Macroprudential policy in the EU — from banking to beyond banking

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Presentation outline

1. The ESRB
2. Current challenges in the European banking sector
3. Macroprudential policy implementation in Europe
4. Macroprudential policy beyond banking
5. Assessing shadow banking: non-bank financial intermediation in Europe
6. Conclusions
1. THE ESRB

ESRB homepage:
http://www.esrb.europa.eu
The European Systemic Risk Board – establishment

- Following de Larosière report (2009), ESRB established end-2010 as part of the European System of Financial Supervision:

  Micro-prudential supervision
  - European Banking Authority (EBA)
  - European Insurance & Occupational Pensions Authority (EIOPA)
  - European Securities and Markets Authority (ESMA)
  - Joint Committee
  - Micro-prudential supervisory authorities (National & Single Supervisory Mechanism (SSM))

  Macro-prudential supervision
  - European Systemic Risk Board (ESRB)
  - European Central Bank (ECB)
  - National macro-prudential authorities
ESRB mission, objectives and tasks (Regulation No 1092/2010)

• The ESRB shall be responsible for the macro-prudential oversight of the financial system within the Union
  • contribute to the prevention or mitigation of systemic risks to financial stability in the Union that arise from developments within the financial system and taking into account macroeconomic developments, so as to avoid periods of widespread financial distress.
  • contribute to the smooth functioning of the internal market and thereby ensure a sustainable contribution of the financial sector to economic growth.

• Soft law tools: ‘warnings’ and ‘recommendations’
  • Warnings or recommendations issued by the ESRB may be of either a general or a specific nature and shall be addressed in particular to the Union as a whole or to one or more Member States, or to one or more of the ESAs, or to one or more of the national supervisory authorities.
  • Recommendations may also be addressed to the Commission in respect of the relevant Union legislation.

• Co-ordination role and information hub
ESRB bringing together policy makers in Europe

- ESRB General Board as a decision making body
- ESRB includes EU central banks, supervisors, ESAs, EC, EFC.

- ESRB Secretariat as a think tank
  - The ESRB Secretariat (hosted by the ECB) provides analytical, policy & administrative support to the ESRB.
  - Analysis supported by the ESRB members incl. ECB and conducted by working groups and task forces.

Mario Draghi
President European Central Bank / ESRB Chair

Mark Carney
Governor Bank of England / ESRB Vice-Chair / Chair of Financial Stability Board

Stefan Ingves
Governor of Riksbank / ESRB ATC Chair / Chair of Basel Committee of Banking Supervision
ESRB organisational structure
ESRB part in developing and operationalising macroprudential policy frameworks in the EU

- Recommendation on the macroprudential mandate of national authorities (ESRB/2011/3):
  A. Objective
  B. Institutional arrangements
  C. Tasks, powers, instruments
  D. Transparency and accountability
  E. Independence
ESRB part in developing and operationalising macroprudential policy frameworks in the EU

• Recommendation on intermediate objectives and instruments of macro-prudential policy (ESRB/2013/1):
  A. Intermediate objectives
  B. Macroprudential instruments
  C. Policy strategy
  D. Periodical evaluation of intermediate objectives and instruments
  E. Single market and Union legislation
### Mapping intermediate macroprudential objectives with instruments

<table>
<thead>
<tr>
<th>Intermediate objectives</th>
<th>Indicative instruments</th>
</tr>
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</table>
| Excessive credit growth and leverage                        | • Countercyclical capital buffer  
• Sectoral capital requirements  
• Macroprudential leverage ratio  
• LTV, LTI                                                        |
| Excessive maturity mismatch and market illiquidity           | • Macroprudential adjustment to liquidity ratio  
• Macroprudential restrictions on funding sources  
• Macroprudential unweighted limit to less stable funding (e.g. LTD)  
• Margin and haircut requirements                                |
| Exposure concentration                                      | • Large exposure restrictions  
• CCP clearing requirement                                         |
| Misaligned incentives                                       | • SIFI capital surcharge                                                                                            |
| Resilience of financial infrastructure                      | • Margin and haircut requirements  
• Increased disclosure  
• Structural systemic risk buffer                                 |
ESRB part in developing and operationalising macroprudential policy frameworks in the EU

- **Flagship Report and Handbook** on Macropurudential policy in the Banking Sector
- **Review of Macroprudential Policy** in the EU (annual)
- Establishment of a **central repository of macroprudential measures** in the EU
- Recommendation on **guidance for setting countercyclical buffer rates** (ESRB/2014/1)
- Framework for **countercyclical capital buffer rates for third countries**
- Framework for **reciprocity** in the EU
- **EU shadow banking monitor**
- **Strategy paper beyond banking**
2. CURRENT CHALLENGES IN THE EUROPEAN BANKING SECTOR
Current challenges in the EU banking sector

• Key issues: low profitability, excess capacity, and NPL burden in some countries.

• EU banks operate in an environment of low interest rates and growth, increased competition from non-banks and fintech, as well as regulatory changes.

Main banking indicators since 1980 (%)

Margins of loans to non-financial corporations and to households for home purchase (%)

Source: OECD, Consolidated Banking Data (ECB) and ESRB Secretariat calculations.
Note: Data until 2009 shows the median from the EU Member States in the OECD Banking Database: Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Poland, Slovakia, Slovenia, Spain and Sweden. From 2010 onwards, data is the weighted average of EU 28 Member States, from the Consolidated Banking Data.

Sources: MIR Statistics (ECB) and ESRB Secretariat calculations.
Note: Margins of loans to non-financial corporations and to households for home purchase are weighted using the stock of loans within each category at the end of 2015. Due to data availability, data for PT is the simple (not weighted) average of the margins of loans to non-financial corporations and to households for home purchase.
Low bank profitability

- EU banks’ profitability is low in historical standards and in comparison with other banking systems and sectors.

Price-to-book ratio and Return on Equity (%)

Return on equity of EU banks (%)

Sources: Bloomberg and ESRB calculations
Note: Data are based on the Eurostoxx 600 (EU), S&P 500 (US), TOPIX (JP) and MSCI emerging market index (EM). Last update 20 May 2016.

Source: Consolidated Banking Data (ECB), OECD Banking Database and ESRB Secretariat calculations.
Note: RoE as of Q4-2015 covering all banks in the Consolidated Banking Data. RoE from Greece, Croatia and Cyprus are -30.91%, -6.80% and -6.72% respectively (not shown in the chart for presentational reasons). Data from the OECD covers Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Ireland, Italy, Japan, Luxembourg, Netherlands, Poland, Slovakia, Slovenia, Spain, Switzerland and the US.
Main drivers of low profitability across countries

- The structure of the profit and loss account of banks differs substantially across EU countries, highlighting the main drivers of low profitability.

- A comparison with the US: much lower interest expenses and NPLs.

### Main components of the profit and loss account of EU banks

(\% of interest income and of total assets (rhs))

Source: Consolidated Banking Data (ECB), FDIC and ESRB Secretariat calculations.

Note: Data refers to Q3-2015. Only banks reporting under IFRS are included. Austrian, German and UK figures may thus not be representative of the whole banking system. There is no reported data on administration costs and fee and commission income for the UK and no breakdown of interest income for Slovakia.
Potential actions to improve bank profitability of EU banks

- To increase profitability, banks can: 1) increase efficiency (lower cost-to-income ratio); 2) adequately deal with NPLs; 3) adapt business models (towards fee-based areas)

- Corresponding to the profit structure, the potential effectiveness of measures varies across countries

**Potential increase in return on assets via a shift in business models, decrease in costs and NPLs (%)**

Sources: ECB Consolidated Banking Data and ESRB Secretariat calculations.

Note: Data refers to Q4-2015. Cost-to-income ratio: ratio of administrative expenses and depreciation to net operating income. 28% is the EU unweighted average of net fee and commission income to interest income. Data for UK is not available in the Consolidated Banking Data. No data for the Czech Republic on NPLs and for Slovakia on net fee and commission income. For countries with a current value of the cost-to-income ratio below 50% or for which net fee and commission income is already at least 28% of interest income, no bar is shown.
Excess capacity in some EU banking systems


- Cost-to-income ratio is high in several countries when compared to peers, which points at some room for enhancing efficiency.

**Population per bank employee**

**Cost-to-income ratio (%)**


Note: Data refers to end-2014, except for Japan (end -2003). Data for the US covers commercial banks, i.e., mainly banks with deposits insured by the FDIC.

Source: ECB Consolidated Banking Data, OECD Banking Database, FDIC and ESRB Secretariat calculations.

Note: Cost-to-income ratio is defined as the ratio of administrative expenses and depreciation to net operating income for EU countries. No data for UK is available in the Consolidated Banking Data. For Japan, the ratio is defined as the ratio between operating expenses and Net interest and non-interest income for the period 1989-1999. For the US, the ratio is calculated as salaries and employee benefits and premises and equipment expenses to net interest income and total non-interest income, for the population of 6,182 banks insured by the FDIC (reference date Q4-2015).
Non-performing and foreborne loans in the EU banking sector (EU weighted average 5.7% in March 2016)

Non-performing and foreborne loans in Q1/2016
(% of total on-balance loans and advances per country of origin)

Source: EBA Report on the dynamics and drivers of nonperforming exposures in the EU banking sector.
Note: Non-performing loans and forborne loans for total On-balance loans and advances per country of origin of the bank (March 2016).
Impact of NPLs on the real economy

- Literature has shown that the real economy is the main factor explaining the size of NPLs.

- But, at the same time, a large stock of NPLs over an extended period of time has negative effects for the recovery after a crisis.

- Counterfactual is the “lost decade” in Japan.
  - Caballero et al. (2008), Hoshi and Kashyap (2015).

- Higher risk weights than performing loans
  - More capital allocated

- Higher costs of market funding
  - Concerns by depositors

- No interest income
  - Higher impairment
  - Less profit

- Opportunity cost for other lending
  - Higher lending rates

- Higher cost of market funding
  - More capital allocated


diagram showing the impact on profits, funding, lending, and capital
3. MACROPRUDENTIAL POLICY IMPLEMENTATION IN EUROPE

Overview of national macroprudential policy measures:
Macroprudential policy implementation: recent experiences

Number of substantial macroprudential measures notified to the ESRB (2014-16Q3)

Source: ESRB Secretariat
Notes: All measures are deemed to be substantial apart from measures of a more procedural or administrative nature, such as the early introduction of the capital conservation buffer and exempting small and medium-sized investment firms from the capital conservation buffer.
The chart does not include the countercyclical capital buffer because of the quarterly setting of the buffer rate. 2016 figures are until end September.
Macroprudential policy implementation: recent experiences

Number of substantial measures notified to the ESRB (2014-16Q3)

Source: ESRB Secretariat
Notes: All measures are deemed to be substantial apart from measures of a more procedural or administrative nature, such as the early introduction of the capital conservation buffer and exempting small and medium-sized investment firms from the capital conservation buffer. The chart does not include the countercyclical capital buffer because of the quarterly setting of the buffer rate. 2016 figures are until end September and relate to measures published on the ESRB website.
Macroprudential policy implementation: recent experiences (CCyB)

Four countries have announced positive CCyB rates of which Sweden and Norway already apply a positive rate.

<table>
<thead>
<tr>
<th>Country</th>
<th>Rate</th>
<th>Application</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Czech Republic</td>
<td>0.5%</td>
<td>01/07/17</td>
<td>19/05/16</td>
</tr>
<tr>
<td>Slovakia</td>
<td>0.5%</td>
<td>01/08/17</td>
<td>26/07/16</td>
</tr>
<tr>
<td>Sweden</td>
<td>2.0%</td>
<td>19/03/17</td>
<td>14/03/16</td>
</tr>
<tr>
<td>Norway</td>
<td>1.5%</td>
<td>30/06/17</td>
<td>23/06/16</td>
</tr>
</tbody>
</table>

Notes: Currently applicable level of the CCyB: yellow = 0%, blue > 0%
Macroprudential policy implementation: recent experiences (SII)

- Different approaches regarding identification and additional capital buffer requirements **systemically important institutions**

**Number of systemically important banks by Member State** *(notified to the ESRB by September 2016)*

Source: ESRB

Notes: In case a bank is subject to multiple qualifications / buffer requirements, it has been allocated to the most specific category. E.g. in case of a qualification as G-SII and O-SII, the institution has been allocated to the G-SII category; in case of a qualification as O-SII that is also subject to a systemic risk buffer, the institution has been allocated to the O-SII category. No data for BG were available (September 2016).
Macroprudential policy implementation: recent experiences (SII)

Economic significance of fully phased-in SII buffer requirements

![Graph showing economic significance of fully phased-in SII buffer requirements](image)

Source: ESRB, ECB, and SNL.
Notes: The figure shows the average SII requirement weighted by both the total risk-weighted exposure amounts and the total assets of SIIs over, respectively, the aggregated total risk-weighted exposure amounts and the total banking assets of the given country. This measure is a joint measure of the size of the SII buffer requirements and the share of SIIs in the banking sector assets of a given country. It therefore is a proxy of the aggregate economic effect (regarding additional required regulatory capital) of SII buffer requirements in a given country. No data for BG were available (September 2016).

Phasing in of SII buffer requirements over time

![Bar chart showing phasing in of SII buffer requirements over time](image)

Source: ESRB
Notes: The coloured area indicates the period when the buffer requirement is phased in (no distinction is made between the different levels of the buffer requirement or the type of the SII buffer required). No data for BG were available (September 2016).
4. MACROPRUDENTIAL POLICY BEYOND BANKING

Macroprudential policy beyond banking:
Context: broad EU shadow banking system growing

• EU shadow banking at EUR 37tn

  – EUR 37 trillion at end-2015, 36% of EU financial sector

  – 22% growth in shadow banking assets since end 2012 (5% decline in EU banking assets over the same period)

  – Broad measure, incl. OFIs, investment funds, MMFs
ESRB strategy paper on macroprudential policy beyond banking

• While macroprudential policy for the banking sector is already operational, the policy strategy, regulatory data and instruments required to address risks beyond the banking sector need further enhancement.

• ESRB strategy paper (published in July 2016) analyses the current legal and institutional framework governing macroprudential policies beyond banking and proposes a comprehensive policy strategy to address financial stability risks.

• ESRB strategy paper presents short-term policy options and a long-term agenda for macroprudential policy beyond banking.
Addressing Risks at Intermediaries and End-Borrowers

**Lender-based measures:**
protect resilience of intermediary against risks from:

i. Excessive credit growth / leverage
ii. Excessive liquidity mismatch
iii. Interconnectedness / contagion
iv. Misaligned incentives

**Borrower-based measures:**
protect resilience of households & corporations against excessive debt. Coverage should be comprehensive, i.e. bank and non-bank loans plus debt securities, domestic and cross border

- Promotes substitution towards more resilient forms of financial intermediation
- Protects resilience of end-borrowers against all types of credit
Short- and Medium-Term Agenda

• Use new Data (AIFMD, EMIR, SFTR) for systemic risk monitoring

• Develop top-down stress tests: asset managers, CCPs, insurers, pension funds – ultimate goal: system wide ST

• Develop and use instruments
  - Operationalise AIFMD leverage requirements
  - Develop new instruments, e.g. to address liquidity mismatches at investment funds, procyclicality of initial margin or haircuts in securities financing transactions and derivatives.
  - Wider toolkit: recovery and resolution frameworks CCPs and insurers

• Investigate consistency of instruments across sectors in setting the resilience standard; e.g. definition of leverage within fund industry
5. ASSESSING SHADOW BANKING: NON-BANK FINANCIAL INTERMEDIATION IN EUROPE

EU Shadow Banking Monitor:
ESRB Joint ATC-ASC Expert Group on Shadow Banking

- Mandate covers risk assessment, research and policy
  - Developing a framework for monitoring structural changes and risks stemming from the shadow banking system in the EU
  - Conducting a more in-depth analysis of specific topics identified as relevant from an EU macro-prudential perspective
  - Building a European network to discuss shadow banking related issues
ESRB Annual Shadow Banking Workshop (last time held on 26 September 2016 in Frankfurt)
Structure of the EU financial sector

EU financial sector (EUR tn)

Breakdown of euro area investment funds and OFIs by type (EUR tn)

Source: ESRB EU Shadow Banking Monitor, No. 1 July 2016 based on ECB and De Nederlandsche (DNB) data and ECB calculations.

Notes: Data for the total OFI sector are sourced from financial accounts statistics; data on investment funds and FVCs are based on ECB monetary statistics. Note that data on non-securitisation special-purpose entities (SPEs) are incomplete and cover only the Netherlands (based on preliminary end-year data made available by the DNB). No further data breakdowns are available for the residual “other OFIs”.

Source: ESRB EU Shadow Banking Monitor, No. 1 July 2016 based on ECB and De Nederlandsche (DNB) data and ECB calculations.
Strong interconnectedness between euro area credit institutions and euro area shadow banking system

- Credit institutions are highly interconnected with entities which comprise the broad measure of shadow banking

Euro area credit institutions’ assets vis-á-vis euro area investment funds and OFIs
(lhs: EUR tn, rhs: %)

Source: ESRB EU Shadow Banking Monitor, No. 1 July 2016, based on ECB data.

Euro area credit institutions’ deposits from euro area investment funds and OFIs
(lhs: EUR tn, rhs: %)

Source: ESRB EU Shadow Banking Monitor, No. 1 July 2016, based on ECB data.
ESRB methodology for designing a monitoring framework for shadow banking in Europe

- **Focus**: Analysis on examining liquidity and maturity transformation, leverage, interconnectedness with regular banking system and credit intermediation

- **Risk-based approach**: Applies entity-based and activity-based approaches, mapping broad shadow banking system in EU

- **Entity-based mapping**: Approach examines investment funds (incl. MMFs), financial vehicle corporations (FVCs), Other OFIs (non-securitisation special purpose entities (SPEs), security and derivative dealers (SDDs) and financial companies engaged in lending (FCLs)), and assesses their level of shadow banking engagement

- **Activity-based mapping**: Approach focuses on horizontal shadow banking risks from financial markets which cut across entities (securities financing transactions (SFTs), derivatives)
Exposures around core shadow banking activities

Overview of engagement

- **Financial Vehicle Corporations (FVCs), Securities and Derivatives Dealers (SDDs), hedge funds**
  - Overall highly exposed to shadow banking activities

- **Bond funds**
  - Strong engagement in maturity transformation

- **Leverage**
  - Hedge funds with significant exposure
  - Large data gaps around synthetic leverage

- **Interconnectedness**
  - Significant for MMFs (70% of exposures to credit institutions)

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### Table

**Mapping of broad shadow banking functions**

Mapping of broad shadow banking activities and risks, and illustrative indication of the typical engagement of entities in these activities. Based on qualitative expert judgement, taking into account market intelligence and quantitative evidence (noting that measurement is hindered by data gaps).

This structural assessment of engagement is not a risk assessment. It neither pre-empt nor replaces systematic evaluations of systemic or other risks for dedicated purposes. The colours of the indicators provide a broad indication as to the intensity of institutional engagement in the relevant areas of activity, based on the coding specified in the note below. Areas of engagement include maturity and liquidity transformation, leverage, credit intermediation and interconnectedness with the regular banking system and use of securities financing and derivatives. Illustrative indications provided in this table may change over time.

<table>
<thead>
<tr>
<th>Summary assessment</th>
<th>Credit intermediation</th>
<th>Maturity transformation</th>
<th>Liquidity transformation</th>
<th>Leverage</th>
<th>Interconnectedness with banking system</th>
<th>Securities financing</th>
<th>Use of derivatives</th>
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<tbody>
<tr>
<td>FVCs</td>
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<td>FCLs</td>
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<td>SDDs</td>
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<td>Bond Funds</td>
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<td>Hedge Funds</td>
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<td>Real Estate Funds</td>
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<td>Private Equity Funds</td>
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Note: FVCs=Financial Vehicle Corporations, non-retained; FCLs=Financial corporations engaged in lending; SDDs=Securities and Derivatives Dealers.
VNAV=Variable Net Asset Valuation, CNAV=Constant Net Asset Valuation.

Colour coding: ●=pronounced engagement; ○=medium engagement; ●=low engagement; ○=unlikely or insignificant engagement.
Work towards transparency in the EU derivatives markets: EMIR and ESRB analysis

- **EMIR** (European Market and Infrastructure Regulation) requires all EU counterparties entering a derivative (OTC and ETD) contract to report details on the contract to trade depositories. This **EU wide** data is available to ESMA and ESRB.

- ESRB has worked extensively on EMIR data with the following objectives:
  1. Developing a **data infrastructure**,
  2. Contributing to improvements in **data quality**, and
  3. Conducting **policy-relevant analyses**.
Focus on three types of derivatives: IR, credit and FX

Several key takeaways, including:

1. EMIR data can already provide **useful insights**

2. High level of **intra-financial exposures** (especially intra-dealer exposures)

3. The network of trades and exposures reflects **key regulatory and other changes** (central clearing obligations, compression, etc.)
6. CONCLUSIONS
Conclusions

- EU banking sector faces both cyclical and structural challenges related to low profitability, overcapacity and asset quality in certain countries.
- Macroprudential policy making active in Europe.
- Rapidly growing EU non-financial sector requires adequate framework to monitor and address potential emerging sources of systemic risk.
- Given the financial system wide focus, the ESRB continues to contribute to macroprudential policy making and development in the EU.
Thank you for your attention!

www.esrb.europa.eu
### Macroprudential policy implementation: recent experiences (SII)

<table>
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<th>Member State</th>
<th>Level</th>
<th>Calculation basis</th>
<th>Main motivation</th>
<th>Timing</th>
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<tbody>
<tr>
<td><strong>Austria</strong></td>
<td>Up to 2%</td>
<td>Twelve banks All exposures (sub-)consolidated</td>
<td>Systemic vulnerability Systemic cluster risk</td>
<td>2016-2019</td>
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<tr>
<td><strong>Bulgaria</strong></td>
<td>3%</td>
<td>All banks Domestic exposures Solo and (sub-)consolidated</td>
<td>Presence of currency board and impact for monetary and fiscal policy Weak economic environment</td>
<td>2015</td>
</tr>
<tr>
<td><strong>Croatia</strong></td>
<td>2 rates: 1.5% and 3%</td>
<td>All banks All exposures Solo and (sub-)consolidated</td>
<td>Systemic risk resulting from O-SIIs Macroeconomic imbalances Features of real estate markets and role of real estate as collateral High concentration in the banking sector</td>
<td>2014</td>
</tr>
<tr>
<td><strong>Czech Republic</strong></td>
<td>3 rates: 1%, 2.5% and 3%</td>
<td>Four banks identified as systemically important institutions All exposures Solo level</td>
<td>Systemic risk resulting from highly concentrated banking sector and common sectoral exposure</td>
<td>2015</td>
</tr>
<tr>
<td><strong>Denmark</strong></td>
<td>5 rates: 1%, 1.5%, 2%, 2.5% and 3%</td>
<td>Six banks identified as O-SIIs All exposures Solo and (sub-)consolidated</td>
<td>Systemic risk resulting from O-SIIs</td>
<td>2015-2019</td>
</tr>
<tr>
<td><strong>Estonia</strong></td>
<td>2%</td>
<td>All banks All exposures Solo and (sub-)consolidated</td>
<td>Small and open economy Ongoing convergence process High concentration in banking sector and common exposures to same economic sectors</td>
<td>2014</td>
</tr>
<tr>
<td>Member State</td>
<td>Level</td>
<td>Calculation basis</td>
<td>Main motivation</td>
<td>Timing</td>
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<tr>
<td><strong>Hungary</strong></td>
<td>4 rates: 0%, 1%, 1.5% and 2%</td>
<td>All banks, but buffer rate depends on the ratio of the bank’s problem commercial real estate exposures to its capital Domestic exposures (Sub-)consolidated</td>
<td>Systemic risk resulting from problem exposures to the commercial real estate sector</td>
<td>2017</td>
</tr>
<tr>
<td><strong>Netherlands</strong></td>
<td>3%</td>
<td>Three largest banks All exposures Consolidated</td>
<td>Systemic risk resulting from systemically important institutions</td>
<td>2019</td>
</tr>
<tr>
<td><strong>Romania</strong></td>
<td>1%</td>
<td>All banks with a parent bank based in a non-investment grade country All exposures Solo and (sub-)consolidated</td>
<td>Contagion risk resulting from ownership structure (parent bank based in a non-investment grade country)</td>
<td>2016</td>
</tr>
<tr>
<td><strong>Slovakia</strong></td>
<td>Up to 1%</td>
<td>Three banks identified as O-SIIs Domestic exposures Solo and (sub-)consolidated</td>
<td>Importance of the banking sector High concentration in the banking sector Small and open economy</td>
<td>2017-2018</td>
</tr>
<tr>
<td><strong>Sweden</strong></td>
<td>3%</td>
<td>Four largest banks All exposures Consolidated</td>
<td>Systemic risk resulting from systemically important institutions Features of the banking sector: similarity of business models, high common exposures, high interconnectedness, high concentration</td>
<td>2015</td>
</tr>
</tbody>
</table>
5.1. ENTITY-BASED MAPPING OF SHADOW BANKING
Composition of EU broad shadow banking sector

EU and euro financial sectors and composition of the broad measure

(Q4 2015, EUR trillion)

Sources: ECB, DNB.
Notes: Non-FVC SPEs are vehicles not engaged in securitisation transactions. Data are currently only available for non-FVC SPVs resident in the Netherlands. Data on FVCs are available only for the euro area. “Other OFIs” cover those where no further breakdowns are available.
EU investment funds: Net asset values & interconnectedness

EU investment funds: Net asset values (€ trillions)

Source: ESRB EU Shadow Banking Monitor, No. 1 July 2016, based on ECB data.
Notes: Based on available data for the EU; Bulgaria, Croatia, Denmark, Sweden and the United Kingdom are not included.

EU investment funds: Interconnectedness (%)

Source: ESRB EU Shadow Banking Monitor, No. 1 July 2016, based on ECB data.
Notes: Based on available data for the EU; Bulgaria, Croatia, Denmark, Sweden and the United Kingdom are not included. Interconnectedness is proxied by the assets with an MFI as counterpart as a share of total assets. MMF data in Q4 2014 are affected by reclassifications in some positions.
EU investment funds: Liquidity and maturity transformation

EU investment funds: Liquidity transformation

EU investment funds: Maturity transformation

Source: ESRB EU Shadow Banking Monitor, No. 1 July 2016, based on ECB data.
Notes: Based on available data for the EU; Bulgaria, Croatia, Denmark, Sweden and the United Kingdom are not included. Total assets less liquid assets (deposits, sovereign bonds, debt securities issued by MFIs and equity and investment fund shares) as a share of total assets. Closed-end funds are not included. Estimates are made for holdings of non-euro area securities and funds not resident in the euro area.

Source: ESRB EU Shadow Banking Monitor, No. 1 July 2016, based on ECB data.
Notes: Based on available data for the EU; Bulgaria, Croatia, Denmark, Sweden and the United Kingdom are not included. Maturity transformation by investment funds expressed as the ratio of long-term assets (with original maturities over one year) to total assets. By this measure, maturity transformation is low for equity funds and real estate funds (which invest in non-financial assets).
EU investment funds: Leverage and credit intermediation

EU investment funds: Financial leverage (%)

Source: ESRB EU Shadow Banking Monitor, No. 1 July 2016, based on ECB data.
Notes: Based on available data for the EU; Bulgaria, Croatia, Denmark, Sweden and the United Kingdom are not included. Leverage is calculated as the ratio of loans received to total liabilities.

EU investment funds: Credit intermediation (%)

Source: ESRB EU Shadow Banking Monitor, No. 1 July 2016, based on ECB data.
Notes: Based on available data for the EU; Bulgaria, Croatia, Denmark, Sweden and the United Kingdom are not included. The credit intermediation ratio is calculated as holdings of loans and debt securities to total assets.
EU investment funds: Cross-sectoral interconnectedness

Exposure of euro area investment funds and OFIs to other euro area sectors

<table>
<thead>
<tr>
<th>Sector</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>11%</td>
</tr>
<tr>
<td></td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>2%</td>
</tr>
</tbody>
</table>

Funding of euro area investment funds and OFIs from other euro area sectors

<table>
<thead>
<tr>
<th>Sector</th>
<th>Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9%</td>
</tr>
<tr>
<td></td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>3%</td>
</tr>
<tr>
<td></td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>7%</td>
</tr>
</tbody>
</table>

Source: ESRB EU Shadow Banking Monitor, No. 1 July 2016, based on ECB data.

Notes: Figures in the arrows refer to the share of the respective euro area sector in the total holdings of investment funds and OFIs of the instruments under review (i.e. deposits and loan claims, debt securities, equity and investment fund shares).

Source: ESRB EU Shadow Banking Monitor, No. 1 July 2016, based on ECB data.

Notes: Figures in the arrows refer to the share of the respective euro area sector in the total liabilities of investment funds and OFIs of the instruments under review (i.e. loans received, debt securities issued, equity and investment fund shares issued).
Overview of euro area financial vehicle corporations (FVCs)

Euro area FVCs’ maturity transformation, leverage, interconnectedness and credit intermediation (%)

Source: ESRB EU Shadow Banking Monitor, No. 1 July 2016, based on ECB data.
Notes: Data on MFI holdings of euro area FVC securities commence in Q2 2010.

Euro area FVCs’ assets (€ trillions)

Source: ESRB EU Shadow Banking Monitor, No. 1 July 2016, based on ECB data.
Notes: “Other assets” includes shares and other equity, financial derivatives and remaining assets.
5.2. ACTIVITY-BASED MAPPING OF SHADOW BANKING
## Activity-based metrics

<table>
<thead>
<tr>
<th>Activities</th>
<th>Markets</th>
<th>Indicators</th>
<th>Aggregation</th>
<th>Data availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>SFTs</td>
<td>- Repo, reverse repo, - Sell/buy backs - Securities lending - Margin lending</td>
<td>- Outstanding positions (stock) - Trade flows - Trade intermediation (principal/agent) - Central counterparty clearing - Repo rate and trade price metrics (e.g. collateral margins/haircuts) - (Cash/non-cash) collateral characteristics, including currency, maturity, quality, trade type, re-use</td>
<td>- Aggregate indicators - By jurisdiction, currency, maturity, trade type, entity and counterparty sector - Firm-level data (e.g. for stress testing)</td>
<td>- Limited market data availability - Upon SFTR implementation in 2018</td>
</tr>
<tr>
<td>Derivatives</td>
<td>- Forwards - Swaps (IRSs, CDSs) - Option contracts</td>
<td>- Gross notional amounts - Market value (gross and net of short/long positions) - Gross credit exposure - (Cash/non-cash) collateral characteristics, including currency, maturity, quality, trade type, re-use</td>
<td>- Aggregate indicators - By jurisdiction, currency, maturity, product type, entity/counterparty sector</td>
<td>- EMIR: initial data available, still subject to quality review - AIFMD: data pending - UCITS: no data</td>
</tr>
<tr>
<td>Collateral</td>
<td>- Cash collateral - General collateral - Special collateral</td>
<td>- Outstanding eligible collateral assets - Outstanding collateral posted - Collateral re-use and rehypothecation - Collateral market liquidity (see section below)</td>
<td>- Aggregate market indicators</td>
<td>- Should build on EMIR and SFTR data and possibly other supervisory data sources (e.g. on banks)</td>
</tr>
<tr>
<td>(across secured markets)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market liquidity</td>
<td>- Bond markets (including corporate, sovereign, securitisation) - Collateral markets - Financial instrument derivatives</td>
<td>- Liquid markets: trading volume, quoted, effective spreads/depth, resilience (e.g. Amihud)/price impact, etc. - Illiquid markets: proxies for the above - Liquidity risk premia - Short-term cross-asset return correlations</td>
<td>- Aggregate indicators by market segment</td>
<td>- Limited and circumstantial</td>
</tr>
<tr>
<td>(liquidity provision/demand activities)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Entity specific indicators (including on investment funds, broker-dealers)</td>
<td>- Liability constraint and liquidity/maturity transformation metrics (see Section 2.3) - Liquid asset holdings (see Section 2.3) - Dealer/market maker inventories (gross and net, and accounting for hedges)</td>
<td>- Firm-level data</td>
<td></td>
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</table>
Developments in the EU Repo Market

- Repos contribute to a high degree of interconnectedness between MFIs because the majority are interbank, but they also reflect links between MFIs and OFIs.

**Size of the EU repo market, € trillions**

**Euro area MFIs’ repos with non-MFIs, by sector, € billions**

Source: ESRB EU Shadow Banking Monitor, No. 1 July 2016, based on ICMA data and ESMA calculations.

Note: Gross nominal value of European repo contracts outstanding.

Source: ESRB EU Shadow Banking Monitor, No. 1 July 2016, based on ECB data.

Note: Based on MFI balance sheet data on repos and securities lending with euro area counterparties which are cash collateralised.
Securities lending

**EU government bond lending (cash/ non-cash collateral ratio)**

Source: ESRB EU Shadow Banking Monitor, No. 1 July 2016, based on Markit data and ESMA calculations.
Note: Outstanding value of European government bonds on loan against cash/non-cash collateral in € billions. Ratio of cash / non-cash collateral shown on RHS.

**EU corporate bond lending (cash/ non-cash collateral ratio)**

Source: ESRB EU Shadow Banking Monitor, No. 1 July 2016, based on Markit data and ESMA calculations.
Note: Outstanding value of European corporate bonds on loan against cash/ non-cash collateral in € billions. Ratio of cash / non-cash collateral shown on RHS.
Derivatives

- New regulatory data through AIFMD and EMIR will allow for a more detailed assessment of the use of derivatives by alternative investment funds and shadow banking entities more generally.

Source: Box 7 in ECB Financial Stability Review May 2015
Market liquidity and market-making


Holdings of non-financial corporate bonds by sector in the euro area, € billions

Source: ESRB EU Shadow Banking Monitor, No. 1 July 2016, based on ECB data.

Non-financial corporate bonds: net market maker inventories, € billions

Note: Investment grade non-financial inventory data collected for 13 EU market-makers.