Risk assessment indicators

Methodological note

1 Introduction

The **risk assessment indicators** (**RAI**) are used for the purposes of financial stability and are mostly part of the European Systemic Risk Board (ESRB) risk dashboard[1]. These indicators provide insights into various risk categories, including interlinkages and composite measures of systemic risk, credit risk, liquidity and funding risk, and structural risk.

The RAI are calculated at the ECB based on different sets of statistics, such as monetary and financial statistics or financial accounts. These sources comprise monetary financial institutions' (MFI) balance sheet items (BSI), MFI interest rate (MIR), insurance corporations (IC), pension funds (PF) and quarterly sector accounts (QSA) statistics.

This note covers the methodology and calculations of the following four indicators, based on BSI and MIR data:

1. Share of variable rate loans in total loans based on outstanding amounts

(a) **Euro area**[2]:

(i) RAI.Q.CC.SVLOAHH.EUR.BSI.Z

(ii) RAI.Q.CC.SVLOANFC.EUR.BSI.Z

The data are available as of January 2003 or from the date of entry in the euro area.

(b) **Non-euro area**[3]:

(i) RAI.Q.CC.SVLOAHH.U1.BSI.Z

(ii) RAI.Q.CC.SVLOANFC.U1.BSI.Z

2. Share of variable rate loans in total loans based on new business volumes

(a) **Euro area**:

(i) RAI.M.CC.SVLHHNFC.EUR.MIR.Z

(ii) RAI.M.CC.SVLHPHH.EUR.MIR.Z

[1] The ESRB risk dashboard is a set of quantitative and qualitative indicators of systemic risk in the EU financial system. It is published quarterly, one week after its adoption by the General Board of the ESRB.

[2] Member States participating in the monetary union (hereafter referred to as the "euro area") and euro area aggregate, where "CC" in the code refers to the country ISO code. For the euro area aggregate the code is U2.

[3] Non-participating Member States (hereafter the "non-euro area"), where "CC" in the code refers to the country ISO code. For the non-euro area aggregate the code is U3.

(b) **Non-euro area**:

(i) RAI.M.CC.SVLHHNFC.U1.MIR.Z

(ii) RAI.M.CC.SVLHPHH.U1.MIR.Z

3. Banks' lending margins

(a) **Euro area**:

(i) RAI.M.CC.LMGLNFC.EUR.MIR.Z

(ii) RAI.M.CC.LMGLHH.EUR.MIR.Z

(iii) RAI.M.CC.LMGBLNFCH.EUR.MIR.Z

(iv) RAI.M.CC.LMGOLNFCH.EUR.MIR.Z

(b) **Non-euro area**:

(i) RAI.M.CC.LMGLHH.U1.MIR.Z

(ii) RAI.M.CC.LMGLNFC.U1.MIR.Z

(iii) RAI.M.CC.LMGBLNFCH.U1.MIR.Z

(iv) RAI.M.CC.LMGOLNFCH.U1.MIR.Z

4. Loan-to-deposit ratio

(a) **Euro area and non-euro area countries**:

(i) RAI.Q.CC.LTD.Z01.BSI.Z

2 Share of variable rate loans in total loans based on outstanding amounts

This indicator is computed using data on outstanding amounts of loans, available in the **MFI balance sheet statistics (BSI)**[4].

The precise name of the indicator should read: *"share of loans with original maturity up to one year and loans over one year with residual maturity or next interest rate reset in the next one year".*

The short name, which is more commonly used by the public, is: *"share of variable rate loans based on outstanding amounts".*

There are two versions of this indicator, both calculated using the same formula: one that covers households and another that focuses on loans to non-financial

[4] Manual on MFI balance sheet statistics.

corporations (NFCs). The share is calculated separately for each sector. The formula is as follows:

$$\mathrm{SVL}_t = 100 * \frac{A20F_t + A20KF_t + A20KKF_t}{A20A_t} \qquad \textit{Equation [2]}$$

where

SVL_t	=	Share of loans with fixation period or residual maturity or next interest rate reset in the next one year in period t
$A20F_t$	=	Loans with original maturity up to one year in period t
$A20KF_t$	=	Loans with original maturity over one year and residual maturity up to one year in period t
$A20KKF_t$	=	Loans with original maturity over one year, residual maturity over one year and interest rate reset in the next 12 months in period t
$A20A_t$	=	Total loans in period t

This indicator is based on balance sheet data from MFIs, excluding central banks, meaning that it also includes loans provided by money market funds (MMF), as a detailed sectoral breakdown that would allow the exclusion of MMF loans from the indicator is not available. However, these positions are not significant.

The indicators on loans with original maturity over one year and residual maturity up to one year encompass both variable and fixed rates.

For non-euro area countries, both loans denominated in the national currency and in euro are used in the calculation. In some countries, loans in the national currency are predominant, while in others euro-denominated loans are more prevalent. Given these national specificities, the indicator most suitable for the intended purpose is one combining currencies and residents from both domestic and euro area. In addition, this approach ensures greater consistency over time where non-euro area countries are moving towards adoption of the euro. This methodology aligns with similar indicators published in the past.

3 Share of variable rate loans in total loans based on new business

This indicator is computed using data on new business loans, available in the **MFI interest rates dataset (MIR)**[5].

The precise name of the indicator should read: *"*share *of new loans with a floating rate or an initial rate fixation period of up to one year in total new loans from MFIs"*.

The short name, which is more commonly used by the public, is: *"share of variable rate loans based on new business".*

There are two versions of this indicator; one that combines the household and NFCs sectors, and another that focuses on loans for house purchase. The series for loans

[5] Manual on MFI interest rate statistics.

with floating rate and up to one-year initial rate fixation is used as a proxy for variable rate loans. The indicator measures interest rate risk, independent of the original maturity. Similarly to the indicator on outstanding amounts (see Section 2), the calculation for non-euro area countries includes loans in both national currencies and in euro.

3.1 Share of variable rate loans in total loans to households and NFCs

$$\mathrm{SVLHHNFC}_t = 100 * \frac{A2F1_t + A2F2_t}{A2A1_t + A2A2_t} \qquad \textit{Equation [3.1]}$$

where

$\mathrm{SVLHHNFC}_t$	=	Share of variable rate loans in total loans to households and NFCs in period t
$A2F1_t$	=	Loans to NFCs with floating rate and up to one-year initial rate fixation in period t
$A2F2_t$	=	Loans to households with floating rate and up to one-year initial rate fixation in period t
$A2A1_t$	=	Total loans to NFCs in period t
$A2A2$	=	Total loans to households in period t

3.2 Share of variable rate loans in total loans for house purchase

$$\mathrm{SVLHPHH}_t = 100 * \frac{A2F_t}{A2A_t} \qquad \textit{Equation [3.2]}$$

where

$\mathrm{SVLHPHH}_t$	=	Share of variable rate loans in total loans for house purchase in period t
$A2F_t$	=	Loans for house purchase with floating rate and up to one-year initial rate fixation in period t
$A2A_t$	=	Total loans for house purchase in period t

4 Banks' lending margins

This indicator measures banks' profitability using MIR data. Lending margins reflect the spread between interest rates charged by banks on new loans and interest rates offered on deposits. Low lending margins may facilitate excessive borrowing and may indicate challenges to banks' business sustainability and long-term viability. Conversely, high lending margins may restrict access to credit for the corporate sector, particularly in countries with a significant proportion of small and medium-sized enterprises (SMEs).

Four indicators on lending margins are published for both euro area and non-euro area countries (see Sections 4.1 to 4.4).

4.1 MFIs lending margins on loans to NFCs

$$\mathrm{LM1}_t = A2R1_t - L22R_t \qquad \textit{Equation [4.1]}$$

where

$\mathrm{LM1}_t$ = MFIs lending margins on loans to NFCs in period t

$A2R1_t$ = Interest rate on total loans to NFCs in period t

$\mathrm{L22R}_t$ = Interest rate on total deposits with agreed maturity from households and NFCs in period t

4.2 MFIs lending margins on loans to households for house purchase

$$\mathrm{LM2}_t = A2R2_t - L22R_t \qquad \textit{Equation [4.2]}$$

where

$\mathrm{LM2}_t$ = MFIs lending margins on loans to households for house purchase in period t

$A2R2_t$ = Interest rate on total loans to households for house purchase in period t

$\mathrm{L22R}_t$ = Interest rate on total deposits with agreed maturity from households and NFCs in period t

4.3 MFIs lending margins on new loans to households and NFCs

$$\mathrm{LM3}_t = WA2R_t - WL22R_t \qquad \textit{Equation [4.3]}$$

where

$\mathrm{LM3}_t$ = MFIs lending margins on new loans to households and NFCs in period t

$WA2R_t$ = Weighted average interest rate on total loans to households for house purchase and total loans to NFCs in period t

$WL22\mathrm{R}_t$ = Weighted average interest rate on total deposits with agreed maturity from households and total deposits with agreed maturity from NFCs in period t

The weights are new business volumes.

4.4 MFIs lending margins on outstanding loans to households and NFCs

This indicator uses both MIR data on interest rates and outstanding amounts of loans from BSI.

$$LM4 = \frac{(A2R1_t - L22R1_t) * A2A1_t}{A2A1_t + A2A2_t} + \frac{(A2R2_t - L22R2_t) * A2A2_t}{A2A1_t + A2A2_t} \qquad \textit{Equation [4.4]}$$

where

$\mathrm{LM4}_t$ = MFIs lending margins on outstanding loans to households and NFCs in period t

$A2R1_t$ = Interest rate on total loans to NFC in period t

$\mathrm{L22R1}_t$ = Interest rate on total deposits with agreed maturity from NFCs in period t

$A2A1_t$ = Outstanding amount of total loans to NFCs in period t

$A2A2_t$ = Outstanding amount of total loans to households in period t

$A2R2_t$ = Interest rate on total loans to households in period t

$\mathrm{L22R2}_t$ = Interest rate on total deposits with agreed maturity from households in period t

5 Loan-to-deposit ratio

The indicator is based on monthly and quarterly data on outstanding amounts of MFI loans and deposits. It encompasses loans and deposits to households, NFCs and non-resident non-banks (excluding general government) sectors. It is expressed as a percentage and covers loans and deposits in all currencies.

Due to their business model, banks are, in general, inherently more susceptible to liquidity risk compared with other financial entities. This liquidity risk indicator helps assess banks' reliance on deposits for funding and can reveal underlying structural vulnerabilities. Banks with higher loan-to-deposit ratios tend to depend more on wholesale funding markets, which are typically more volatile than retail deposits, thereby increasing their exposure to liquidity risk.

For euro area countries, the counterpart area is the euro area (U2). For non-euro area countries, the counterpart area is both domestic and euro area for households and NFCs, while for non-resident non-banks, it is all areas other than domestic and euro area.

The formula is as follows:

$$\mathrm{LTD}_t = 100 * \frac{(A2A1_t + A2A2_t + A2A3_t)}{L1_t + L2_t + L3_t} \qquad \textit{Equation [5.1]}$$

where

LTD_t = Loan-to-deposit ratio in period t
$A2A1_t$ = Total loans to NFCs in period t
$A2A1_t$ = Total loans to households in period t
$A2A3_t$ = Total loans to non-resident non-banks in period t
$L1_t$ = Total deposit from NFCs in period t
$L2_t$ = Total deposit from households in period t
$L3_t$ = Total deposit from non-resident non-banks in period t

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