



EUROPEAN CENTRAL BANK

EUROSYSTEM

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Assessing the implications of negative interest rates

Yale Financial Crisis Forum

28 July 2016

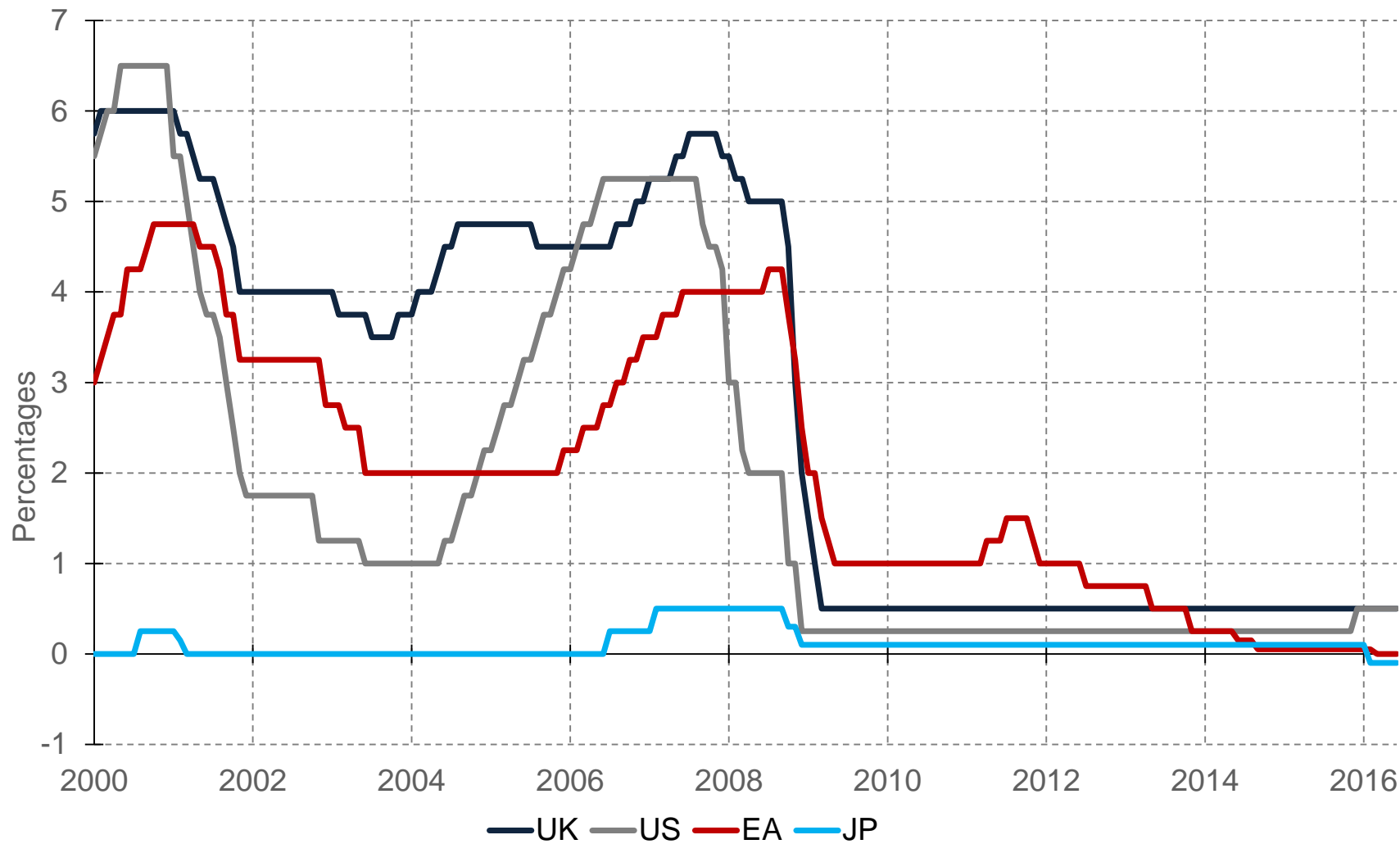
Ten-year government bond yields



Source: Bloomberg.

Note: Generic yields on ten-year benchmark government bonds. Monthly data, yields at the last day of the month. Latest observation: 22 July 2016.

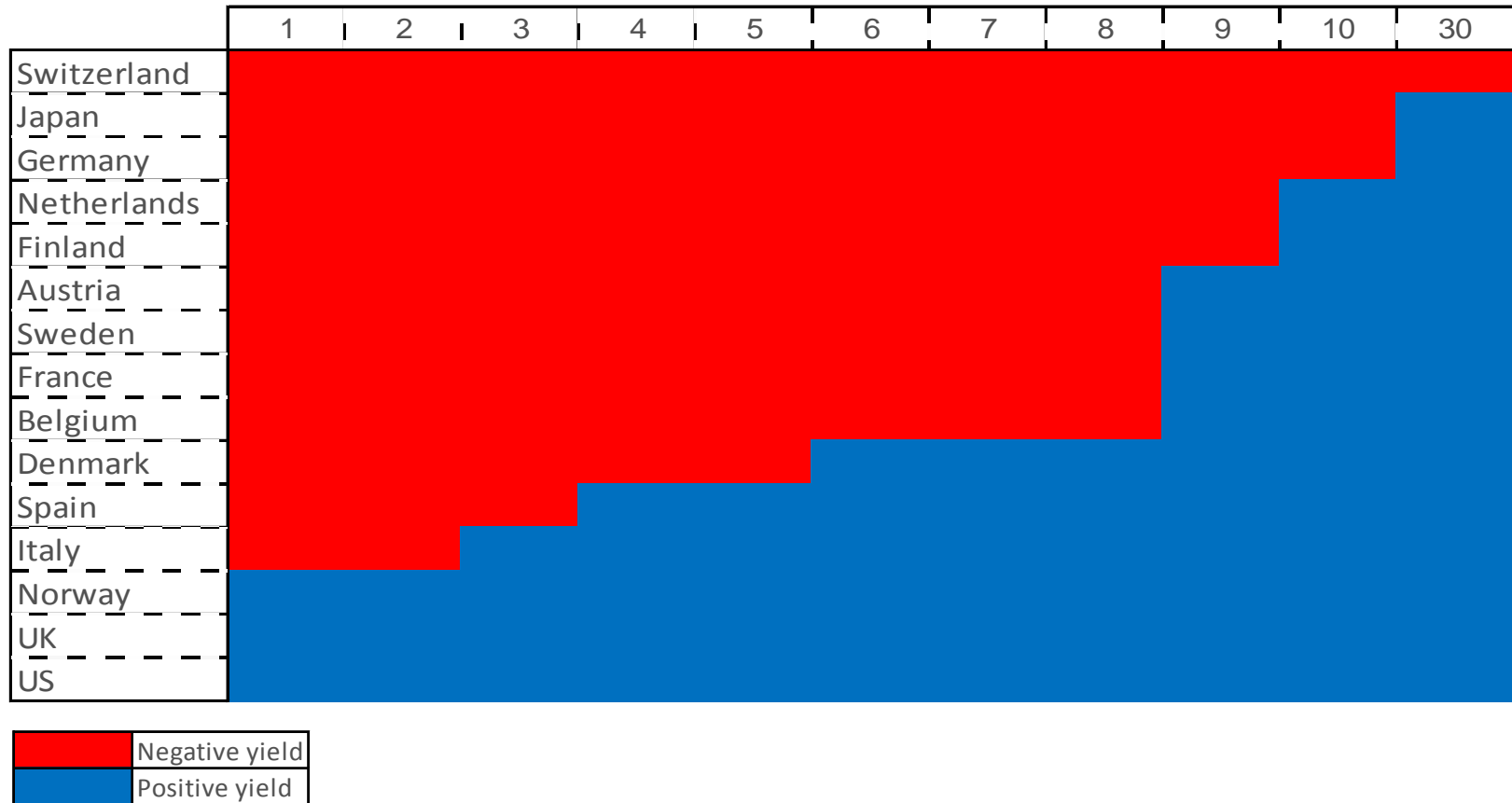
Policy rates in major economies



Source: Datastream.

Note: Monthly data. End of month rates. Latest observation: June 2016.

Government bonds with negative yields



Sources: Deutsche Bank , Bloomberg and ECB calculations.

Note: Maturities are shown on the horizontal axis. For NL, SE, FR and IT the 1y maturity refers to T-Bills and all the other bonds refer to generic government bonds. The last observation available for SE 1y T-Bill is 20/01/2016. The last observation for the 2y Government Bond for NO is 18/02/2016. The last observation available for the 3y Government Bond for DK is 12/01/2016 and for SE is 05/02/2015. The last observation available for the 4y Government Bond for NO is 18/02/2016. The last observation available for the 6y Government Bond for DK is 22/10/2015 and for NO is the 18/02/2016. No observations are available for 6, 8 and 9 years maturity for SE; 1, 4, 7, 8 and 9 years maturity for DK; 4, 6, 8 and 9 years maturity for US; 9 years maturity for the UK; 30 years maturity for NO and 30 years maturity for SE. Where the observation is missing it takes the colour of the adjacent maturities. Where those colours differ, it takes the colour of the longer maturity. Latest observation: 21 July 2016.

Cash substitution

- Cash dominates assets with a negative yield
- The cost of holding and insuring cash imposes a (negative) lower bound on short-term nominal interest rates

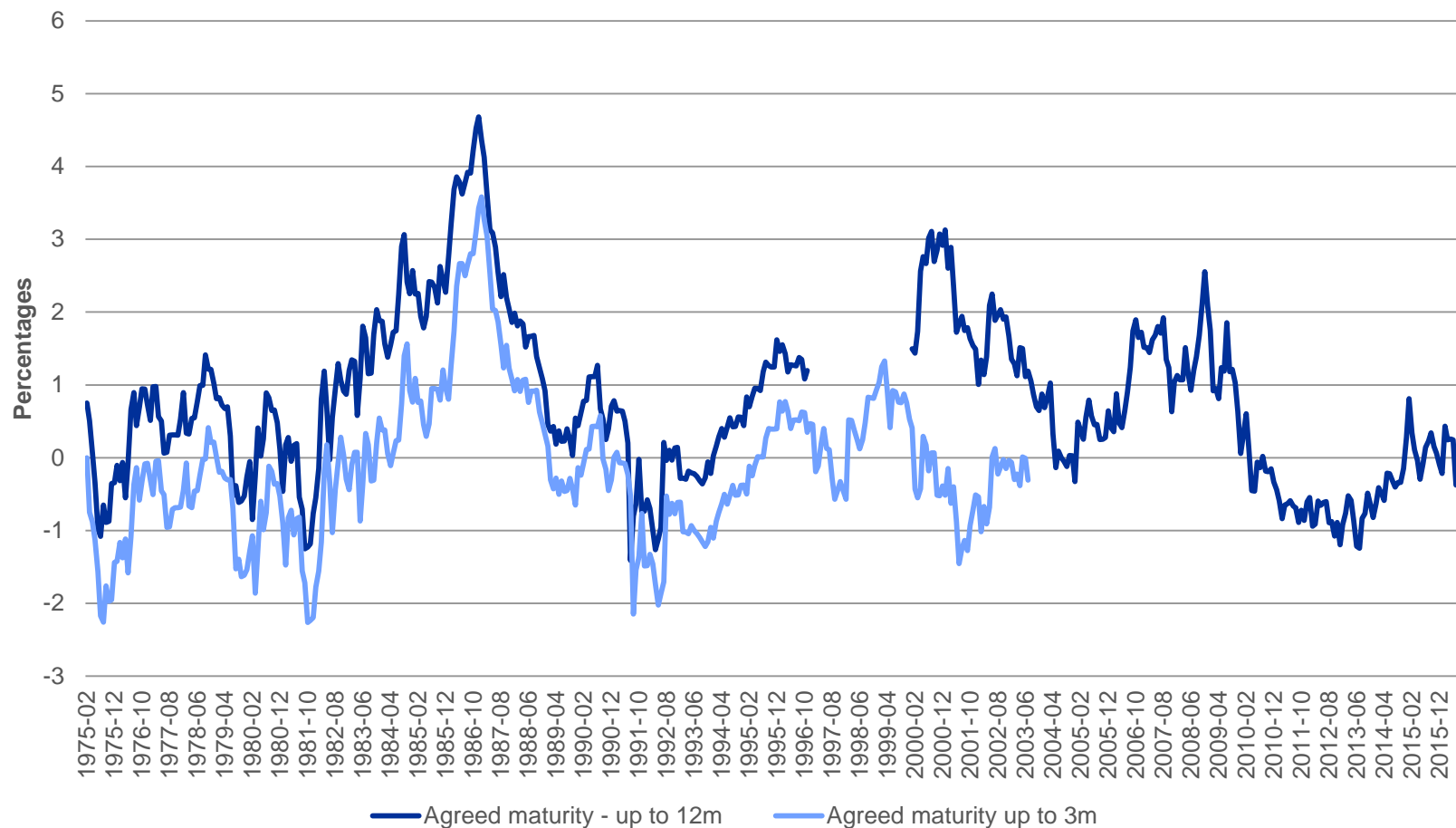
Nominal illusion

- $r \neq rr + \pi^e$?
- Broader cognitive issues

Institutional features

- Legal restrictions
- IT systems
- Taxes

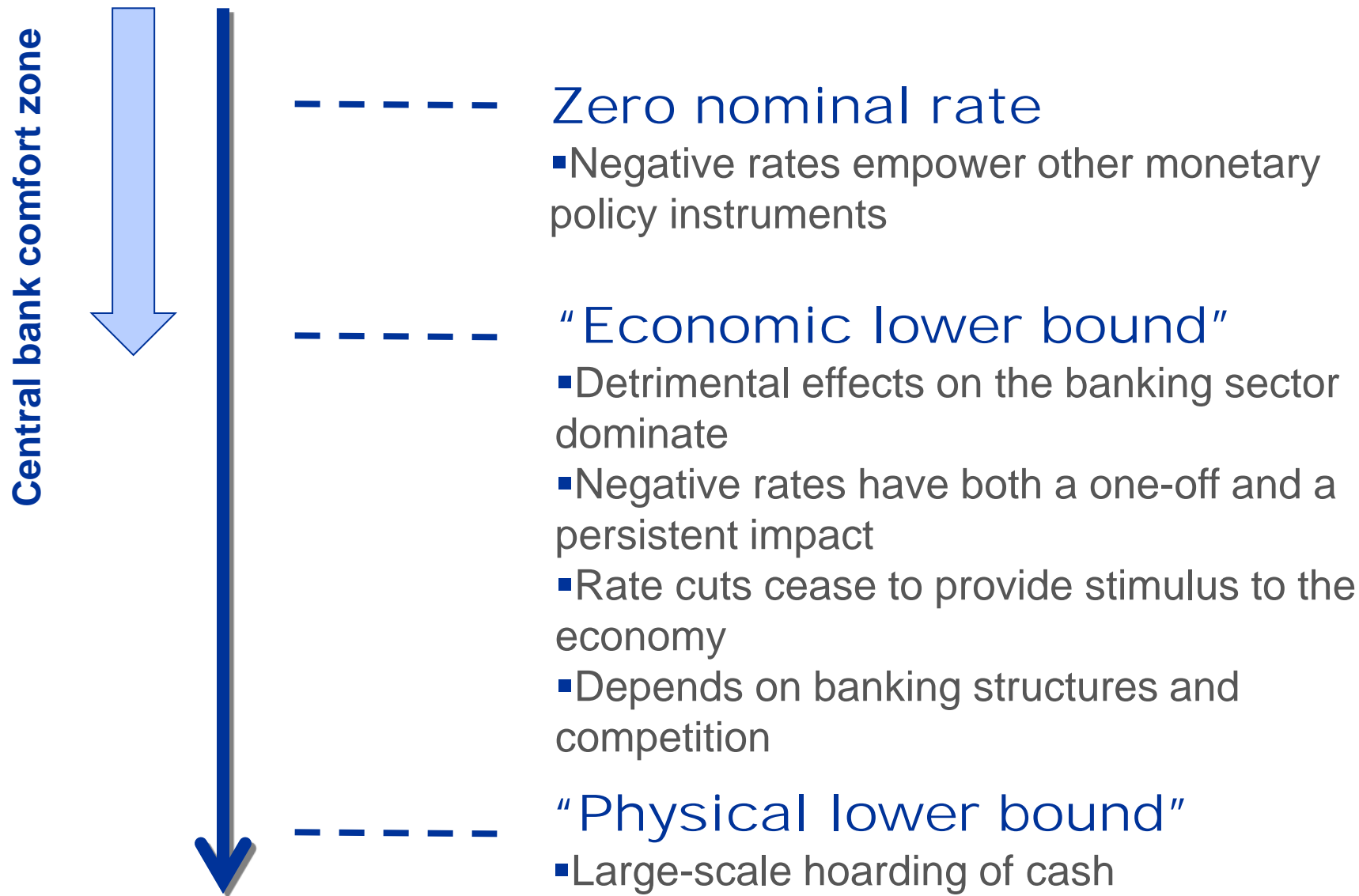
Real remuneration of savings deposits in Germany



Sources: Deutsche Bundesbank and ECB calculations.

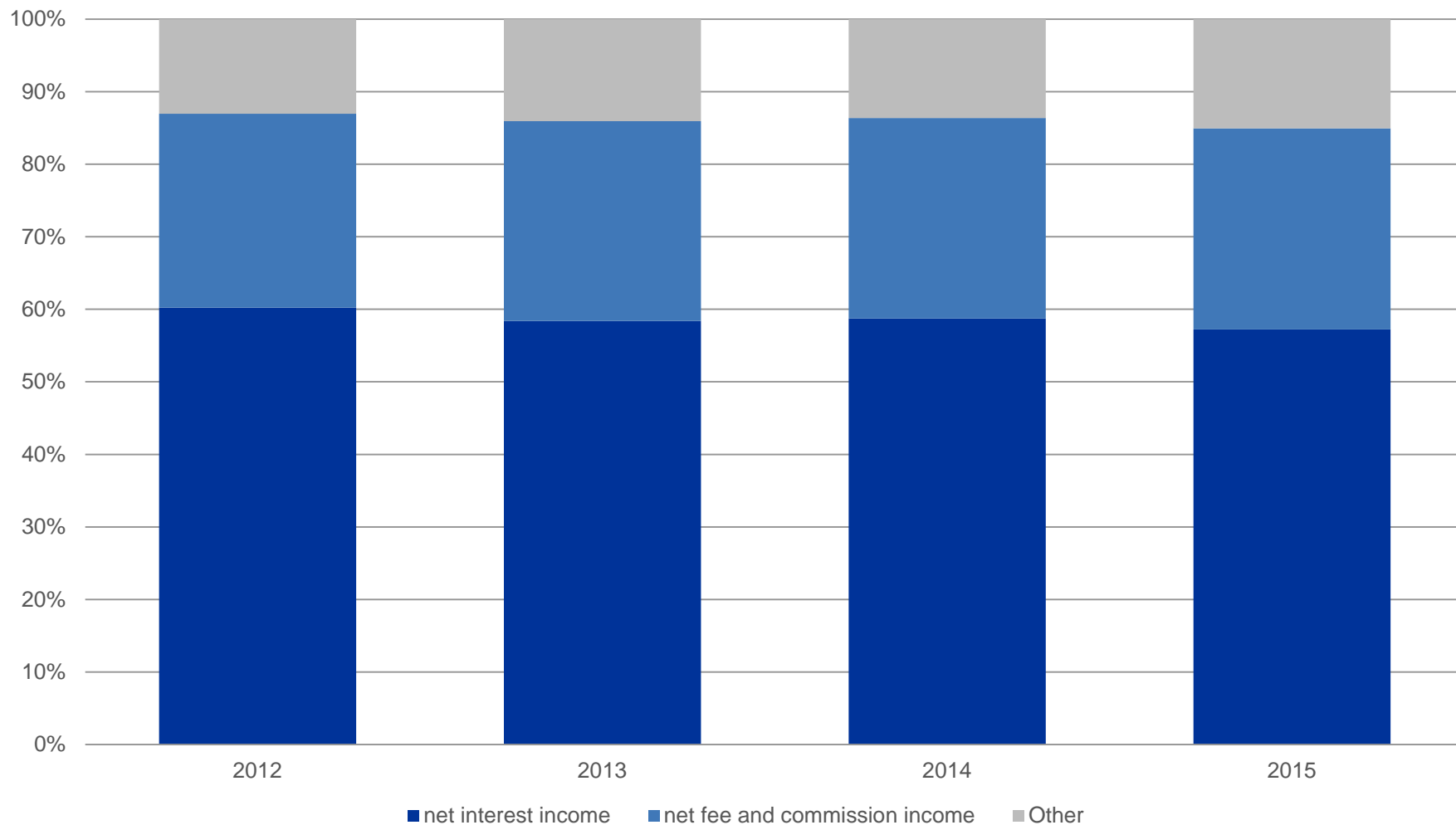
Note: Rates are adjusted for inflation using the calendar and seasonally adjusted consumer price index for Germany (BBDP1.M.DE.Y.VPI.C.A00000.I10.L), obtained from the Bundesbank website. Rates on deposits with agreed maturities up to 12 months are taken from the Bundesbank database (series BBK01.SU0025) for the period Febr.1975-Nov.1996 (all 3-month deposits) and from the ECB MIR dataset for the period Jan. 2000 – Dec2015 (only new household deposits: MIR.M.DE.B.L22.F.R.A.2250.EUR.N). Rates on deposits with agreed maturities up to 3 months are taken from the Bundesbank database (series BBK01.SU0022) for the period Febr.1975-Jun. 2003. Gaps are due to the discontinuation of the series.

How much lower can we go?*



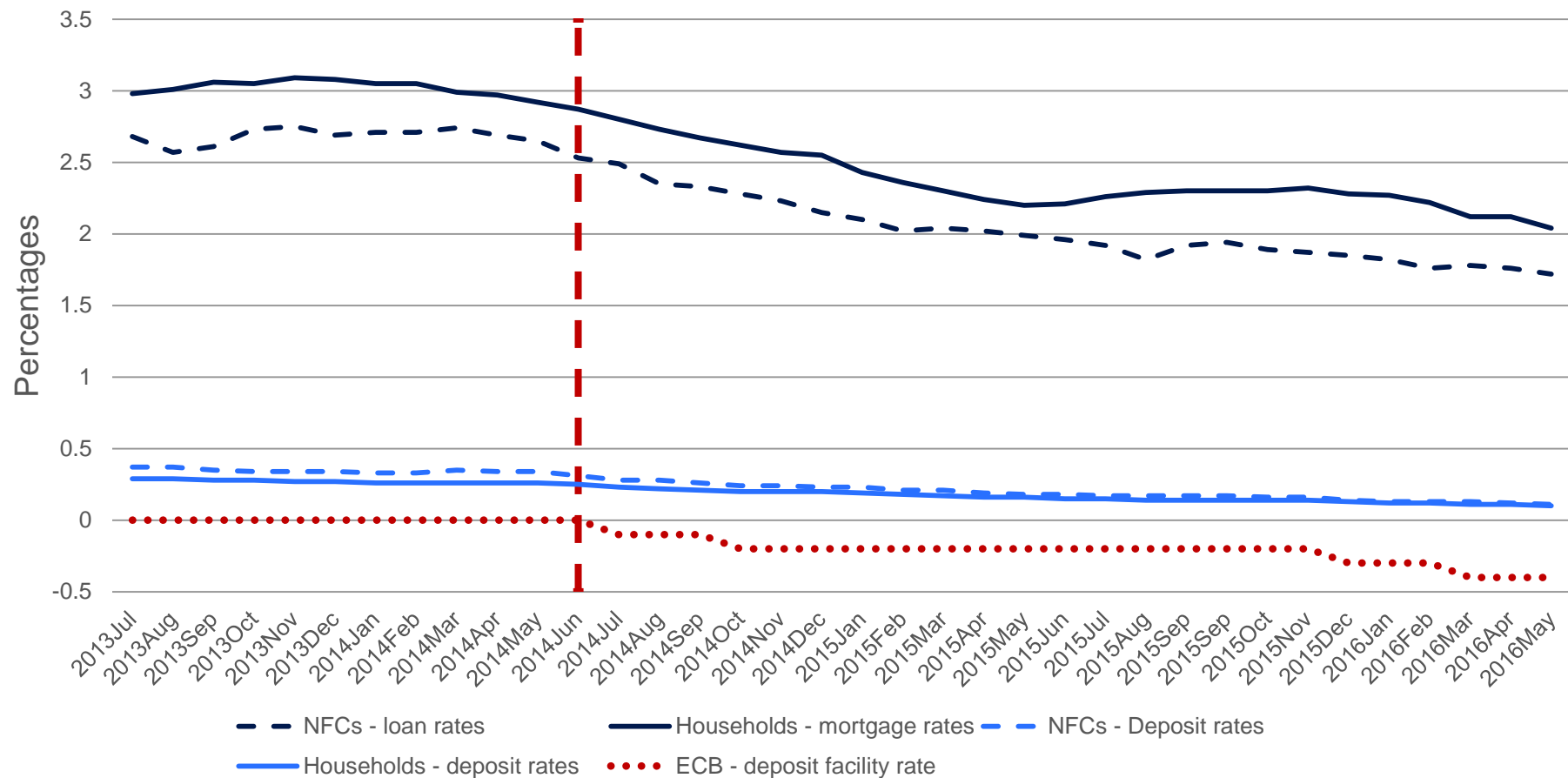
*Note: The chart is for illustrative purposes. As discussed in the text, the economic lower bound can be, under certain circumstances, above zero or below the physical lower bound. 7

Euro-area banks: income sources



Source: ECB Statistical Data Warehouse – Consolidated Banking Data and ECB calculations.

Euro-area banks: interest rates on new loans and deposits



Source: ECB Statistical Data Warehouse - MIR Data

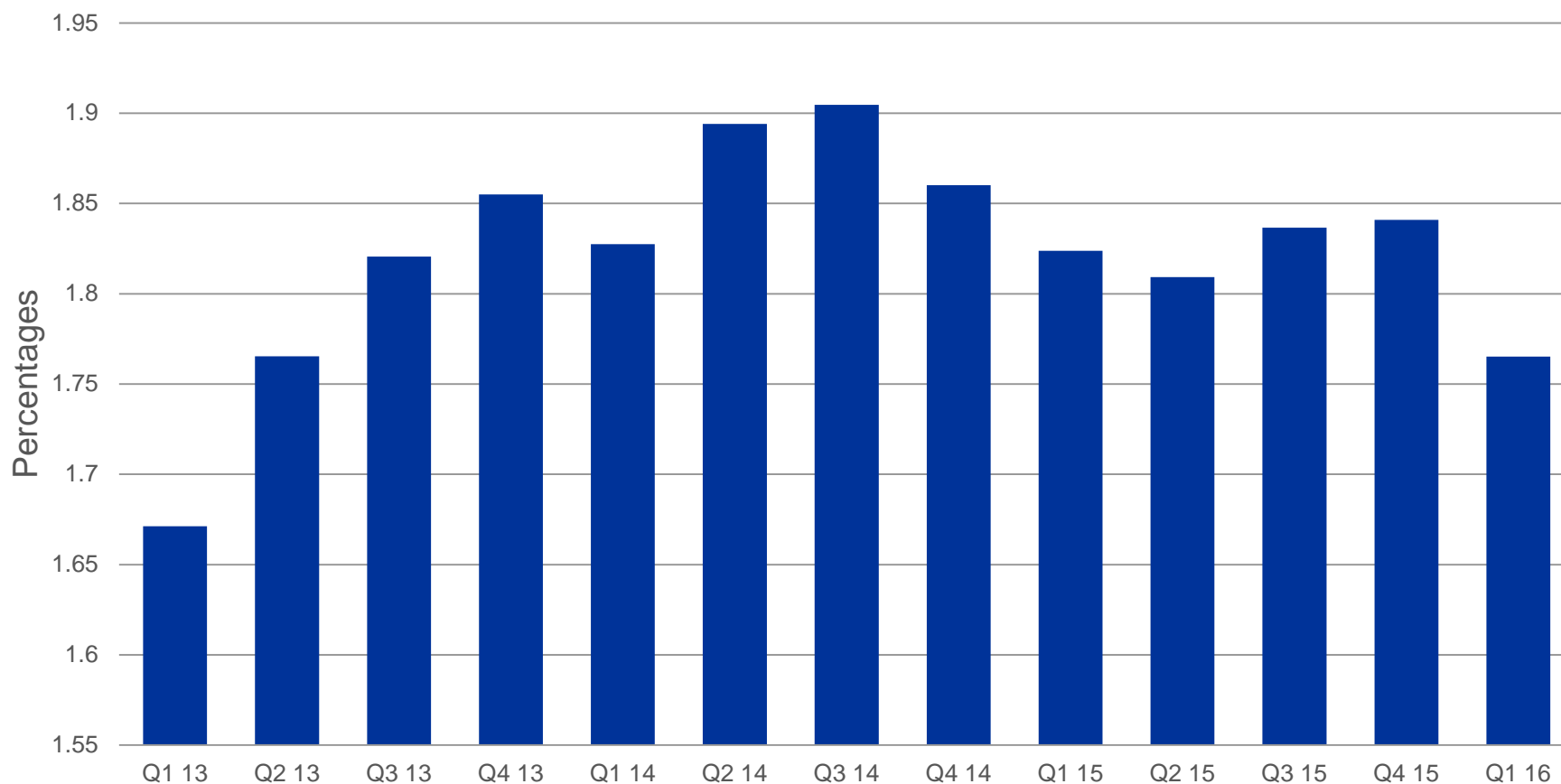
Note: All rates are averages for euro denominated loans and deposits in the euro area. Deposit rates are rates on new overnight deposits.

Loan rates for NFCs are rates on new loans other than revolving loans and overdrafts, convenience and extended credit card debt.

Loan rates for households are rates on new loans for house purchases excluding revolving loans and overdrafts, convenience and extended credit card debt.

The vertical red line indicates June 2014. On June 5, 2014 deposit facility rates were set below zero for the first time. Latest observation: May 2016.

Euro-area large banks: net interest margin



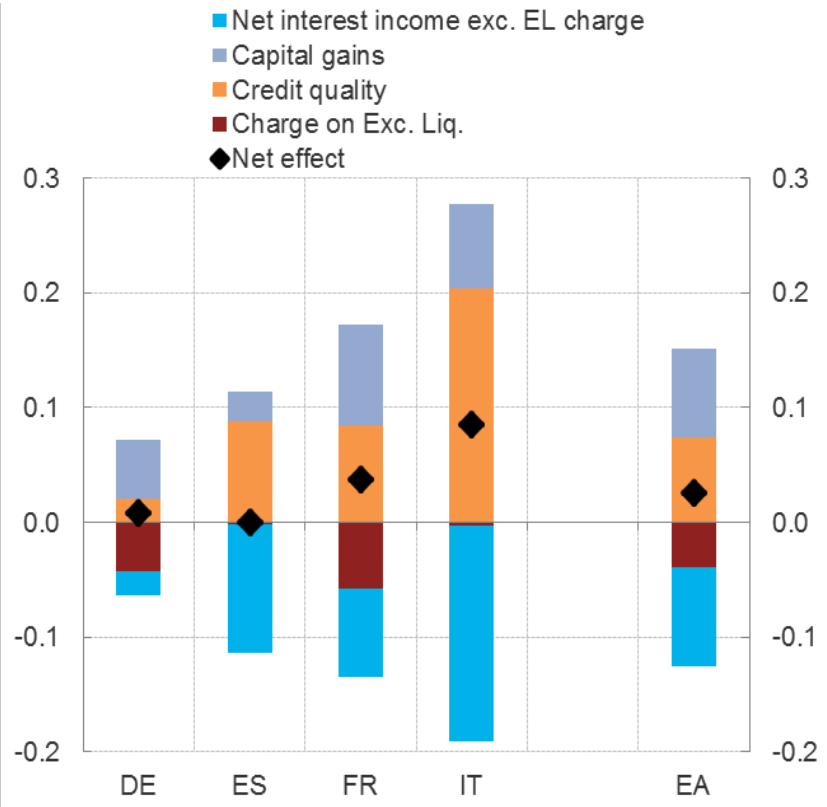
Sources: SNL Financial and ECB calculations

Note: Based on publicly available data for 27 euro area banking groups for which quarterly P&L data is available. Annualised average net interest margins. The net interest margin is calculated as net interest income over total assets.

Monetary policy and bank profitability: estimates

Bank profitability and monetary policy: 2014-2017

(contribution to ROA, percentage points)



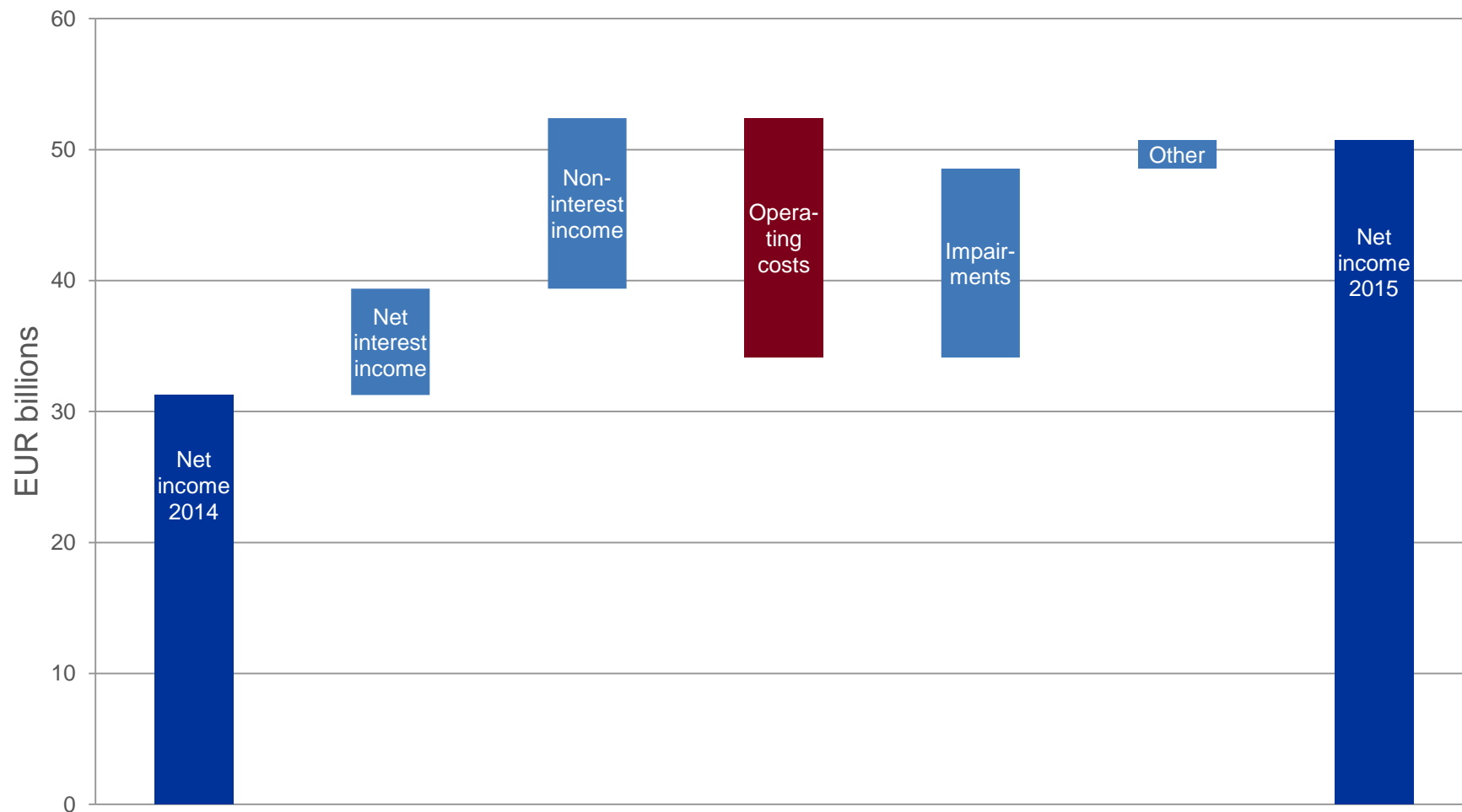
Multiple channels at work

- **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.

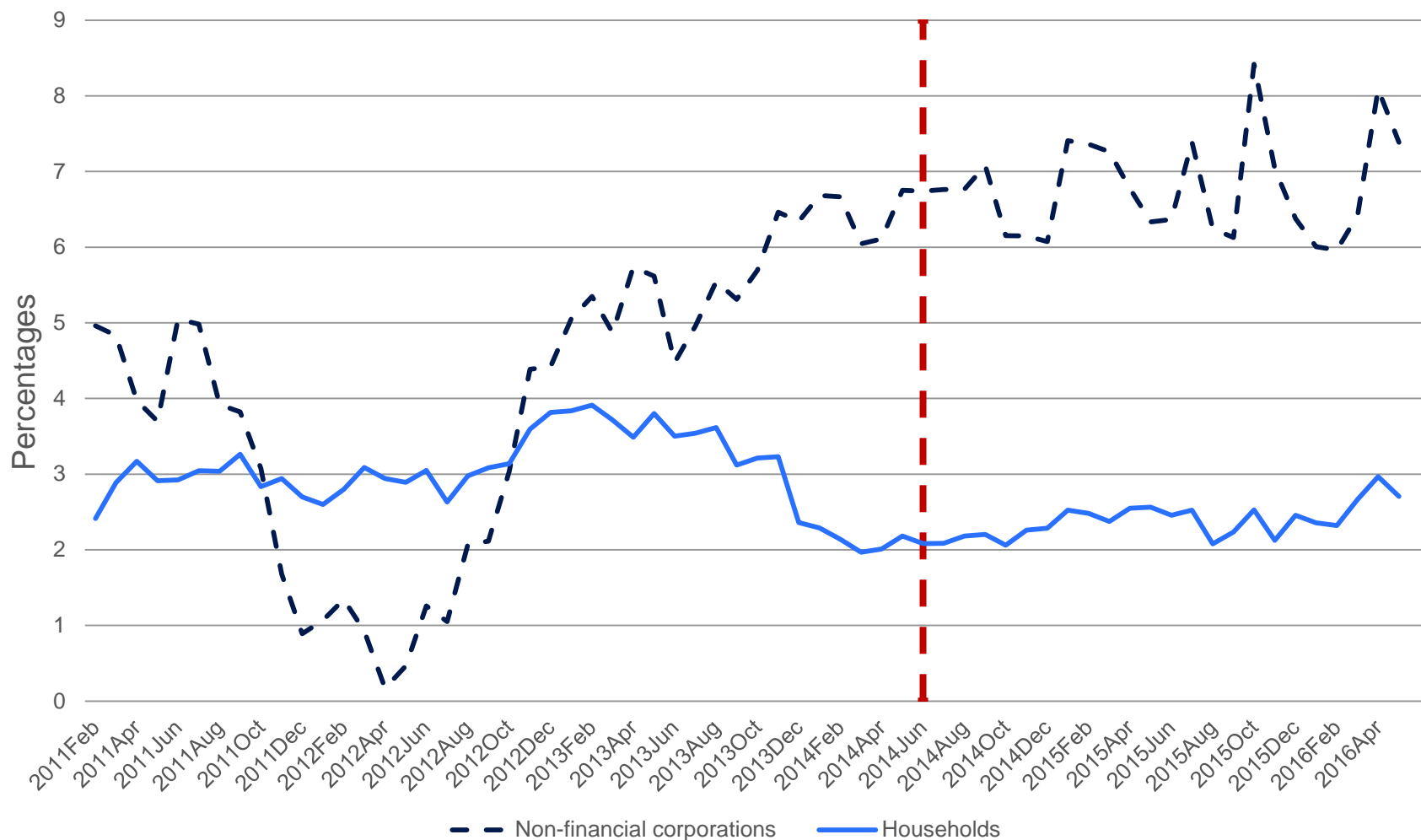
Euro-area large banks: aggregate net income



Source: ECB Financial Stability Review, May 2016. Based on SNL Financial data.

Note: Based on publicly available data for a sample of 83 euro area systemic banking groups.

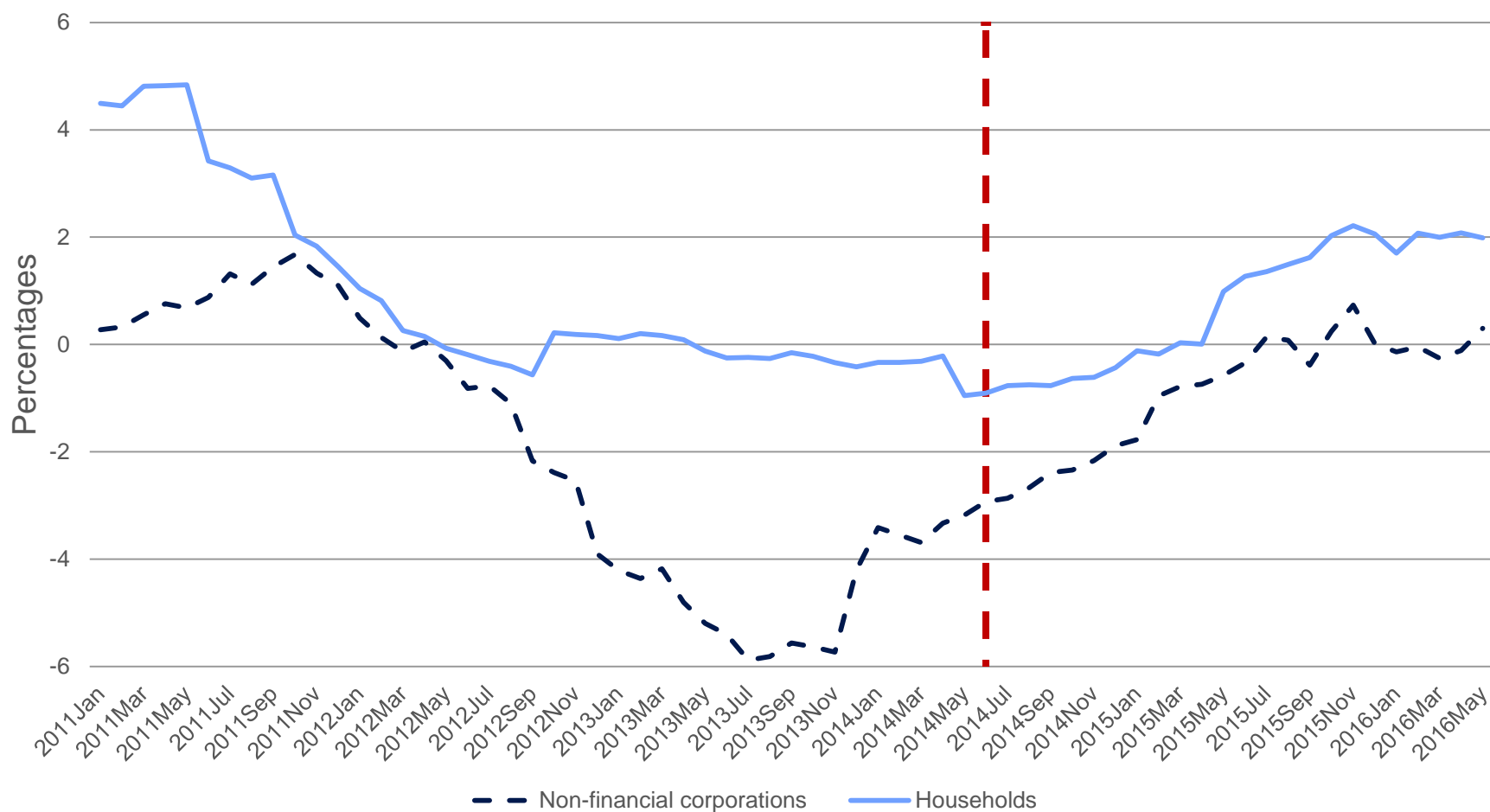
Euro-area banks: deposit growth



Source: ECB Statistical Data Warehouse - BSI data

Note: Year-over-year growth rates of outstanding deposits at the end of the period (stocks). Outstanding deposits at all euro area Monetary Financial Institutions, Excluding ESCBs. The vertical red line indicates June 2014. On June 5, 2014 Deposit Facility rates were set below zero for the first time. Latest observation: May 2016.

Euro-area banks: loan growth



Source: ECB Statistical Data Warehouse - BSI data

Note: Year-over-year growth rates of outstanding loans at all euro area monetary financial institutions (stocks), excluding ESCBs.

The vertical red line indicates June 2014. On 5 June 2014 deposit facility rates were set below zero for the first time. Latest observation: May 2016.

- The economic lower bound is safely below the current level of the DFR
- Negative nominal rates have reinforced forward guidance, sped up portfolio rebalancing associated with APP, and supported the effectiveness of TLTRO
- But there can be cumulative effects on financial intermediation and financial stability if rates remain very low for a very long time
- Fiscal and structural policies should act more decisively to avoid the economy falling in a low interest rate trap
- Action by banks to adjust their business models, cut their operating costs, and reduce their NPLs, will also improve their resilience to a prolonged period of very low rates