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

Ryan Banerjee

IMF-BoA conference on negative euro area rates

5 May 2017

Disclaimer: the views expressed are those of the presenter and not necessarily those of the BIS
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?

\[ \pi_{it+12}^e = 0.24\pi_{it} - 0.08(defl_{it}) + 0.22(ECBneg_t) \\
- 0.42(defl_{it} \times ECBneg_t) + \beta X_{it} + \epsilon_{it} \]

- 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

<table>
<thead>
<tr>
<th>By type of deflation</th>
<th>Table 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
<td>IT</td>
</tr>
<tr>
<td>$D_{defl \text{ credit}}^{\text{c, t-1}}$</td>
<td>0.214* (0.104)</td>
</tr>
<tr>
<td>$D_{defl \text{ neer}}^{\text{c, t-1}}$</td>
<td>-0.0388 (0.0799)</td>
</tr>
<tr>
<td>$D_{defl \text{ prop price}}^{\text{c, t-1}}$</td>
<td>0.199 (0.124)</td>
</tr>
<tr>
<td>$D_{defl \text{ output gap}}^{\text{c, t-1}}$</td>
<td>-0.192 (0.117)</td>
</tr>
<tr>
<td>$E_{c,t}(\pi_{c,t+h})D_{c,t-1}^{High \text{ infl}}$</td>
<td>0.0907*** (0.0256)</td>
</tr>
<tr>
<td>$D_{c,t-1}^{High \text{ infl}}$</td>
<td>-0.298*** (0.0929)</td>
</tr>
<tr>
<td>Additional control variables</td>
<td>Yes</td>
</tr>
<tr>
<td>Obs</td>
<td>3,116</td>
</tr>
<tr>
<td>$R$-squared</td>
<td>0.485</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Long-run elasticity of GDP growth with respect to real effective (REER) and debt-weighted (DWER) exchange rates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<tr>
<td><strong>EMEs</strong></td>
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<tr>
<td>Short-run</td>
</tr>
<tr>
<td>REER</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>DWER</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Observations</td>
</tr>
<tr>
<td>R-squared²</td>
</tr>
</tbody>
</table>

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

- 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?
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:

\[
\begin{align*}
\text{if } i_t < E(r_t) + E(\pi_t) & \implies \text{inflationary impulse } \pi_t > E(\pi_t) \\
\text{if } i_t > E(r_t) + E(\pi_t) & \implies \text{disinflationary impulse } \pi_t < E(\pi_t)
\end{align*}
\]

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 \( \implies \) constraint on expansionary interest rate impulses

\( \implies \) 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 $i < i^*$

![Graph showing EUR 5y5y inflation swap forward rate and Euro area HICP YoY](chart.png)

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

Sources: 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

Conventional policies: ECB interest rate corridor and EONIA since 1999

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

Negative Interest rates – Conventional or Non-Conventional?
Unconventional policies: ECB balance sheet since 2007

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

www.ecb.europa.eu ©
Recent TLTRO operations and outstanding amounts

Source: ECB website
Unconventional policies: the ECB’s APP to lower term spread

Monthly purchase volumes and composition

Source: ECB website. Last observation: March 2017
Effects of APP – PSPP

German 10Y yield and spreads

Source: Bloomberg. Last observation: 24 April 2017
Effects of APP – CSPP

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

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

Note: * For the ECB, the deposit 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 and possible downsides of negative interest rates

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?
a) Interest rate pass-through

Pass-through to money markets smooth

Source: ECB, last observation: 27 April 2017
b) Money market activity

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.
c) Other CB liabilities towards non-banks: central bank accounts?

Accounts of non-euro area official sector investors have increased somewhat, but attention 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.
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.
d) ELB II / reversal rate has not been reached

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.

Source: ECB.
Notes: Annual growth rates of loans are adjusted for sales, securitisation and cash pooling activities.
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
NOMINAL EXCHANGE RATES

CHF per foreign currency

Source: SNB
CHF REAL EFFECTIVE EXCHANGE RATE (CPI-BASED)

Index, post-1995 average = 100

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
### INTEREST RATE TRANSMISSION

<table>
<thead>
<tr>
<th>Year</th>
<th>CHF-3M-Libor</th>
<th>Government Bond 10Y</th>
<th>Corporate Bonds 10Y</th>
<th>Mortgage Rates 10Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td></td>
<td></td>
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<tr>
<td>2016</td>
<td></td>
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</tr>
<tr>
<td>2017</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Quelle: SNB
INTEREST RATE TRANSMISSION (2)

Quelle: SNB
MORTGAGE RATES, LIBOR SWAP RATES AND MARK-UP

% p.a.


-1 0 1 2 3 4 5

Mortgage rates (10-year, offered, new contracts, end of month)

Libor swap rate (10-year, end of month)

Mark-up (Mortgage rate - Libor swap rate)

Source: SNB
CHF 1000 BANKNOTES IN CIRCULATION
Percentage change from previous year

Source: SNB
GOVERNMENT BONDS 10Y

%


Switzerland  Germany

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!
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

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
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

- 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.

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

- 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.

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>-0.5%</td>
<td>2.7%</td>
<td>4.6%</td>
</tr>
<tr>
<td>Gross value added</td>
<td>-0.5%</td>
<td>3.4%</td>
<td>3.9%</td>
</tr>
</tbody>
</table>

**Contribution of individual factors to the GDP dynamics**

<table>
<thead>
<tr>
<th>Factor</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>fiscal impulse</td>
<td>-1.0 p.p.</td>
<td>0.3 p.p.</td>
<td>0.8 p.p.</td>
</tr>
<tr>
<td>oil price</td>
<td>0.0 p.p.</td>
<td>0.1 p.p.</td>
<td>0.7 p.p.</td>
</tr>
<tr>
<td>tobacco excise duties</td>
<td>0.0 p.p.</td>
<td>-0.7 p.p.</td>
<td>0.7 p.p.</td>
</tr>
<tr>
<td>monetary pol. + sentiment</td>
<td>-0.1 p.p.</td>
<td><strong>1.9 p.p.</strong></td>
<td>0.5 p.p.</td>
</tr>
</tbody>
</table>

Source: CZSO, CNB's calculations
- 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.
• 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
adviser to the CNB Board
dana.hajkova@cnb.cz
Deflationary shocks and fulfilment of inflation target

- 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

Shrinking central bank balance sheet
Examples:
- Self-financing, HUF conversion
- targeted programmes

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

Magyar Nemzeti Bank
The MNB has taken a different approach than some other central banks.
Overview of recent traditional and unconventional monetary policy measures

1. Base rate decreased to historical low level (0.9%)
2. Narrowed asymmetric interest rate corridor and negative O/N deposit rate (-0.05%)
3. Gradual phase-out of the two-week deposit facility supported by IRS instruments
4. Upper limit on 3M central bank deposits as integral part of monetary policy instruments (and less frequent tenders)
5. Growth Supporting Programme following FGS
6. 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.

First easing cycle: 7% -> 2.1%
Second easing cycle: 2.1% -> 1.35%
Third easing cycle: 1.35% -> 0.9%

Using forward guidance has successfully guided expectations.

Source: MNB
The interest rate corridor gradually became asymmetric

Money market yields and the interest rate corridor

Starting from 23 November 2016 the upper bound of the interest rate corridor as well as the interest rate on the one week central bank loan facility are equivalent with the base rate.

Per cent

-100 bp

+100 bp

+75 bp

+25 bp

-125 bp

-95 bp

Base rate
Interest rate on O/N loans
Interest rate on O/N deposits
3M BUBOR
3M Discount Treasury Bill rate

Sources: MNB, ÁKK
Gradual phase-out of the two-week central bank deposit facility

**Stock of the main sterilisation instruments**

- **Stock of 3-month deposit**
- **Stock of 2-week deposit**

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

Sources: MNB, Bloomberg

Short-term market yields and the base rate
Crowding liquidity out from the 3M deposit generates decline in yields

Initial 3M deposit

Liquidity, risk, yield

Government securities
Preferential deposit (limited)
3-month deposit (limited)
O/N deposit
Excess reserve
Interbank market (depo, FX swap)

3M bill 0.08%*
Base rate 0.9%
Base rate 0.9%
O/N depo rate -0.05%
Excess reserve -0.2%
3M BUBOR 0.16%*

*Rates on 26 April
FGS improved significantly the financing conditions of the SME sector
Thank you for your attention!
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

The views expressed are those of the presenter and not necessarily those of the ECB.
# Overview

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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?

- 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

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0 ... zero restriction on impact

+/− ... sign restriction on the periods specified

• ... no restriction
**Euro area results I**

_Eurosysten balance sheet assets_ (in percent)

![Graph 1](image1)

_EONIA-MRO spread_ (in percentage points)

![Graph 2](image2)

_CISS_ (in absolute values)

![Graph 3](image3)

_MRO_ (in percentage points)

![Graph 4](image4)

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

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)
References

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
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The ECB experience

Impairments in Transmission

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

Post-OMT Easing Cycle (July 2012 – Feb 2015)


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 (<€1mn) to NFCs.
III. THE IMPAIRMENT IN THE TRANSMISSION MECHANISM (iii)

The banking lending channel and the exchange rate channel in an euroized economy
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- NPLs and exchange rate
- Financial euroization
- Asset bubbles
- Banks’ funding structure
- Banks’ profitability
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
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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
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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.
Conduct of monetary policy with financial stability issues and challenging environment – Case of Serbia

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

  
  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.
Historically high level of eurisation.

Reasons: bad legacy (hiiperinflation, 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.
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.
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 allocation (to tackle transfer of costs).

ER policy (high NPLs, public perception 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 management tool;
  - support to overcome trading limits;
  - incentive to develop fx swap market, benchmark for pricing.
• Time of “global currency wars” reiterates euroisation problems, in Serbia market incentives in front of administrative measures,

• Unilateral euroisation not an option for Serbia, de-euroisation is a marathon not a sprint – key is “deposit de-euroisation“,

• Monetary policy credibility: low and stable 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.
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.