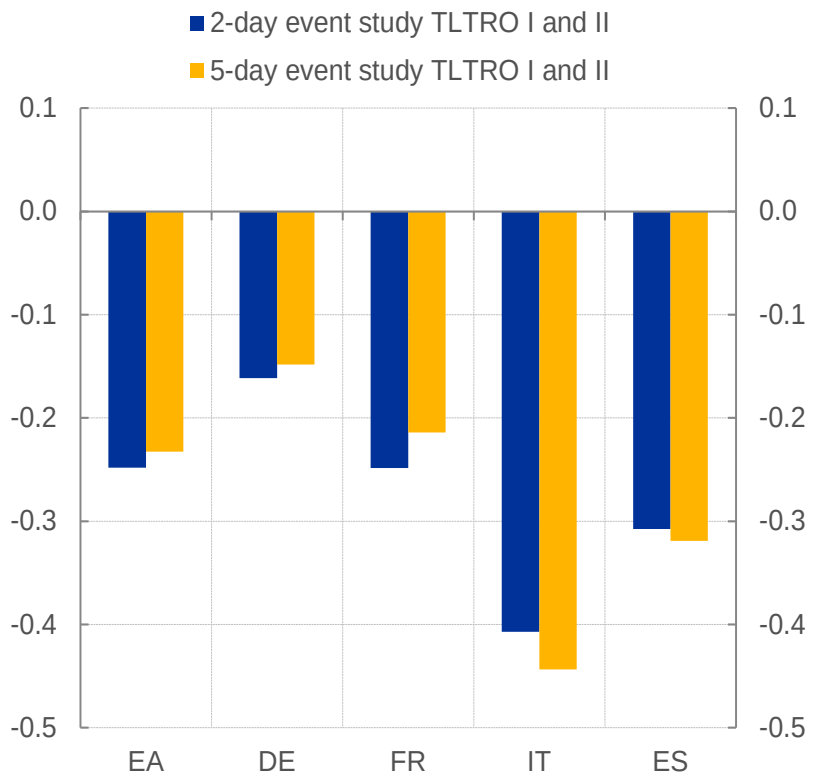
2. Portfolio rebalancing channel

   Banks taking part in TLTRO would likely cancel or postpone plans to issue bonds into the market, bank bond scarcity would bring a funding cost relief even to the benefit of those banks that were to shun the operations.

3. Signalling channel

   Large liquidity injection determined a shift of investor expectations concerning the future policy path

Bank bond yields around past TLTROs announcement *(percentage points)*

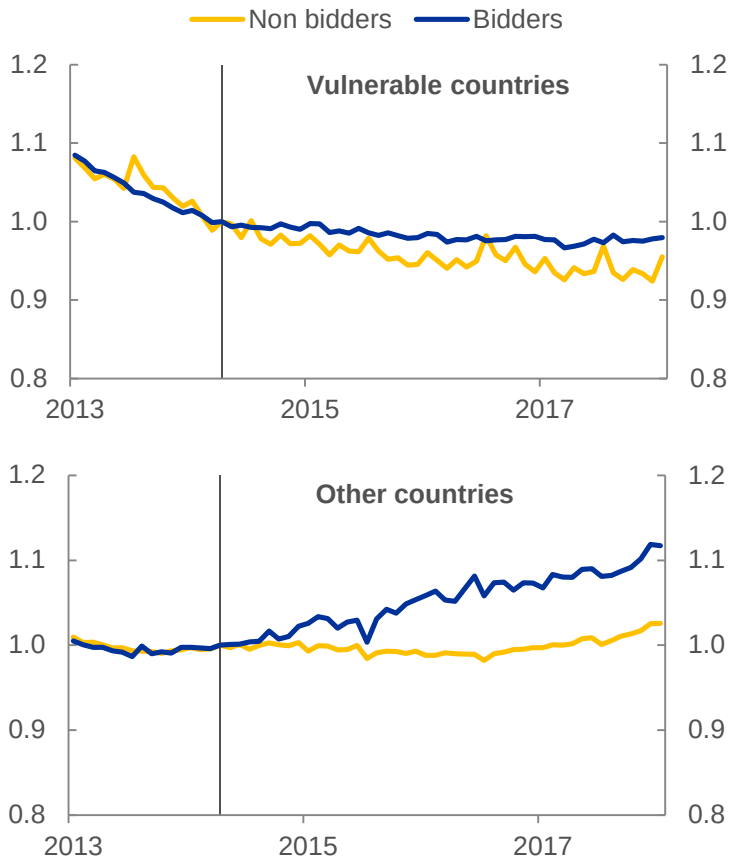


Notes: The chart shows the reaction of bank bond yields to the announcements of the TLTROs made in 5th June 2014 and 10th March 2016.

Past operations stimulated lending

Lending volumes to NFCs of bidders and non bidders

(notional stock; September 2014=1)



Source: ECB iBSI and ECB calculations.
Notes: The chart shows the notional stock of loans to NFCs across bidders and non bidders relative to September 2014. Vulnerable countries are Ireland, Greece, Spain, Italy, Cyprus, Portugal and Slovenia. Other countries are all the remaining euro area countries.

Counterfactual estimation for euro area banks

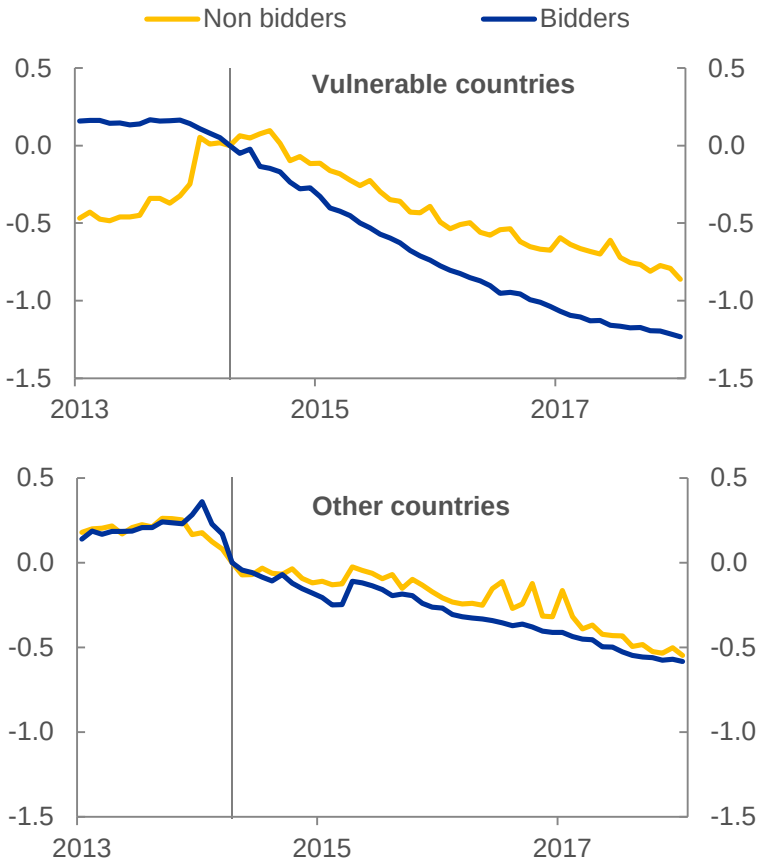
(percent)

Source: ECB calculations.
Notes: Estimates without TLTRO are based on a range of models including Albertazzi, Altavilla, Boucinha, Di Maggio (mimeo 2019), Holton, Rodriguez D´Acri (2018) Journal of Banking and Finance, Altavilla, Canova, Ciccarelli (2019) Journal of Monetary Economics.

...and reduced lending rate level and dispersions

Lending rates to NFCs of bidders and non bidders

(percentage points; deviations from September 2014)

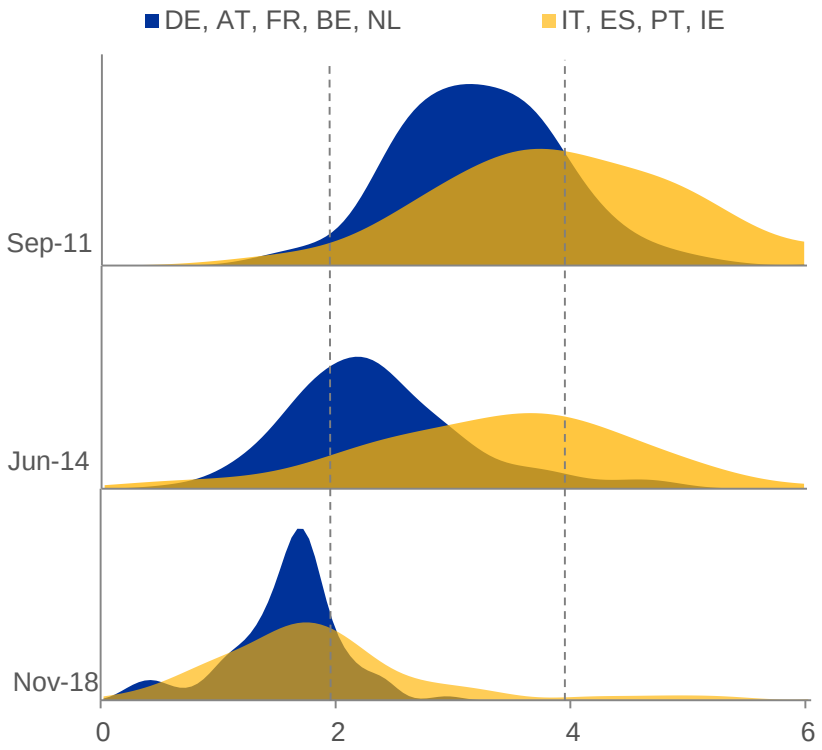


Source: ECB iMIR and ECB calculations.

Notes: NFC lending rates are on outstanding loans to non-financial corporations weighted by volume. Chart shows average rates across bidders and non bidders in deviation from rates in September 2014. Vulnerable countries are Ireland, Greece, Spain, Italy, Cyprus, Portugal and Slovenia. Other countries are all the remaining euro area countries.

Changes in lending rates to NFCs across individual banks in the euro area

(percentages per annum)

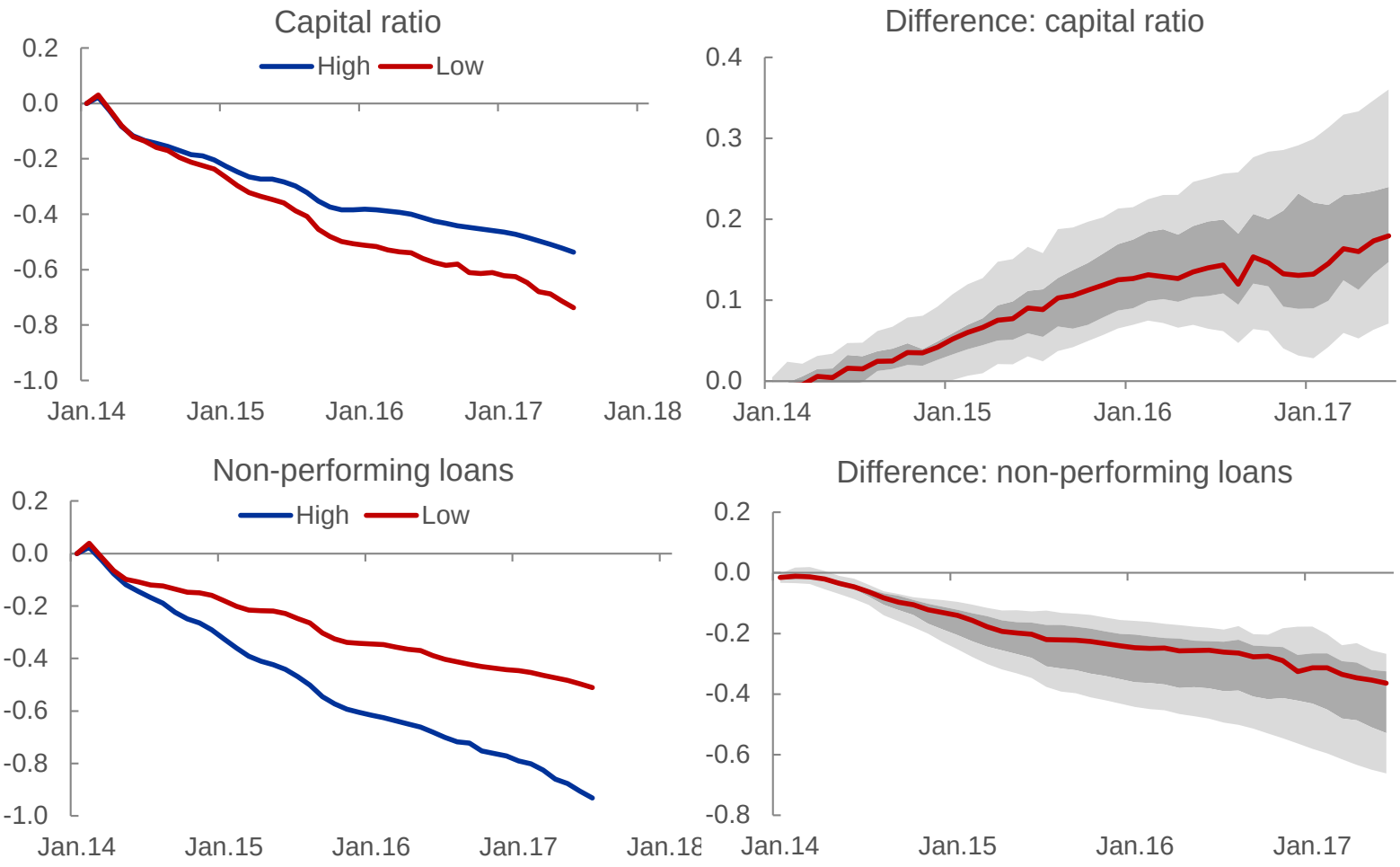


Source: ECB iMIR and ECB calculations.

Notes: The figure reports the distribution density approximation of individual banks' new business lending rates in three different periods (September 2011, June 2014 and November 2018) for banks operating in two set of countries.

...especially for banks that most needed

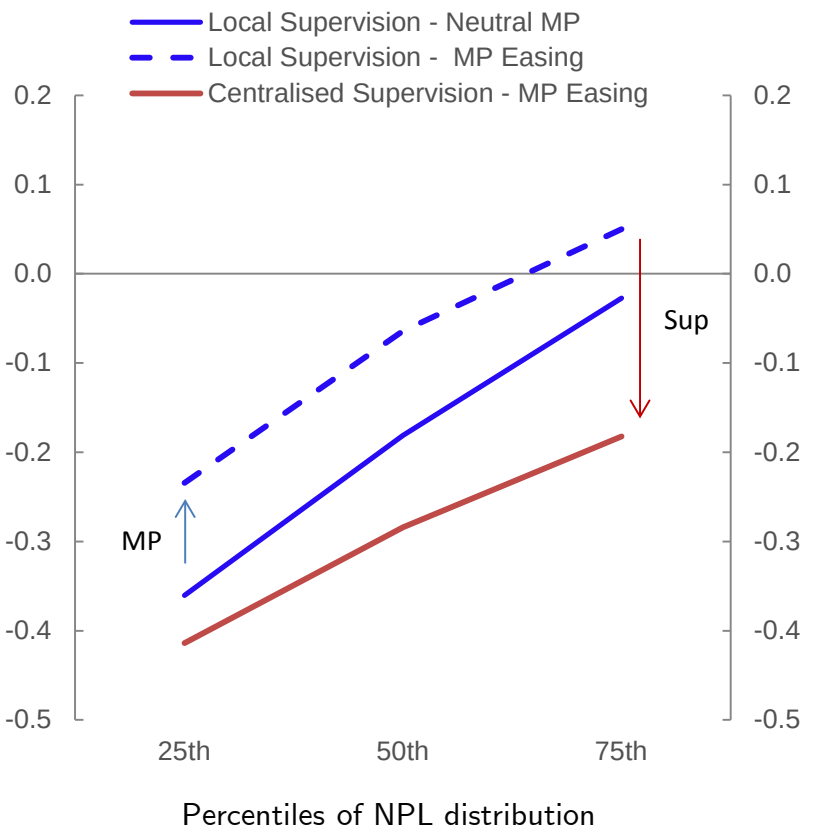
Decline in bank lending rates due to the ECB's non-standard monetary policy measures by bank characteristics *(percentages points)*



Source: Altavilla, Canova, Ciccarelli (2019) Journal of Monetary Economics.

Interaction with (micro- and macro-) prudential policies

Effect on lending to low-quality borrowers of monetary easing and centralized supervision



- ✓ MP easing leads to increase lending towards riskier firms
- ✓ But risk-taking tend to be canceled by centralized supervision

Open questions

- ➢ Do banks with ex-ante higher NPL supply more credit to riskier borrowers?
- ➢ Does centralised (ECB) vs. local banking supervision affect bank risk-taking?
- ➢ Does the interaction between bank supervision & MP affect risk-taking?

We address both issues by using multiple credit registers (our Big Data) about 300mln observations

Source: Altavilla Carlo & Miguel Boucinha & José-Luis Peydró & Frank Smets, 2019. Banking Supervision, Monetary Policy and Risk-Taking: Big Data Evidence from 15 Credit Registers

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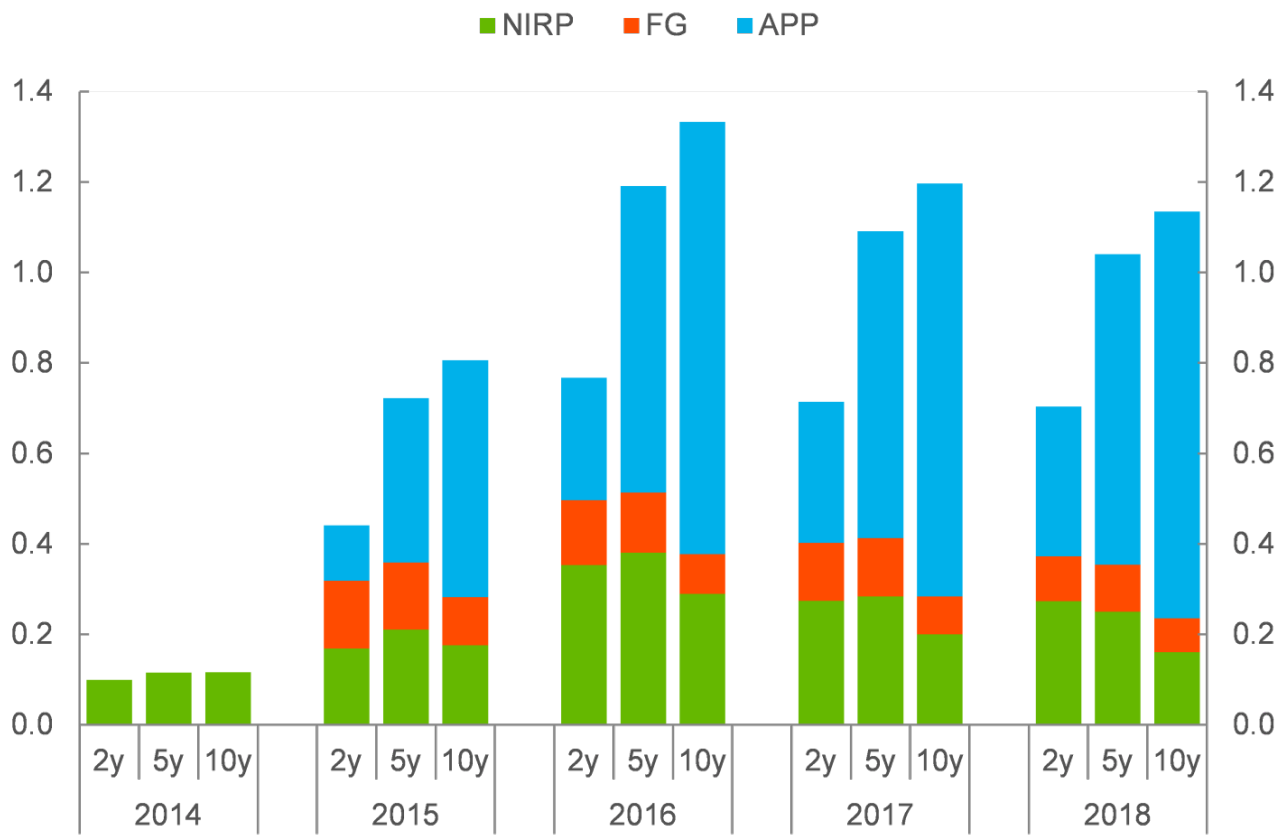
Propagation to yields

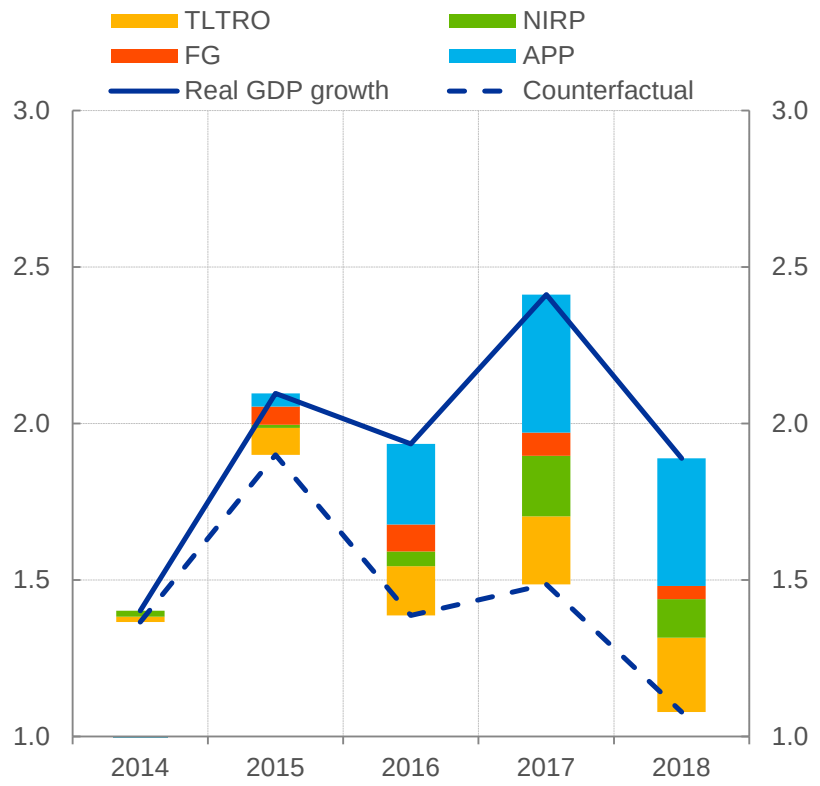
Impact of ECB non-standard measures on the term structure of interest rates 2014-18
(percentage points per annum)



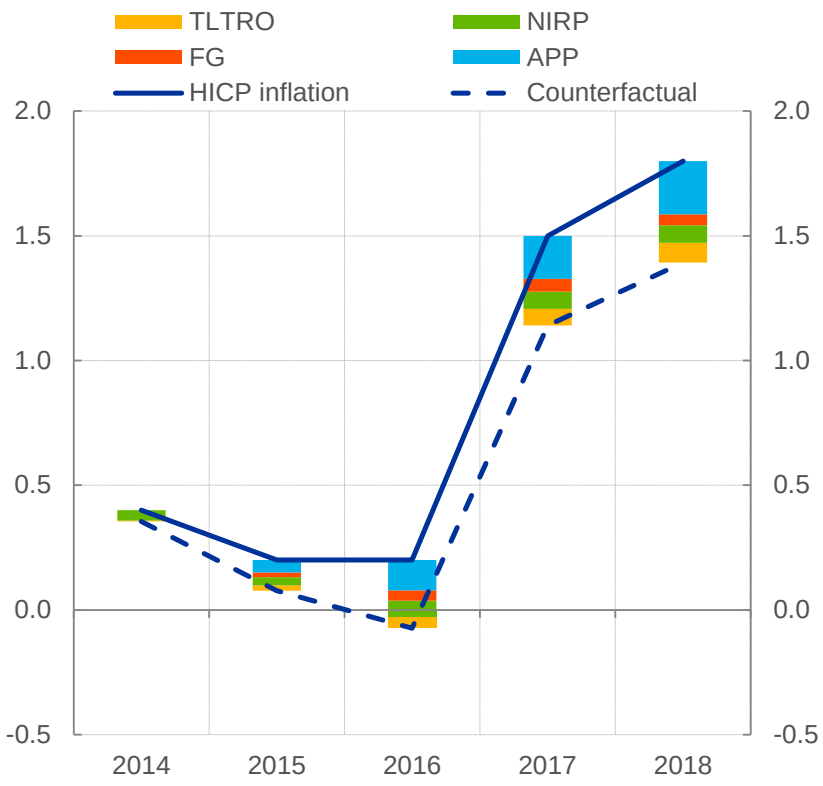
Sources: Rostagno, Altavilla, Carboni, Lemke, Motto, Saint-Guilhem, Yiangou (2019): A Tale of two Decades: The ECB's Monetary Policy at 20.

Propagation to inflation and the economy

Contribution of ECB non-standard measures to real GDP growth 2014-2018
(year-on-year percentage changes)



Contribution of ECB non-standard measures to HICP inflation 2014-2018
(year-on-year percentage changes)



Sources: Rostagno, Altavilla, Carboni, Lemke, Motto, Saint-Guilhem, Yiangou (2019): A Tale of two Decades: The ECB's Monetary Policy at 20.
Notes: Shown is the impact of ECB non-standard measures on macro variables based on a macroeconomic model with financial variables conditioning on the yield curve impact shown on the previous slide.

Outline

- The transmission of standard measures
- The transmission of non-standard measures
  - APP
  - NIRP
  - TLTRO
- Impact on GDP and Inflation
- Conclusions

Conclusions

- The results presented suggest that the NSMs have significantly lowered yields in a broad set of financial market segments, with the effects generally increasing with maturity and riskiness.

- The various programmes have contributed to a reduction in banks' funding costs, which has incentivised them to pass on the cost relief to final borrowers by granting more credit at better conditions.

- Overall, the improved credit conditions in the euro area have helped push the monetary policy accommodation through the intermediation chain to reach households and firms.

- The effects on real economic activity have been sizeable.

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