EBA REPORT ON LIQUIDITY MEASURES UNDER ARTICLE 509(1) OF THE CRR

EBA/REP/2023/40

EBA EUROPEAN BANKING AUTHORITY

Contents

List of figures

List of tables

Abbreviations

CCP	central counterparty
CET1	Common Equity Tier 1
CHF	Swiss franc
COREP	Common Reporting
CRR	Capital Requirements Regulation
DR	Delegated Regulation
EBA	European Banking Authority
ECB	European Central Bank
EHQCB	extremely high-quality covered bond
ESRB	European Systemic Risk Board
EU	European Union
EUR	euro(s)
FINREP	Financial Reporting
FX	foreign exchange
GBP	pound sterling
GDP	gross domestic product
GSIIs	global systemically important institution
HQCB	high-quality covered bond
HQLA	high-quality liquid asset
LCR	liquidity coverage ratio
MRR	minimum reserve requirement
NFC	non-financial company
NP	net profit
OLS	ordinary least squares
O-SII	other systemically important institution
p.p.	percentage points
Pr	probability
QE	quantitative easing
SMEs	small and medium-sized enterprises
TLTRO	targeted longer-term refinancing operation
USD	United States dollar

Executive summary

The objective of the report is to monitor banks' short-term liquidity risk profiles.

This report provides an update of the European Union (EU) banks' compliance with the liquidity coverage ratio (LCR), defined as the stock of high-quality liquid assets (HQLAs) divided by the net liquidity outflows that arise during a 30-calendar-day stress period. The analysis is based on Common Reporting (COREP).[1]

LCR values decreased by 3 p.p. in the first half of 2023 to reach 163%, as HQLAs declined while net outflows remained stable. Only small banks reported an increase in their HQLAs in the first half of 2023.

At the end of June 2023, the weighted average LCR for a sample of 372 EU/EEA banks stood at 163%, well above the minimum LCR requirement of 100%. LCR decreased by 3 p.p. during the first half of 2023, as HQLA dropped during the turmoil in the US and Swiss banking sectors in the end of the first quarter of 2023 while net outflows remained stable.

From September 2022 to June 2023, during which TLTRO-3 repayments were EUR 503bn in December 2022 and EUR 498bn in June 2023, HQLA declined by 7%. In the same period, net outflows declined by 6%. LCR declined by 2 p.p. since September and 3 p.p. since December 2022. Such decline in outflows from deposits is explained by the increase in retail deposits that are exempted from the calculation of outflows (pre-weight), which increased by 27% in the first half of 2023, representing 8% of the amount of retail deposits (pre-weight) as of June 2023. The total outflows (pre-weight) from retail deposits only decreased by 1% in the first half of 2023 while excess operational deposits (pre-weight) showed a decline of 15%.

The decline in liquid assets was mainly in the form of a decline in cash and reserves held at central banks, followed by a decline in the securities component. Cash and reserves declined because of the removal of the excess liquidity and also due to the large TLTRO re-payments made by the euro area banks in June 2023. Banks with outstanding TLTRO as of 2023Q1 showed larger declines in reserves. The decline in the securities component is mostly attributed to the sovereign portfolio where the decline was two times higher than in the covered bonds portfolio.

According to the EBA Risk Dashboard, sovereign bonds classified in the amortised cost category declined in the first half of 2023.

---

[1] The report is provided under Article 509(1) of the Capital Requirements Regulation (CRR). The objective of the report is to monitor and evaluate the liquidity coverage requirements under Commission Delegated Regulation (DR) (EU) 2015/61.

The amortised cost portfolio is exposed to unrealised losses in the event of increasing interest rates.

In p.p. of assets, net outflows remained stable and showed a slight decline in the first half of 2023, as outflows from excess operational deposits, operational deposits and retail deposits decreased. These decreases in deposit outflows are mostly explained by the increase in retail deposits that are exempted from the calculation of outflows, which increased by 27% in the first half of 2023.

In the first half of 2023, LCR levels declined from 158% to 152% for large banks, increased from 192% to 212% for medium-sized banks and increased from 216% to 225% for small banks. Small banks were the only category of institutions showing an increase in HQLA. The average LCR for global systemically important institutions (G-SIIs) stood at 146% while it declined from 174% to 165% for O-SIIs. Similarly, other banks were the other category to increase LCR, from 209% to 217% as of June 2023. By country, LCR declined in 12 out of 27 countries.

Although the average LCR levels remain higher than prior to the COVID-19 pandemic, the ongoing tightening of monetary policy stance is likely to have an adverse effect on the banks' liquidity ratios in the future. For example, the gradual unwinding of the asset purchase portfolios announced by the ECB in December 2022 is likely to reduce the Eurosystem excess liquidity by €300-400bn by the end of 2024. Excess liquidity is also being drained by the maturing TLTRO debt. At the end of June 2023, the eurosystem had €558bn of TLTROs outstanding which will be fully repaid at the end of 2024 and will contribute to a similar decline in excess liquidity when the last debt will mature by the end of 2024. At the end of the period of review in June 2023, banks which had positive TLTRO holdings in March 2023 showed larger drops both in their LCRs and cash and central bank reserves compared to banks with no TLTRO balances.

The scheduled additional TLTRO repayments by banks and further gradual unwinding of past asset purchases by central banks will exert further downward pressure on the LCR measures. Possible additional liquidity-impacting measures, such as an increase in the banks' minimum reserve requirement, would further accelerate this trend, potentially exposing some outlier institutions.

LCR was down for all business models apart from retail-oriented banks.

By business models, the LCRs range from 156% for universal banks to 230% for retail-oriented banks. Business models with greater recourse to wholesale funding generally show higher net liquidity outflows (post-weight) and lower LCRs than retail-oriented business models.

As of June 2023, LCR levels in USD and in GBP are lower than the LCR in EUR. LCR in USD increased in the first half of 2023, while it declined in GBP and in EUR.

Regulation requires banks to ensure that the currency distribution of their liquid assets is consistent with the currency distribution of their net liquidity outflows. After several years of significant shortfalls, in the first half of 2023 the average LCR of the 110 banks reporting USD as a significant foreign currency improved to 97%, a 1 p.p. increase compared to the level observed as of December 2022. With regards to the liquidity position in GBP, the LCR for the 26 banks reporting GBP as a significant foreign currency stood at 108%, slightly lower than the level observed in December 2022. LCRs also declined, on average, for banks which report EUR as significant foreign currency. The ability of banks to initiate currency swaps and to raise funds in the foreign exchange markets may be impaired during times of stress. In this vein, following Russia-Ukraine war since 2022 and the banking turmoil in March 2023 the USD cross currency basis swaps against European currencies widened, making USD funding more expensive for EU banks. To avoid a scenario where banks may not be able to fill their USD liquidity gaps, competent authorities may make use of the discretion in Article 8 of the LCR DR to limit significant excesses of net outflows denominated in a significant reporting currency (Article 8(6) of the LCR DR). Specific limits or quantitative restrictions may be implemented to correct mismatches in material cases.

There is some evidence that banks with low LCR levels are more likely to reduce bank lending to non-financial corporations and households, although the results are not particularly robust.

In line with the findings in the previous years, the analysis of the potential impact of the LCR regulation on bank lending shows that a statistically significant relationship can be identified between the level of the LCR and the probability of banks increasing their lending activity. However, after controlling for additional variables such as the level of capital and the non-performing loan ratio, this relationship is no longer statistically significant.

Based on current data, the effect of the unwind mechanism seems limited.

Concerning the LCR unwind mechanism, it was not possible to detect any material impact on the level of the LCR. The unwind mechanism has an impact on the determination of the adjusted amount of Level 1 assets, and this effect can be positive or negative, whereas the effect on the LCR is close to nil. This finding seems to be due to the banks' use of Level 1 assets far more than

the regulatory minimum of 30% of the overall liquidity buffer. This makes it unlikely that other HQLA categories would also show surpluses over the respective requirements. However, this situation may reflect current special conditions in the funding markets (e.g. the ample liquidity provision by central banks through long-term refinancing operations) that may change in the future.

Introduction

As part of the mandate in Regulation (EU) No 575/2013 (CRR), the European Banking Authority (EBA) monitors and evaluates the liquidity coverage requirements on an annual basis (pursuant to Article 415(1)). The EBA takes into account the potential impact of these requirements on the business and risk profiles of banks, on the stability of financial markets, on the economy and on the stability of the supply of bank lending (Article 509(1) of the CRR). The current report is the tenth publication of the EBA report under Article 509(1) and the eighth publication since the introduction of the minimum liquidity coverage standards in 2015.

This report presents a detailed analysis of the short-term resilience of banks' liquidity risk profiles. It also reports on the liquidity risks that banks face in various significant foreign currencies.[2] As in the previous reports, the analysis is based on COREP data. The sample covers 331 banks (372 banks including subsidiaries) in 27 EU Member States and three European Economic Area / European Free Trade Association states that report COREP data to the EBA on a regular basis.[3]

The report includes a detailed assessment of the LCR key components (HQLA and net liquidity outflows), the impact of the TLTRO repayment of June 2023 in the main liquidity metrics as well as as the impact of some implementation features such as the unwinding mechanism. It also provides breakdowns by different business models across the EU. The analysis of currency mismatches investigates whether the banks' liquidity coverage in foreign (and significant) currencies differs from their overall LCR. Additionally, the report analyses what is the impact on lending that could derive from the existence of the LCR regulation.

The bank sample covers both globally active and other significant institutions (G-SIIs and O-SIIs), as well as 'other banks'. In this years' report, some metrics are also shown by banks' size measured by total assets as of June 2023. In terms of total assets, the sample covers approximately EUR 28.8 trillion (EUR 29.8 trillion including subsidiaries) or, on average, 90.2% of the total assets of the EU banking sector [4] . Country data should be interpreted with caution as differences in the representativeness of the sample across countries may affect data comparability.[5] Aggregated figures in this report are based on COREP data reported at the highest level of consolidation, with the exception of the analyses concerning banks' business models and country breakdowns,[6] which

---

[2] See definition of significant and foreign currency in Section "LCR — analysis of currency mismatch".

[3] Banks included in the sample not only reported LCR COREP data but also Financial Reporting (FINREP) data (amount of total assets). Banks that do not report the amount of total assets in FINREP have not been included in the analysis.

[4] The information on total assets of the EU has been obtained from the Statistical Data Warehouse of the European Central Bank (ECB).

[5] See Table 11: Total asset coverage by country as of June 2023 (in percentage) for more details regarding the coverage by country.

[6] To ensure confidentiality, figures by country breakdown are shown only if there are at least three banks that reported data in each specific country.

also include subsidiaries of EU parent institutions.[7] Unless stated otherwise, all average figures are weighted.

---

[7] The number of banks by country breakdown included in the different analyses is provided in the Annex.

Analysis of the LCR and its components

Trends in the LCR

Liquidity coverage requirements are intended to ensure banks' short-term resilience to potential liquidity disruptions. Banks should hold liquid assets to cover net liquidity outflows over a stress period of 30 calendar days and should maintain an LCR of at least 100%.[8] The LCR minimum requirement was set at 60% on 1 October 2015 and it reached 100% at the end of the implementation period on 1 January 2018.

An analysis of the evolution of the LCR over time[9] shows that banks experienced a strong increase in the last three quarters of 2020 (from 147% as of March 2020 to 175% as of December 2020) as a result of central banks' extraordinary liquidity-enhancing measures following the COVID-19 crisis. During 2021, the LCR remained stable, closing the year almost at the same level observed as of December 2020. During 2022, the LCR for EU/EEA banks started a downward trend, first triggered by the outbreak of the war in Ukraine and second by the monetary policy tightening in several EU jurisdictions. Overall, the LCR closed at a level of 166% as of December 2022, more than 9 percentage points below the level observed a year earlier.

In the first quarter of 2023, the market volatility that followed the turmoil in the US and Swiss banking sectors pushed the average LCR downward to a level of 165% in March 2023. In the second quarter of 2023, the repayment of the ECB targeted long-term refinancing operations (TLTRO) and additional interest rates hikes by EU central banks led to another decline in liquidity coverage ratios to 163%. None of the banks of the sample reported LCR levels below 100% as of June 2023 (Figure 14).

---

[8] In accordance with Article 412 of the CRR and Article 4(3) of the Commission Delegated Regulation (EU) 2015/61, credit institutions can make use of their liquid assets to cover their net liquidity outflows under stressed circumstances, even if such a use of liquid assets may result in their liquidity coverage ratio falling below 100% during such periods. However, as further specified in Article 414 of the CRR and Article 4(4) of the Commission Delegated Regulation (EU) 2015/61, where credit institutions do not meet or expect not to meet the requirement, including during times of stress, they shall immediately notify the competent authorities and shall submit, without undue delay, to the competent authorities a plan for the timely restoration of compliance.

[9] The time series uses a consistent sample of 91 banks (excluding subsidiaries; results are shown for total EU, GSIIs and O-SIIs). Analysis showing two reference dates (December 2019 and June 2020) is based on a consistent sample of 297 banks. The results are reported in terms of volumes or in changes from previous period reference dates. In all other analyses, the sample is the same as was used in the cross-sectional analyses, which includes all banks that submitted data by the latest reporting date.

Figure 1: LCR evolution (weighted average)
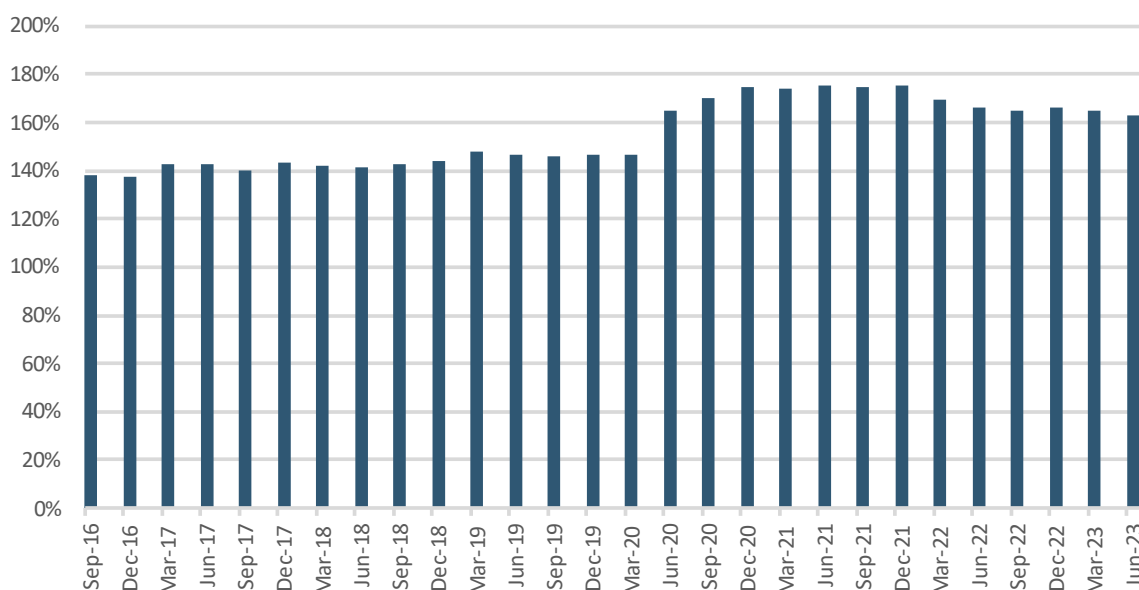
Source: Supervisory reporting and EBA calculations.

By systemic importance, LCR values dropped from 174% to 165% for O-SIIs, while G-SIIs maintained their LCR at 146% and other banks increased their LCR from 209% to 217% in the first half of 2023. By size, in the first half of 2023 LCR levels declined from 158% to 152% for large banks, while they increased from 192% to 212% for medium-sized banks and from 216% to 225% for small banks. Finally, the LCR dispersion across 'other banks' remained greater than across G-SIIs and O-SIIs (Figure 14), reflecting the heterogeneity of banks in the group classified as 'other' in terms of size and business model.

Figure 2: Weighted average LCR across bank groups (G-SIIs, O-SIIs and others)
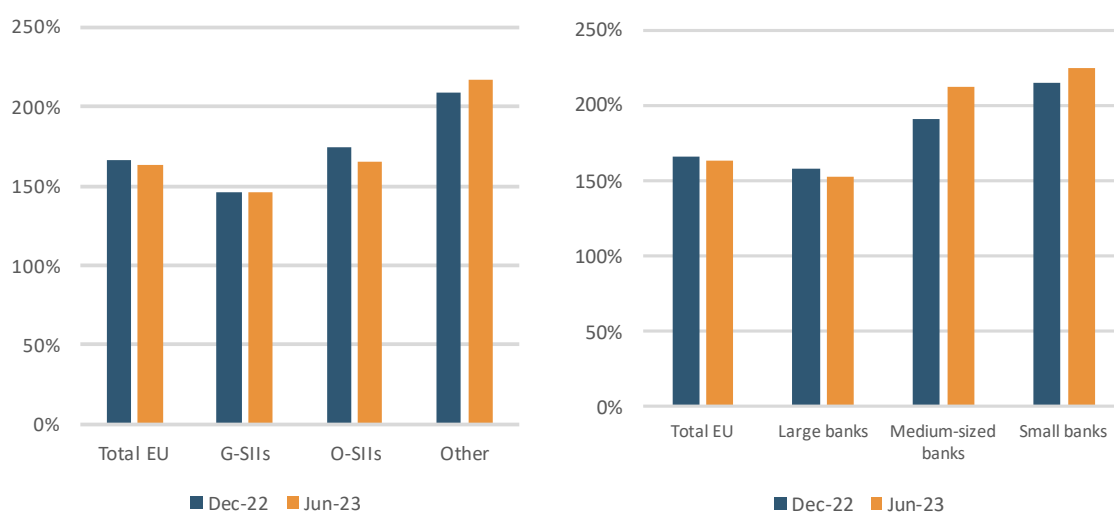
Source: Supervisory reporting and EBA calculations. Large banks are those with consolidated assets above EUR 100bn, while the group of medium-sized banks present consolidated assets between EUR 50 and 100bn and small banks present consolidated assets below EUR 50bn.

The evolution of the LCR levels can be better understood by looking at the evolution of its components during the first half of 2023. The decrease in the LCR ratio between December 2022 and June 2023 is due to the decline in liquid assets (HQLA) likely following the banking turmoil of the first quarter of 2023, as net outflows remained constant, showing only a slight decline. Liquid assets had a decline of 0.71% in the first half of 2023 (Figure 8). The decline in liquid assets started in the first quarter of 2023, showing a stronger decline after March 2023. By systemic importance, both systemic and non-systemic entities showed a drop in their liquid assets. By banks' size, small banks were the only category that increased their liquid assets, while large and medium-sized banks reduced them.

As for the total sample, the same tendency of decline in liquid assets with constant net outflows was observed for G-SIIs and O-SIIs (Figure 3). However, other banks increased their LCR ratio because the decline in liquid assets (HQLA) is below the decline observed in net outflows.

By banks' size, large banks declined their LCR because liquid assets fell while net outflows increased. Medium-sized banks increased their LCR because net outflows declined by more than liquid assets. Lastly, small banks increased their LCR because liquid assets increased by more than the increase in net outflows.

In the period ranging from September 2022 to June 2023, EU/EEA banks have partially compensated the drop in HQLA with a drop of net outflows. For this, the decline in LCR observed in this period is lower than the decline observed in the first half of 2023, in which the net outflows remained constant while the HQLA continued declining. By group of banks, the same tendencies are observed for this period than for the first half of 2023, large banks declined their LCR while small and medium-sized banks increased their LCR.

The drop in net outflows is mainly explained by lower outflows from deposits, which was due to an increase in retail deposits that are exempted from the calculation of the outflows. This phenomenon is observable for both systemic and non-systemic banks. The drop in liquid assets in the last quarter of 2022, in turn, is explained by the repayment of nearly EUR 500bn of the TLTRO-3 loans.

G-SIIs and O-SIIs behaved as the sample average, with a decline in net outflows that almost compensates the decline in HQLA, while other banks showed a decline in net outflows that is much lower than the decline observed in HQLA and unable to compensate the decline of HQLA. Therefore, other banks suffered a higher decline in LCR compared to the decline observed for systemic banks.

Looking at the evolution by banks' size in the period ranging from September 2022 to June 2023, large banks showed a drop of HQLA above the drop in net outflows that led to a decline in LCR. Medium-sized banks had a decline in net outflows above the decline of HQLA, and thus increased their LCR. Small banks increased both the HQLA and net outflows in the period, being the increase in HQLA stronger than the increase in net outflows, which led to an increase in LCR.

Figure 3: Evolution of the numerator and the denominator of the LCR, September 2016 = 100% — balanced sample
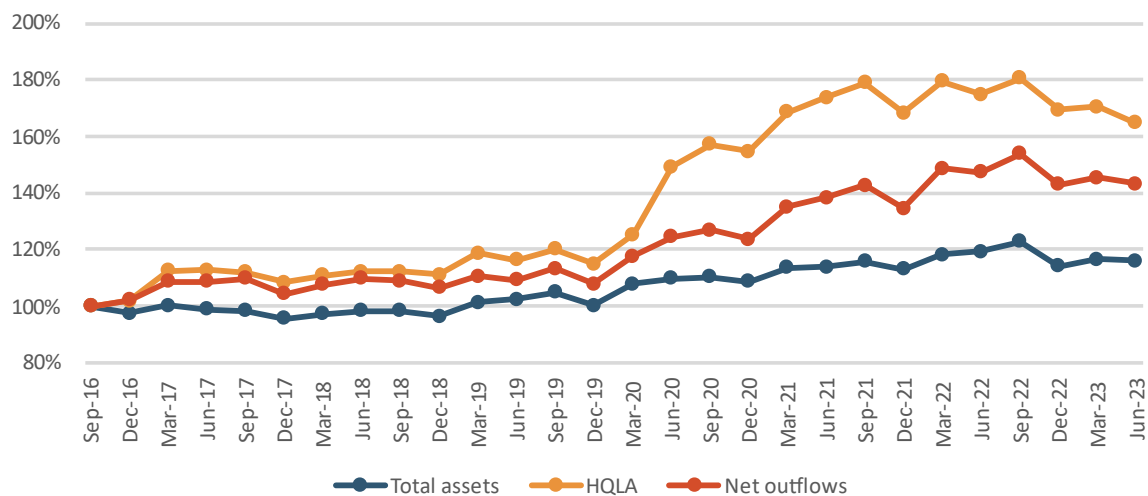
Source: Supervisory reporting and EBA calculations.

Figure 4: Evolution of the numerator and denominator of the LCR by bank group, September 2016 = 100% — balanced sample
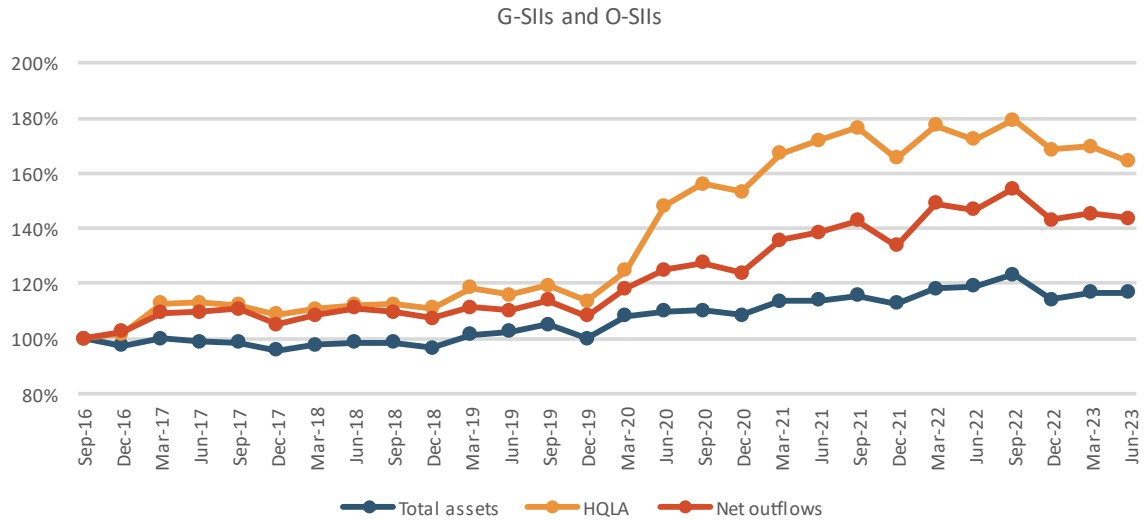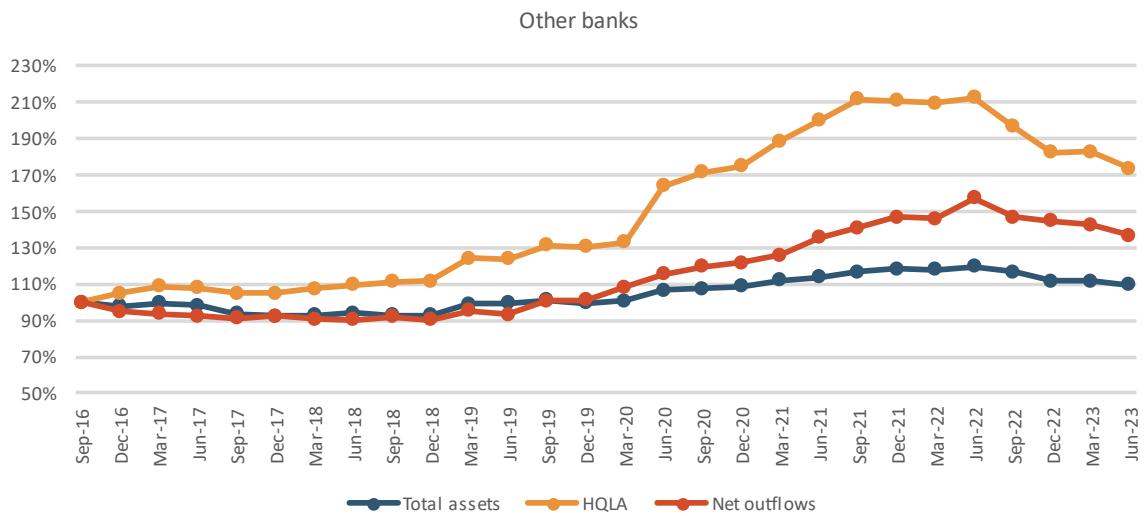
G-SIIs and O-SIIs

Source: Supervisory reporting and EBA calculations.

Other banks

Source: Supervisory reporting and EBA calculations.

Large banks

Total assets — HQLA — Net outflows

Medium-sized banks

Total assets — HQLA — Net outflows

Small banks

Total assets — HQLA — Net outflows
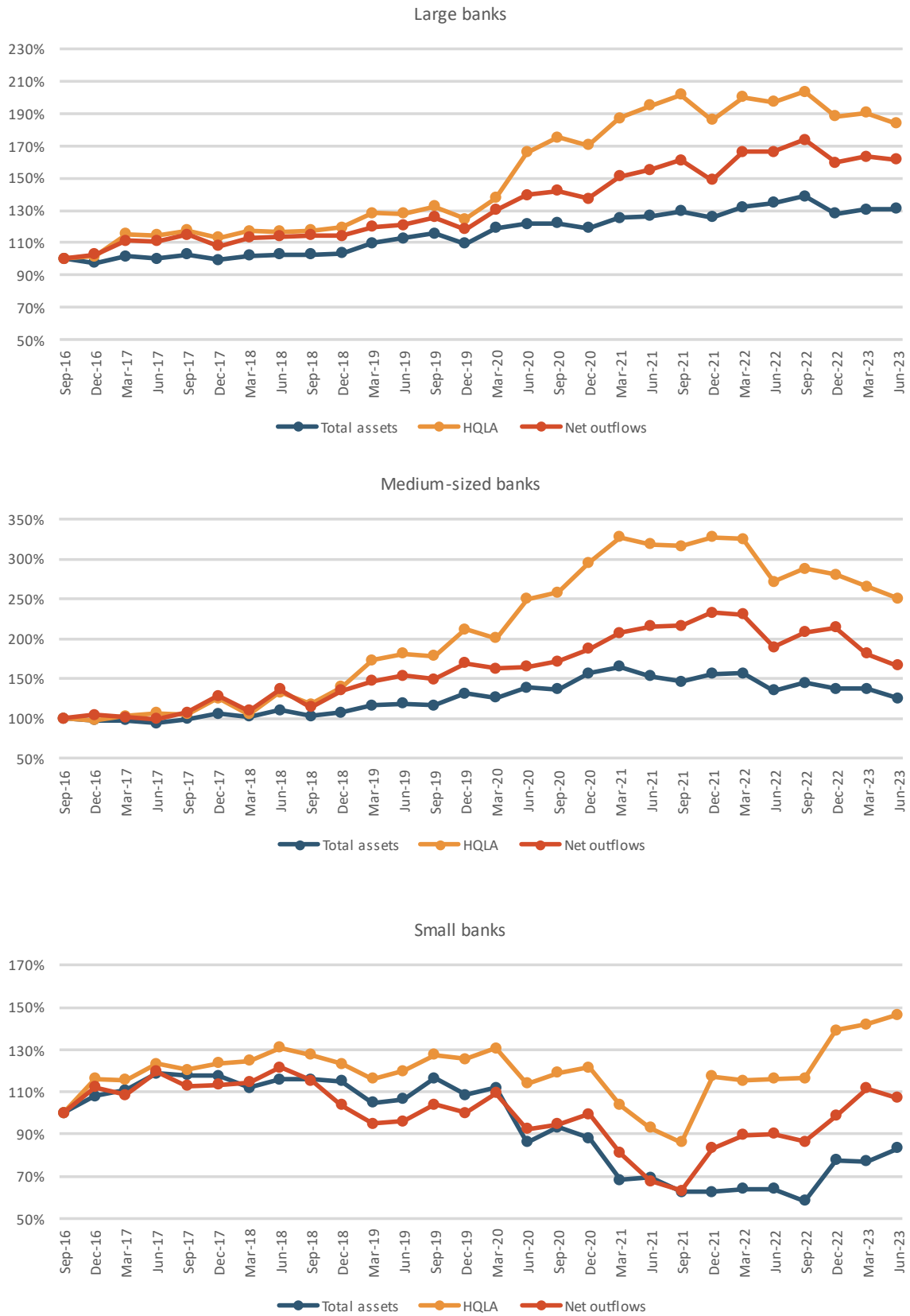
Source: Supervisory reporting and EBA calculations. Large banks are those with consolidated assets above EUR 100bn, while the group of medium-sized banks present consolidated assets between EUR 50 and 100bn and small banks present consolidated assets below EUR 50bn.

The analysis of the composition of HQLA and net outflows gives more insights into the drivers of the changes in HQLAs and net outflows. Figure 5, Figure 6 and Figure 7 show the evolution of such composition between December 2022 and June 2023.

The slight decline in net cash outflows in percentage points of assets was driven by a moderate increase in inflows from 4.8% to 5% of total assets between December 2022 and June 2023 (Figure 6), while gross outflows remained broadly stable, showing a slight decline. This slight decline in gross outflows in p.p. of assets between December 2022 and June 2023 is mainly driven by excess operational deposits, operational deposits and retail deposits (Figure 5). The pre-weight amount of excess operational deposits declined by 15% in the first half of 2023, while pre-weight amount for operational deposits and retail deposits declined by 9.8% and 1.5%, respectively.

Such decline in outflows from deposits is explained by the increase in retail deposits that are exempted from the calculation of outflows, which increased by 27% in the first half of 2023. The total outflows (pre-weight) from retail deposits decreased by 1.3%. With the increase of exempted deposits observed in the first half of 2023, the amount retail deposits exempted from the calculation of outflows represent 8% of the amount of retail deposits as of June 2023. Outflows from non-operational deposits and other outflows increased during the period. The banking turmoil of the first half of the year resulted in fall in asset prices and high volatility. Under that environment, the increase in outflows from derivatives (included in 'other outflows') reflects a fall in market values due to elevated volatility.

Figure 5: Evolution of the composition of cash outflows (post-weight) relative to total assets — balanced sample
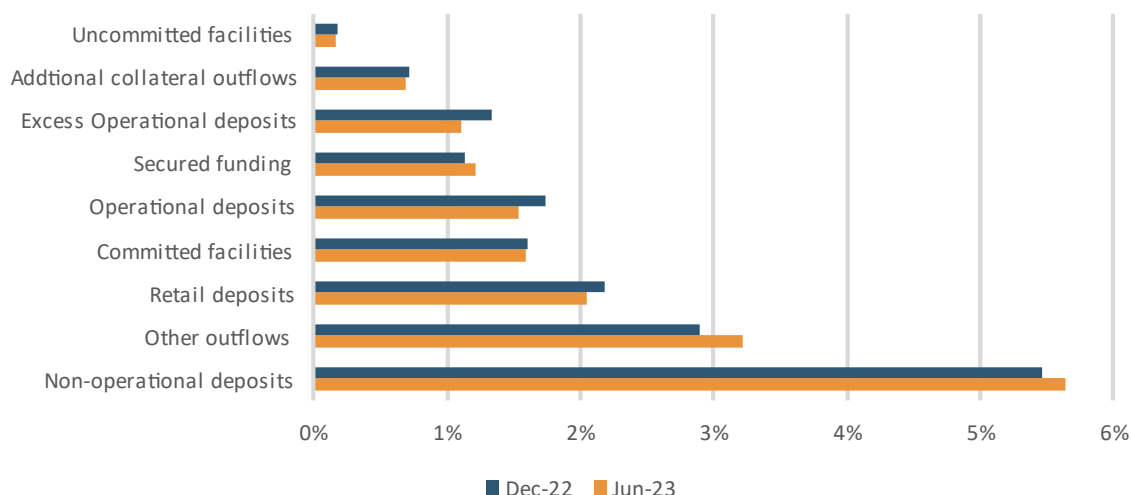
Source: Supervisory reporting and EBA calculations.

Figure 6: Evolution of the composition of cash inflows (post-weight and before cap) relative to total assets — balanced sample
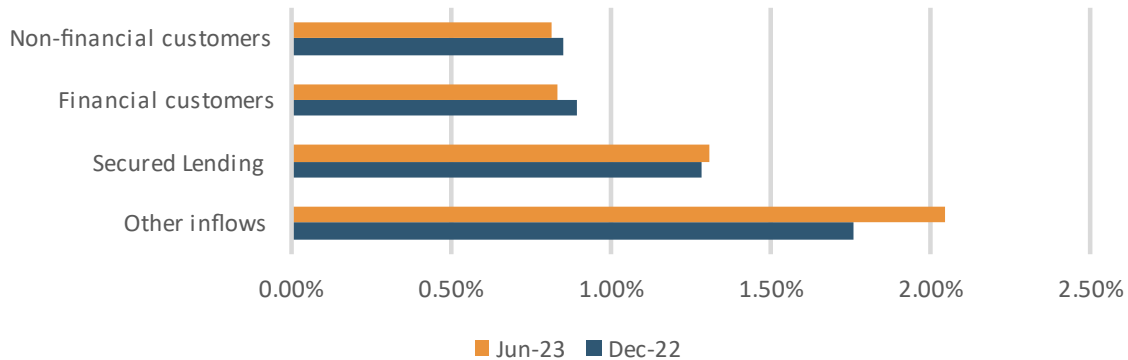
Source: Supervisory reporting and EBA calculations.

Figure 7: Evolution of the composition of liquid assets (post-weight and before the cap) relative to total assets — balanced sample
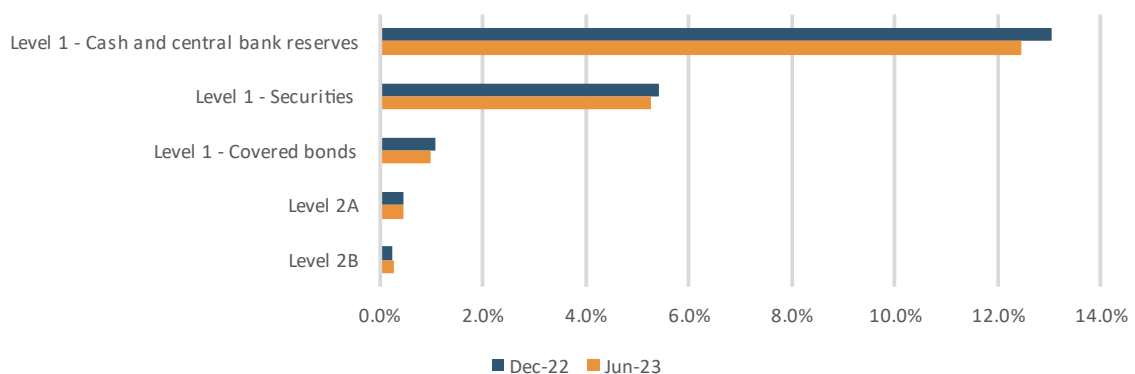
Source: Supervisory reporting and EBA calculations.

Liquid assets declined between December 2022 and June 2023 (liquid assets represented 20.2% of total assets as of December 2022 and 19.5% as of June 2023). The decrease arises mainly from cash and reserves, followed by the securities component.

The decline in the securities component is attributed to the sovereign portfolio which decreased two times more than the covered bonds portfolio. The monetary policy tightening undertaken by the ECB and other EU central banks during 2023 caused a parallel upward shift in the yield curve, reducing the market value of the entire portfolio. This translated into unrealised losses for instruments placed in the amortised cost portfolios. Such unrealised losses may crystallise in the event of forced sales needed to obtain liquidity. To limit the extent of unrealised losses, banks reduced the part of the bond portfolios classified in the amortised cost category, which is mainly composed of sovereign bonds. According to the EBA Risk Dashboard, sovereign bonds classified in the amortised cost category declined in the first half of 2023[10]. Since several EU central banks

---

[10] EBA Risk Dashboard. Data as of Q2 2023.

started tightening monetary policy in 2022 banks have progressively reduced their securities portfolios classified in the amortised cost category, which have been shrinking meaningfully since December 2022 (Figure **8**).

Figure 8: Evolution of the composition of liquid assets (post-weight and before the cap) relative to total assets
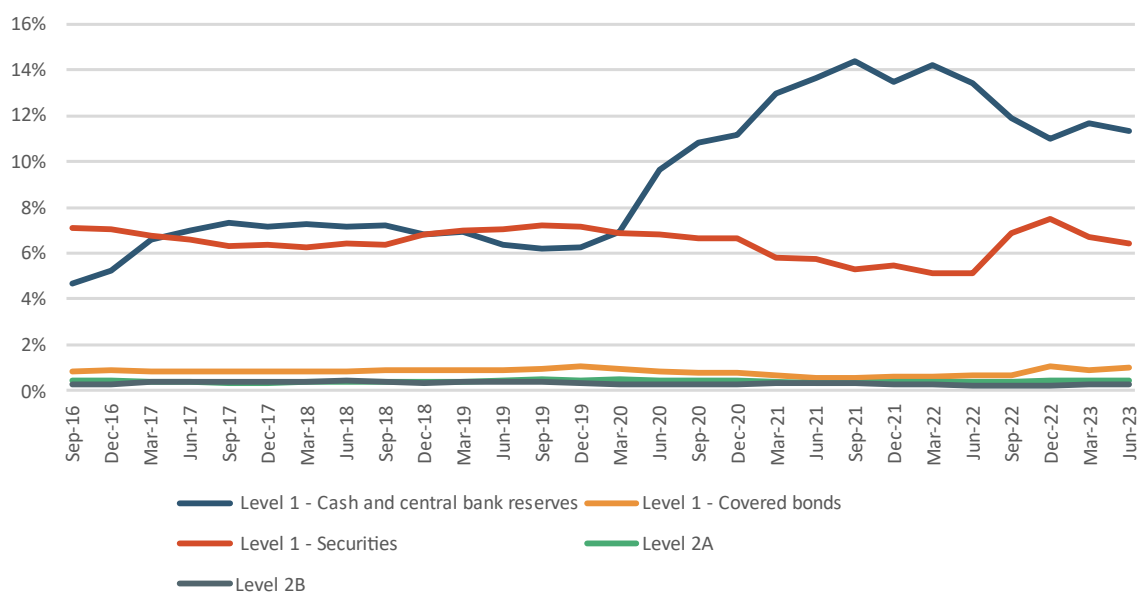
Source: Supervisory reporting and EBA calculations.

Cash and reserves declined by 0.57% on average in the first half of 2023. This was mainly explained by the repayment of ECB TLTRO-3 in June 2023, as banks that reported positive TLTRO holdings as of March 2023 suffered higher and banks which reported no TLTRO holdings lower declines in their cash and reserves positions. The specific impact of the repayment in the main liquidity metrics of Euro area banks is addressed in Box 1 below.

Box 1: The impact of the June 2023 TLTRO repayment on the liquidity profile of Euro area banks

Based on consolidated data as of June 2023, euro area banks reported EUR 438bn of remaining balances of TLTRO funding, down from EUR 776bn as of March 2023. This amount covers more than 70% of the outstanding longer-term refinancing operations in the Consolidated balance sheet of the Eurosystem which amounted to EUR 598bn as of end-June 2023[11]. The decline in the banks' holdings of EUR 337bn is explained by the repayment of TLTRO loans by 49 banks out of the 69 which reported positive TLTRO holdings as of March 2023. This box discusses the distribution of the remaining TLTRO balances across the banks after the

---

[11] The EBA receives consolidated reporting of funding in EUR currency from 337 Euro area banks, which are the ones considered in this analysis that cover nearly 70% of the outstanding longer-term refinancing operations in the Consolidated balance sheet of the Eurosystem. The remaining 30% that is not included in this analysis may be explained by the outstanding TLTRO amounts of more than 2,000 euro area banks that submit individual reporting.

latest repayment round, as well as the impact the repayments had on the banks' main liquidity metrics at the end of 2023 Q2.

Banks which still had TLTRO balances outstanding covered 69% of the EU banking sector total assets both as of March 2023 and as of June 2023. While the outstanding amount of TLTRO loans declined significantly between the two dates, the number of banks with outstanding balances declined only moderately (69 banks as of March 2023 versus 65 banks as of June 2023). For the banks with remaining TLTRO balances, this type of funding represents on average 1.66% of total assets as of end-2023Q2 (down from 2.94% as of 2023Q1), however 11 banks show TLTRO balances in excess of 5% of their total assets. The bulk of the TLTRO repayments in June 2023 were made by large euro area banks, followed by medium-sized and small banks. Even after the latest repayment round, large banks are the major holders of TLTRO loans both in absolute and in relative terms: at the end of 2023Q2, the outstanding TLTRO amount represented 1.79% of total assets for large banks, 0.85% for medium-sized banks and 0.94% for small banks.

As regards the LCR, the June 2023 repayment of TLTRO funds resulted in a negative impact of -3.55 percentage points for the affected banks. Over the same period, for the full sample of euro area banks the LCR declined by -2.89 percentage points, which is explained by the high share of banks with positive TLTRO balances in the sample. Despite this decline, the LCR remains high for euro area banks at 160.55% (151.54% for banks with TLTRO funds and 198.24% for non-TLTRO banks).

Figure 9: LCR ratios for the total sample of euro area banks, for TLTRO banks and for non-TLTRO banks (left panel), as well as outstanding TLTRO amounts in percentage of total assets by size category (right panel).
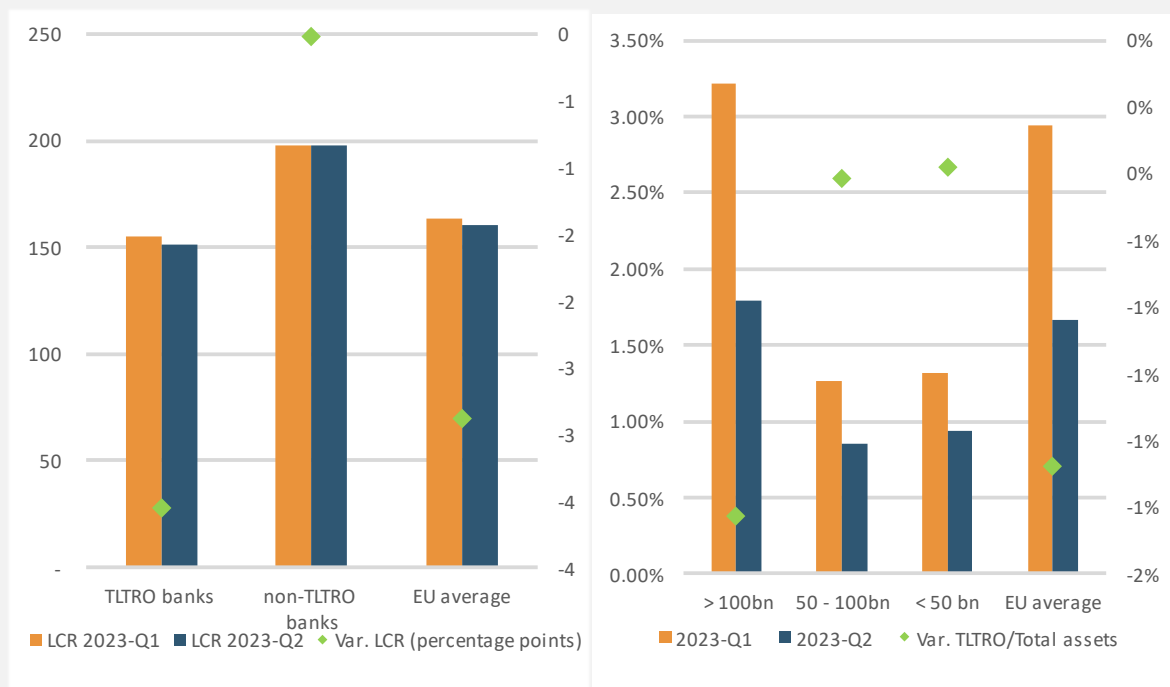
Sources: COREP and EBA calculations.

At present, the share of liquid assets of total assets amounts to 18.5% for TLTRO banks and to 21.2% for non-TLTRO banks. The share of liquid assets declined in the full sample of the EU banks, but the drop in TLTRO banks which was twice higher than the drop in non-TLTRO banks. Consistent with the observed repayments,

the decline in liquid assets was driven by a fall in Level 1 cash and central bank reserves which also contributed to an increase of the share of Level 1 sovereign exposures of total liquid assets. For the full sample of euro area banks, liquid assets declined by 0.70%.

Figure 10: Composition of liquid assets for TLTRO banks (left) and non-TLTRO banks (right), percentage of total assets, June 2023.
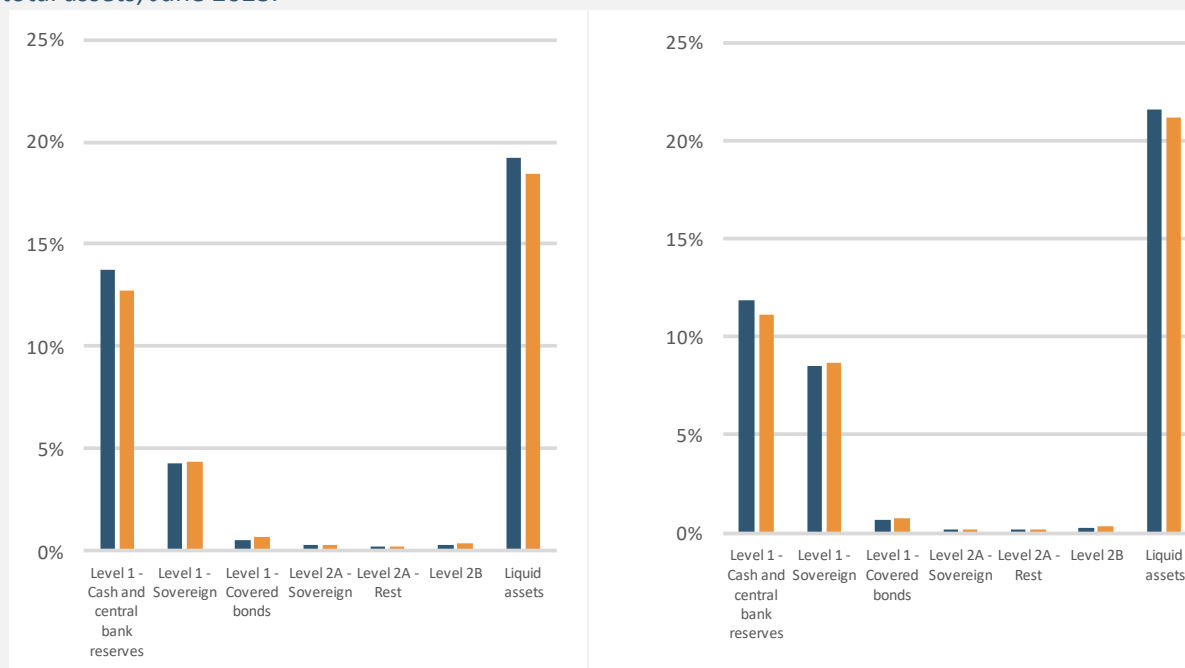
Sources: COREP and EBA calculations.

For banks with remaining TLTRO liabilities, level 1 cash and central bank reserves now represent on average 12.38% of total assets. For a large majority of these banks, cash and cash balances at central banks remain higher than the outstanding TLTRO funds (Figure 11), suggesting that further repayments are unlikely to cause any issues for these institutions. For a subset of 9 institutions cash and reserves instead do not cover the outstanding TLTRO balances as of June 2023. For five of these institutions the remaining TLTRO liabilities also exceed 5% of their total assets, and for one bank they represent more than 10% of total assets. For four institutions out of the subset of 9 for which cash and reserves do not cover the outstanding TLTRO balances, cash and reserves cover less than 30% of the stock of HQLA, but together with sovereigns and other securities they are above the minimum requirement of 30% envisaged in Article 17 of the LCR DRAll in all, the current strong liquidity position of euro area banks has allowed them to repay their TLTRO loans thus far without recourse to market-based funding or significant de-leveraging of their assets. Given the still high levels of Level 1 cash and central bank reserves, for the remaining repayments most banks can continue to draw down their reserves without any risk of jeopardising their liquidity coverage and/or net stable funding ratios. At the same time, close monitoring of the few outlier banks seems warranted as the phasing-out of these operations advances.

Figure 11: TLTRO and Level 1 cash and central bank reserves (rhs), percentage of total assets, June 2023.
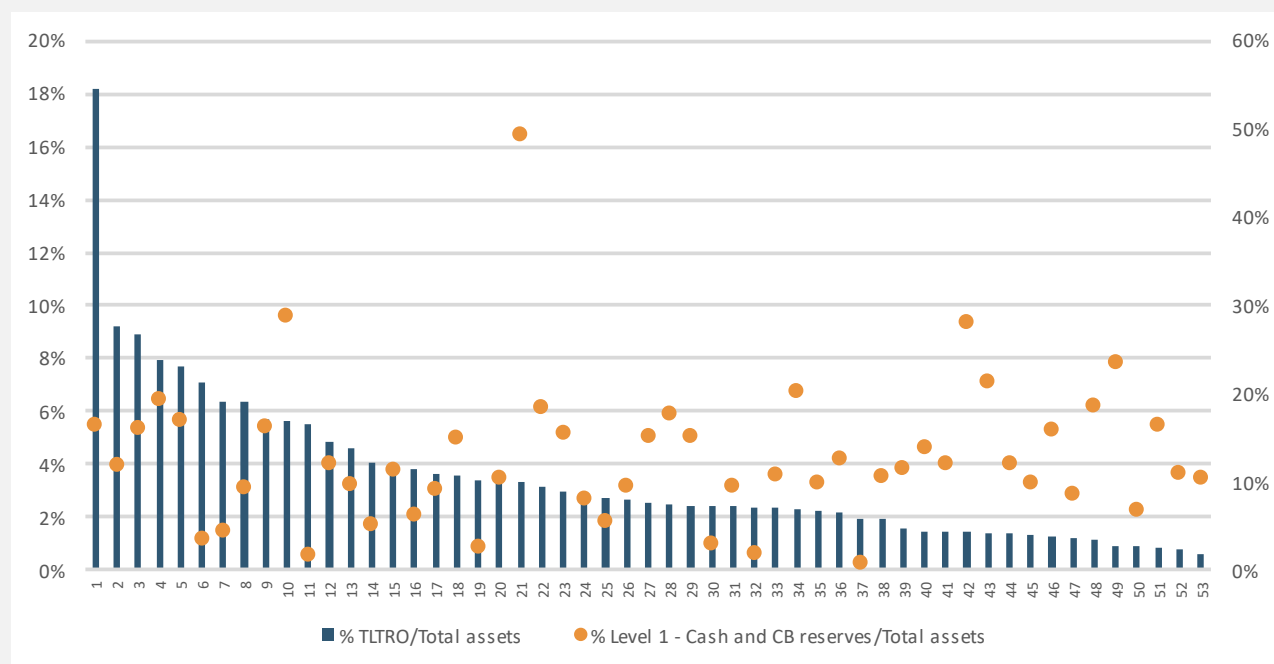
Sources: COREP and EBA calculations.

The more uncertain economic outlook together with persistent inflationary pressures and monetary policy tightening make the monitoring of banks' LCR levels relevant going forward. Although EU/EEA banks continued to show strong LCR levels in the first half of 2023, an extension of the current trend of decreasing liquid assets together with a possible increasing trend of outflows would exert further downward pressure on LCR levels.

Figure 12 shows the interaction between HQLA and net liquidity outflows at the individual bank level. The measures are expressed as shares of total assets. The 45° line indicates equality between HQLA and net liquidity outflows, i.e. the situation where the LCR is at 100%.

Similarly to previous findings[12], as of June 2023, most banks in the sample are located above the line, suggesting that they still have LCR levels that are adequately above the minimum requirement despite the decreasing trend. As observed in Figure 2, the LCR of other banks is well above the LCR of G-SIIs and O-SIIs. On the other hand, also the number of banks that may face difficulties in the future to comply with the minimum requirement is higher in the group of other banks than in the group of systemic banks (Figure 12). While 98% of G-SIIs and O-SIIs have HQLA above 10% of assets, that proportion is lower for the other banks category (83%). Regarding net liquidity outflows, the

---

[12] See EBA Report on liquidity measures under Art. 509(1) of the CRR (4A2022/2Q2023 Reference date) and EBA Report on liquidity measures (4Q2020/2Q2021 Reference date).

proportion of banks with net liquidity outflows above 20% of total assets is similar for G-SIIs and O-SIIs (9%) compared to other banks (7%).

Figure 12: HQLA and net liquidity outflows (as a share of total assets) by group of banks (as of June 2023), G-SIIs and O-SIIs (left) and other banks (right), June 2023
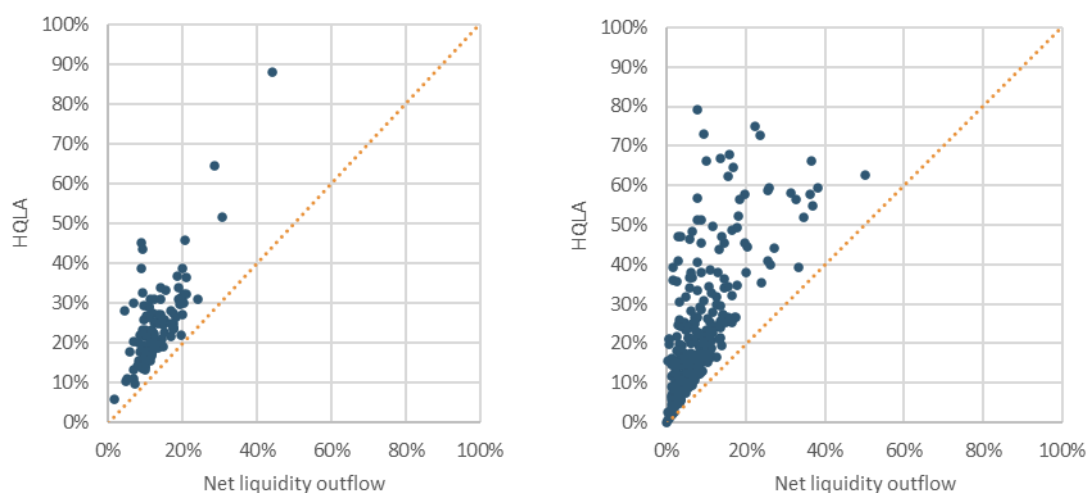
Sources: Supervisory reporting and EBA calculations.

With data as of June 2023, EU/EEA banks do not record any liquidity shortfall[13]. Based on the fully loaded LCR minimum requirement (100%), the shortfall has declined from over EUR 27 billion in September 2016 to no shortfall since June 2020 for a balanced sample of banks. Consequently, the number of banks with an LCR below 100% also declined, from eight in September 2016 to no bank with a shortfall since June 2020. The analysis of the weighted average LCR levels across countries highlights some differences across member states, however. The majority of countries showed average LCR levels between 100% and 200% as of June 2022. Nevertheless, some countries present very high average LCR levels, such as Lithuania[14], Malta, Cyprus, Czech Republic and Bulgaria, with weighted average ratios above 300%. Slovenia, Poland, Portugal, Greece and Lichtenstein have ratios higher than 200%, and no country presents average LCR levels lower than 100%.

---

[13] The shortfall calculated in this report is the sum of differences between the net liquidity outflows and the stock of HQLAs for all banks with an LCR below the minimum requirement. The calculation of shortfall does not account for the offsetting effect of the aggregate surplus arising from those banks that already meet or exceed the minimum requirement. Therefore, no reallocation of liquidity between individual banks or within the banking system is assumed.

[14] The high LCR observed for Lithuania as of June 2023 is caused by an outlier bank. Excluding the outlier bank from the sample of LT banks, the average LCR for LT would be below 300%.

Figure 13: LCR across countries — balanced sample
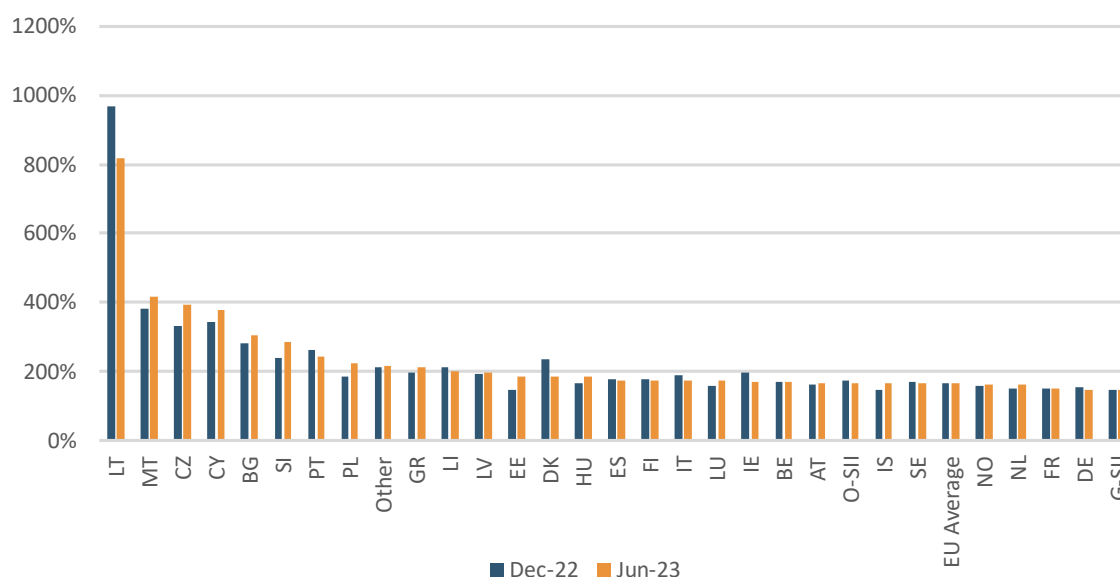
Differences can also be found when looking at the LCR evolution by country between December 2022 and June 2023. Out of 27[15] countries, 12 showed a decrease in their average LCR ratios, following the tendency also seen at the aggregate level. However, 15 countries showed an increase in their average ratio. The most significant decreases are observed in DK, LT and IE. In the case of DK, the decrease is caused by the drop in the LCR of one single bank, which had a high LCR at end of 2022. Regarding IE, five banks present declines of their LCR, but only one shows a significant drop. Finally, five LT banks had lower LCR, and four of them present significant declines, with drops in their LCR of more than 100 percentage points. The main reason of the decrease of LT banks' LCR was the reduction of excess liquidity in three largest banks[16].

---

[15] 25 EU Member States and 2 European Economic Area / European Free Trade Association states were included in the analysis but no country results are shown for Iceland, Croatia and Slovakiaas fewer than 3 banks reported data for the two reference dates shown in the analysis.

[16] The high level of LCR for LT banks is explained by one single bank with a LCR above 1,000% in the two reference dates. Excluding this bank from the LT sample, the LCR for LT would be 241% as of December 2022 and 246% as of June 2023.

Figure 14: LCR dispersion across countries — balanced sample, percentage
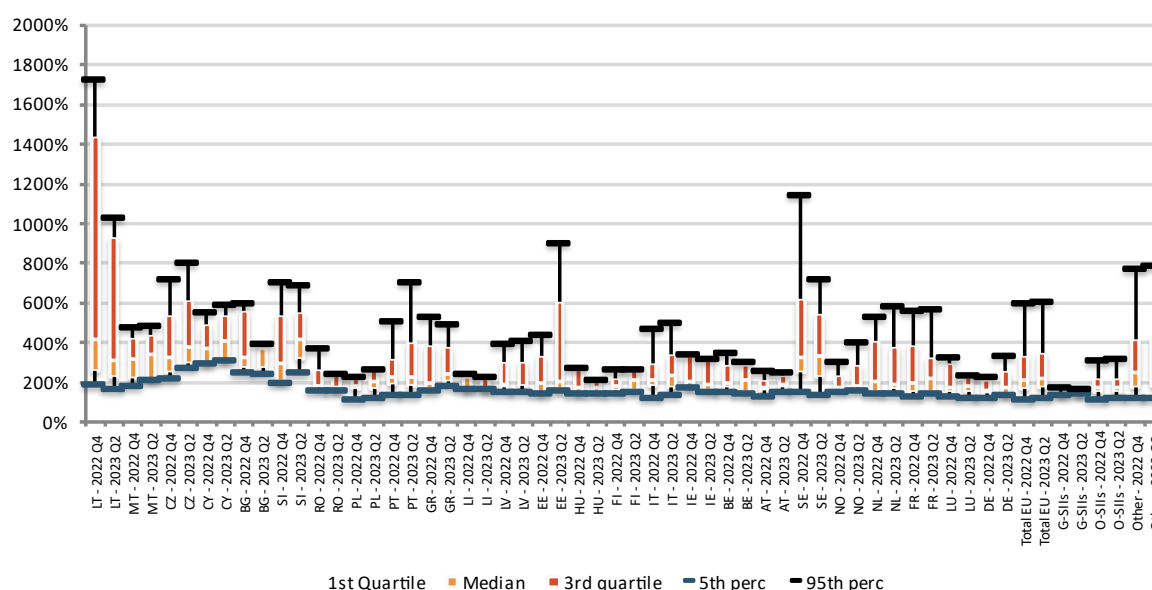
Source: Supervisory reporting and EBA calculations.

Figure 14 shows the dispersion of the LCR across countries[17]. The figure shows that there is dispersion in the banks' LCR levels even within countries. As of June 2023, Lithuania and Estonia are the countries with the highest dispersion driven by two banks with LCR above 900% in the case of the former and two banks with LCR above 800% in the case of the latter. In 13 out of 27 countries, the weighted average is close to or below the 25th percentile, meaning that larger banks within these jurisdictions have lower-than-average LCRs.

Composition of liquid assets

Regulation differentiates between assets of extremely high liquidity and credit quality (Level 1 assets) and assets of high liquidity and credit quality (Level 2 assets). Level 1 assets may comprise, *inter alia*, cash and central bank reserves, as well as securities in the form of assets representing claims on or guaranteed by central or regional governments, local authorities or public sector entities. The EU regulation, unlike the Basel III framework, also considers promotional banks' assets as being in the Level 1 liquidity buffer. In addition, it provides for greater recognition of extremely high-quality covered bonds (EHQCBs), which may be included in Level 1 assets (unlike the Basel III framework).

Level 2 assets are divided into Level 2A and Level 2B assets. Level 2A assets are considered to be more liquid than Level 2B assets and, therefore, are subject to lower haircuts. The EU framework allows Level 2 assets to include exposures in the form of high-quality covered bonds (HQCBs), certain non-residential mortgage-backed securities, as well as units or shares in collective investment undertakings.

---

[17] A percentile is the value of a variable below which a certain percentage of observations fall. For example, the 25th percentile is the value below which 25% of the observations are found.

Box 2: Estimating the impact of a potential increase of Minimum Reserve Requirement on the banks' liquidity metrics

This box assesses the impact of a possible increase of the Minimum Reserve Requirement (MRR) on the liquidity profile of EU banks. Such proposals have recently been floated in the discussions about the next steps in the ongoing monetary policy normalisation process.

In the aftermath of the great financial crisis, and more recently during the COVID-19 pandemic, several EU central banks deployed non-standard monetary policy measures including long-term refinancing operations and asset purchase programmes (or quantitative easing, QE). These policies, which were intended to stimulate monetary policy transmission and economic activity in the environment where policy interest rates had approached the zero lower bound, have resulted in vast increases in central banks' assets.[18] On the liability side of the central bank balance sheet, these expanded assets are reflected by the funds that banks place onto the central bank deposit facilities and that are surplus to the banking system's own liquidity needs and minimum reserves requirements (MRR). These surplus deposits are commonly referred to as excess liquidity.[19] For the banks, such deposits held at the central bank are booked as central bank reserves which count as part of the HQLA assets. The increase in HQLA holdings has contributed to the growth of the EU banks' LCR ratios well beyond the minimum regulatory requirements.

In a modern fractional reserve system, the function of the MRR is mostly to help the central bank to steer the short-term market interest rates close to the policy interest rate. Funds held by the banks towards the MRR do not count to the LCR[20]. Looking at the euro area specifically, the MRR is calculated as a % share of short-term liabilities, including overnight deposits, deposits with agreed maturity or period of notice up to 2 years, debt securities issued with maturity up to 2 years, and money market paper. The MRR funds are placed on the current accounts that banks hold at the ECB and is to be fulfilled over the six-week reserve maintenance period. From 1999, the MRR requirement for the euro area banks was 2%, but in 2012 the MRR was lowered to 1%. On 27 October 2022[21], its rate of remuneration was lowered from the marginal refinancing rate to the deposit facility rate which forms the lower bound of the ECB interest rate corridor. On 27 July 2023[22], the ECB decided to set the rate of remuneration of the MRR to zero, effective as of the reserve maintenance period that began on 20 September 2023. The reduction was justified by the need to "improve the efficiency of monetary policy by reducing the overall amount of interest that the central bank needs to pay on reserves". The funds that banks place on the deposit facility continue to be remunerated at the deposit facility rate (currently at 4%).

To accelerate the draining of excess liquidity and to further reduce the interest payments to the euro area banks, some members of the ECB Governing Council have floated ideas of increasing the MRR from the current 1%, possibly as high as 5-10%. In practice, such a change would involve sweeping funds held by banks at the deposit facility to the current accounts where they are remunerated at zero interest rate and do not count to the LCR requirement.

With data as of June 2023 for a sample of 208 euro area banks that cover 82% of total EU banking sector assets, a hypothetical increase in the MRR from 1% to 4% would cause a shift from excess reserves to MRR by approximately €224 bn on average. This would entail a drop in the euro are banks' LCRs by 7 percentage points (7 pp for large banks, 10 pp for medium-sized banks and 8 pp for small banks). While these averages mask important variations across individual institutions, none of the banks in the sample would end up

with an LCR below 100%. Considering altogether an increase of MRR and the repayment of the remaining amount of TLTRO-3 that will take place in June 2024, the impact in LCR will be 22 percentage points on average (22 pp for large banks, 20 pp for medium-sized banks and 16 pp for small banks).

The drivers of the decline in the LCR are twofold: (i) the share of short-term funding over total balance sheet size (a high share of short-term funding entails a higher base for the calculation of the MRR) and (ii) the level of HQLA (a high share of HQLA over total assets is associated with a strong buffer to withstand additional liquidity outflows or changes in regulation). With data as of June 2023, euro area banks had a share of short-term funding of total assets of 29% on average (28% for large banks, 31% for medium-sized banks and 33% for small banks). The share of HQLA over total assets was 19% on average (18% for large banks, 20% for medium-sized banks and 27% for small banks).

Against this backdrop, the smaller decline in the LCR for large banks is explained by their relatively lower share of short-term funding of total funding, whereas the opposite is true for the medium-sized banks. With regard to small banks the share of short-term funding of total funding is even higher, but the adverse LCR impact is partially offset by the high share of HQLA over total assets.

---

[18] In the ECB TLTRO operations, for example, eligible counterparties (banks) are offered long-term loans at favourable conditions. In QE operations, central banks are not restricted to use only banks as counterparties. However, non-bank sellers typically deposit the proceeds from their asset sales to central banks onto their accounts at commercial banks.

[19] As regards the ECB, in December 2022 the governing council announced the start of the unwinding of part of its assets purchased since 2015. At the current pace, it is expected that the eurosystem excess liquidity will decline by €300-400bn by the end of 2024. Excess liquidity is also being drained by the repayments of the TLTROs loans. At the end of June 2023, the eurosystem had €558 bn of TLTROs outstanding which will be fully repaid by the end of 2024, leading to a similar decline in excess liquidity. An eventual unwinding of the purchases carried out during the COVID-19 pandemic would further accelerate the decline of excess liquidity. Concerning other EU central banks, in February 2023 the Swedish Riksbank announced that it would be shrinking its asset portfolios from around SEK800bn to SEK200bn over the period of three years. In April 2023, it announced the start of outright sales of holdings by SEK3.5bn per month which was further increased to SEK 5bn per month in September 2023.

[20] Article 416 (1) (a) of the Regulation (EU) No 575/2013 and Article 10(1) (b) (iii) of the Commission Delegated Regulation (EU) 2015/61 of 10 October 2014. The current treatment of MRR in the LCR is based on an agreement between the central bank.

[21] https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.pr221027~25d335259c.en.html

[22] https://www.ecb.europa.eu/press/pr/date/2023/html/ecb.pr230727~7206e9aa48.en.html

Figure 15: LCR by banks' size (left) and LCR impact, short term funding and HQLA for euro area banks (right), percentage, June 2023
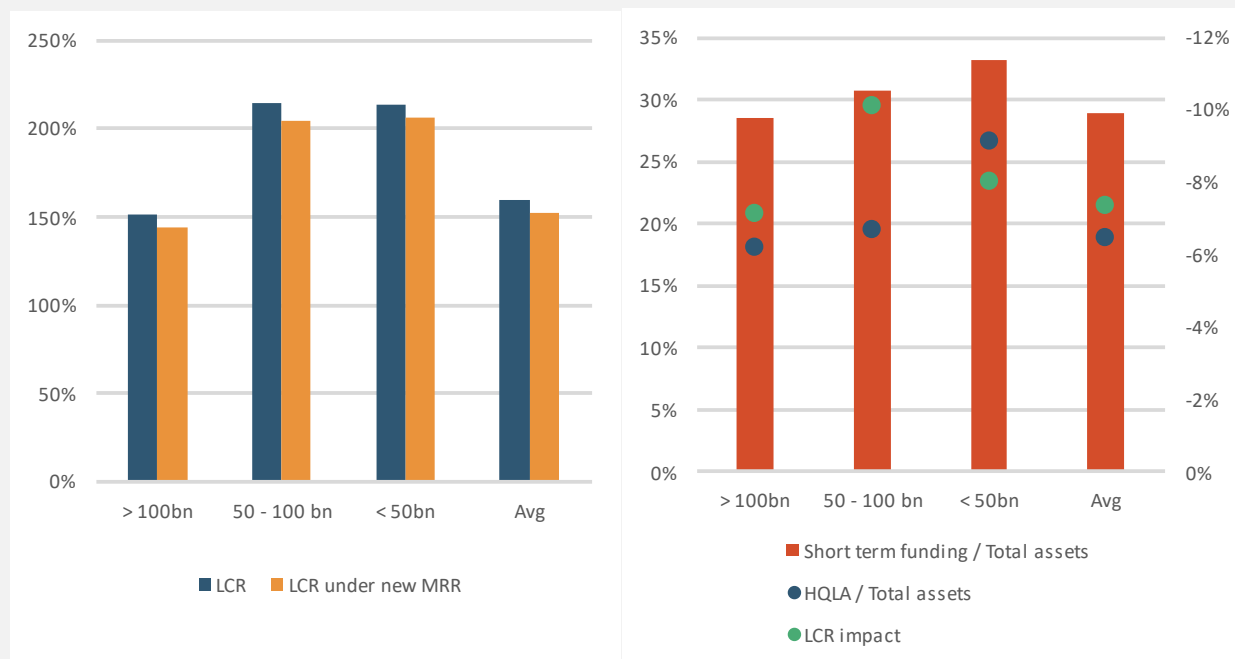
Sources: COREP and EBA calculations.

Looking at individual institutions, four outlier banks show a decline in LCR by more than 50 pp. These banks show both above average shares of short-term funding over total funding (the average of the sample is 29%) and below average shares of HQLAs of total assets (the average HQLA over total assets is 19%). The banks with impact ranging from 20 to 50 percentage points of LCR are in total 29 banks (14% of the number of banks in the sample). Out of those 29 banks, 26 have above average share of short-term funding over total funding. Other two banks have a very low share of HQLA over total assets, which is unable to withstand additional shocks or requirements. Lastly, one bank differs from the two previous groups because the high impact is explained by a very high starting point LCR, rather than a high share of short-term funding or low level of HQLA, because the bank reports a below average short-term funding and above average HQLA over total assets. Banks with more moderate LCR impact feature either low shares of short-term funding, high levels of HQLA holdings, or both.

Taken together, a possible increase of MRR combined with the scheduled repayment of the remaining amount of TLTRO-3 in June 2024, six EU banks would end up with a LCR below 100%. Four of those banks show an above-average impact of the increase in MRR, two banks because of a high share of short-term funding and two banks because of a low share of HQLAs over total assets.

Figure 16: LCR impact and short-term funding over total funding, June 2023
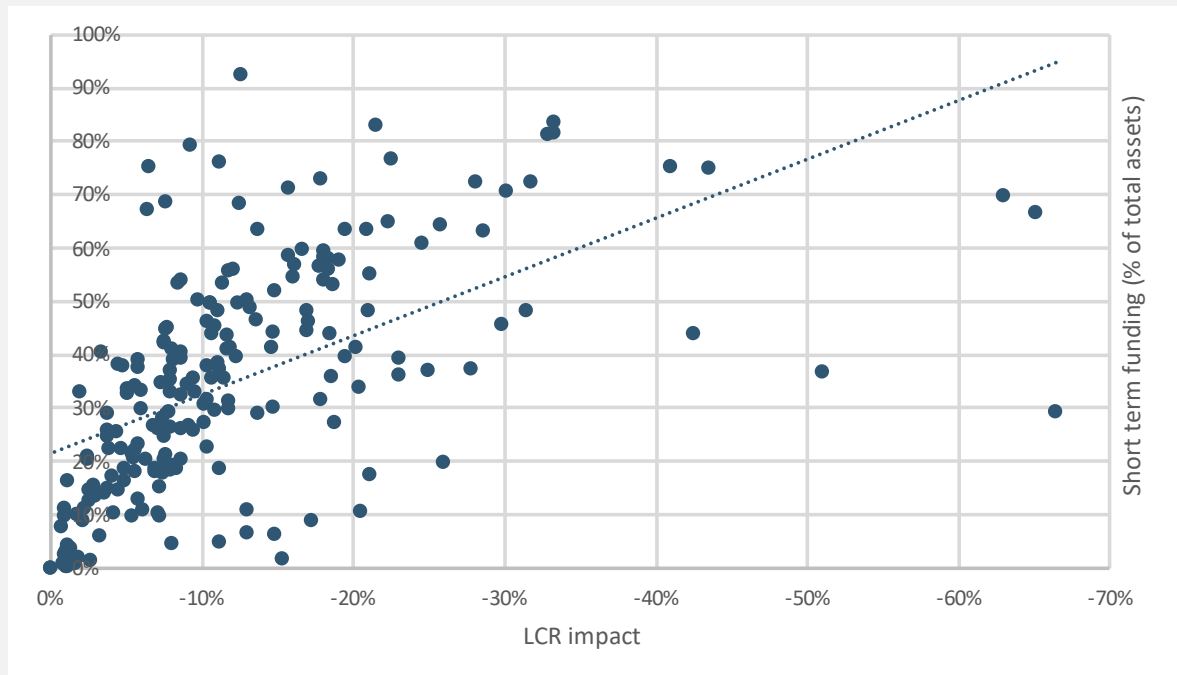
Sources: Supervisory reporting and EBA calculations.

Figure 17: LCR impact and HQLA assets over total assets, June 2023
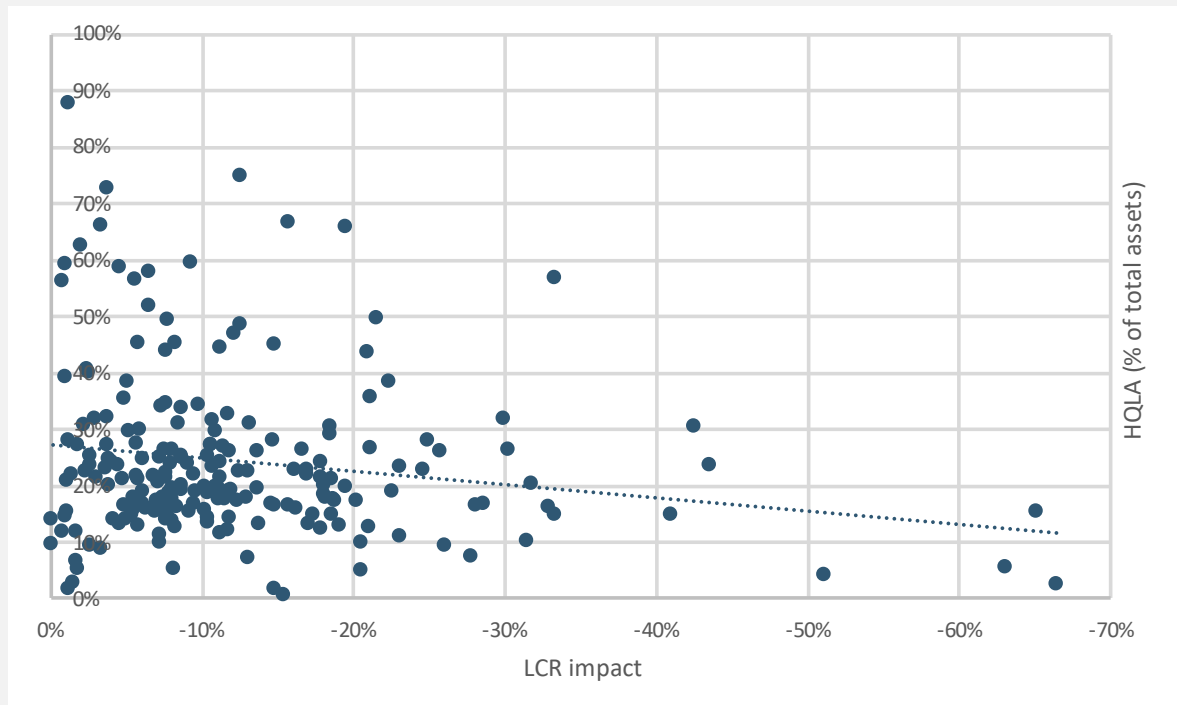
Sources: Supervisory reporting and EBA calculations.

Figure 18 shows the composition of liquid assets as a share of total assets by country as of June 2023. The bulk of liquidity buffers consists of Level 1 assets in the form of cash, central bank reserves and securities (also EHQCBs), but with a decreasing trend. G-SIIs and O-SIIs, on average, tend to hold higher shares of central bank reserves and lower levels of securities (including EHQCBs) than 'other banks'. Overall, the average liquidity buffer (before the application of the cap on liquid assets) is approximately 19.5% of total assets for all banks (19.2% for G-SIIs and O-SIIs and 21.4% for other banks).

Article 17 of the LCR DR sets the minimum requirements for the composition of the liquidity buffer by asset category. A minimum of 30% of the liquidity buffer is to be composed of Level 1 assets, excluding EHQCBs. Aggregate Level 2 assets should not account for more than 40%, and Level 2B assets should not account for more than 15% of a bank's total stock of HQLAs.

The composition of the liquid assets depends largely on the business models of the institutions and also reflects differences across EU countries. While liquidity buffers comprise mainly Level 1 assets in all countries, banks in 44% of the countries have a share of cash and central bank reserves above 50% of liquid assets; banks in 38% of the countries rely on Level 1 securities (excluding covered bonds). On average, Lithuania and Cyprus are the countries with a larger share of cash and central bank reserves in their total liquidity buffer (91% and 84% of the total liquidity buffer), whereas Czech Republic, Poland and Romania have the biggest share of Level 1 securities (between 87% and 94% of the total liquidity buffer). Covered bonds contribute significantly to the liquidity buffer in Denmark (41% of the total liquidity buffer), Finland (20%), Norway (19%) and Sweden (11%).

Figure 18: Composition of liquid assets (post-weight and before the cap) relative to total assets (as of June 2023)

Level 1 - Cash and central bank reserves ■ Level 1 - Securities ■ Level 1 - Covered bonds ■ Level 2A ■ Level 2B
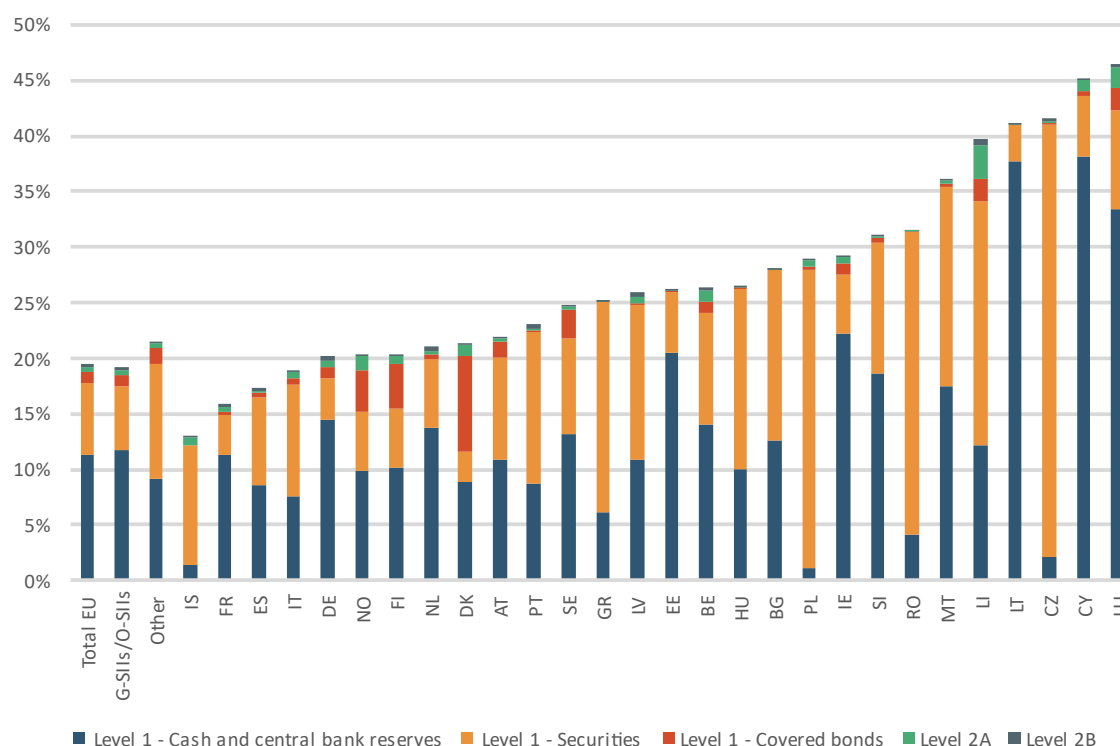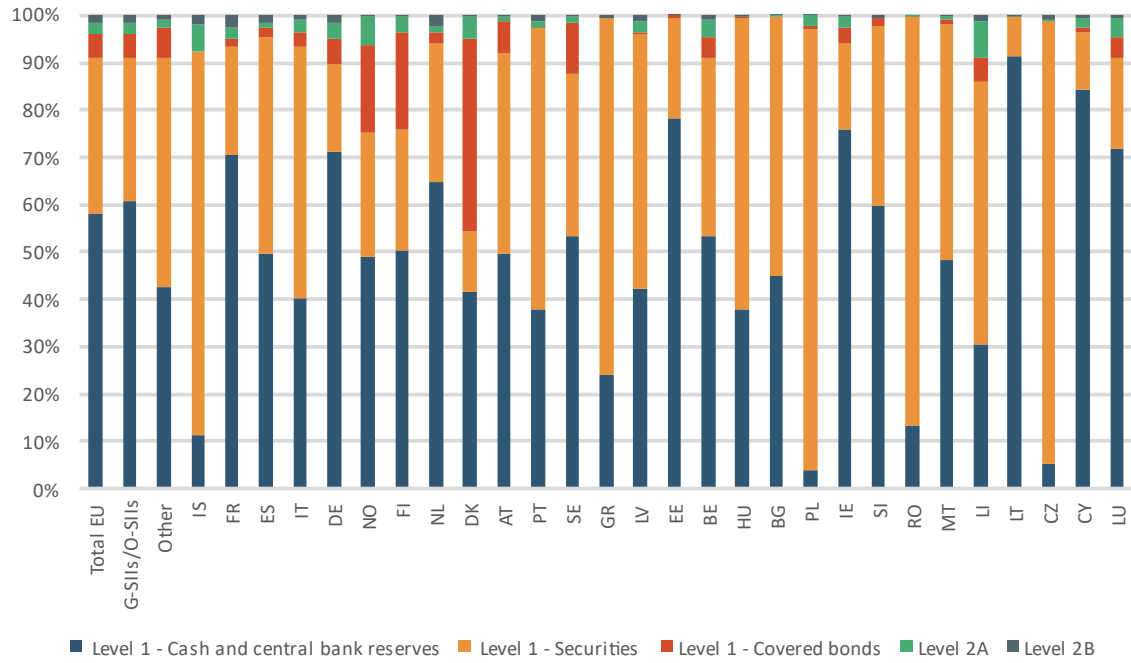
Source: Supervisory reporting and EBA calculations.

Box 3: Interactions between non-standard monetary policy measures and the LCR liquidity buffer

Monetary policy operations can have direct implications for banks' liquid asset holdings because liquidity provided by central banks is commonly held in the form of exposures to central banks (withdrawable central bank reserves or other assets representing claims on or guaranteed by central banks), which are currently one of the major components of banks' liquidity buffers. The evolution of liquidity buffers since 2015 has indeed been influenced by the ECB's targeted longer-term refinancing operations (TLTROs) and the asset purchase programme in the euro area, as well by the quantitative easing (QE) or asset purchase programmes carried out by other EU central banks.[23]

Banks' central banks assets were boosted with the pandemic emergency purchase programme (PEPP) launched in March 2020 and targeted to both the public and the private sector. Also, the ECB improved the conditions of the TLTRO-3[24] programme and in operations between September 2019 until December 2021, euro area banks took up a total of EUR 2,339 bn of TLTRO-3 funds. This additional central bank funding provided explained the increase in the contribution to the LCRs of central bank assets and exposures from December 2019 to December 2021. In the first half of 2023, central bank assets and exposures dropped by 3% for the total sample (3% for G-SIIs and O-SIIs and 11% for other banks), while other liquid assets dropped by 1% (2% for G-SIIs and O-SIIs and 1% for other banks).

---

[23] The proceeds of the central bank asset purchases add to the banks' liquidity buffers insofar as the central bank acquires the assets from the banks. However, in QE operations the central banks are not restricted to the use of banks as counterparties but can purchase assets from a broader set of counterparties. However, even these counterparties tend to deposit the proceeds from the central bank QE purchases in the banks, thus adding to the banks' liquidity position.

[24] The Governing Council's decisions of 12 March and 30 April 2020 have secured the transmission of monetary policy via banks at times of elevated uncertainty and high liquidity needs by expanding banks' borrowing allowance under TLTRO III from 30% to 50% of the eligible loan book (providing an additional leeway of approximately €1.2 trillion) and reducing the interest rate applied on these operations to a rate as low as -1% until June 2021 for banks fulfilling the lending requirements.

Figure 19: Evolution of central bank assets and exposures over time (EUR billion) — total sample (left) and G-SIIs and O-SIIs (right).
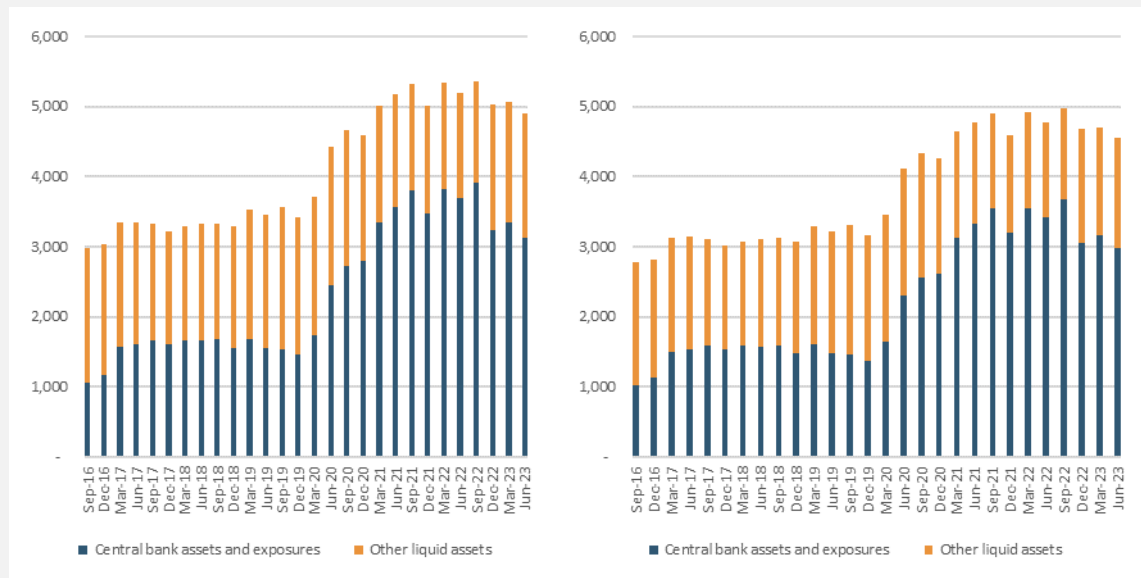
Source: Supervisory reporting and EBA calculations.

Figure 20: Evolution of central bank assets and exposures over time (EUR billion) — other banks
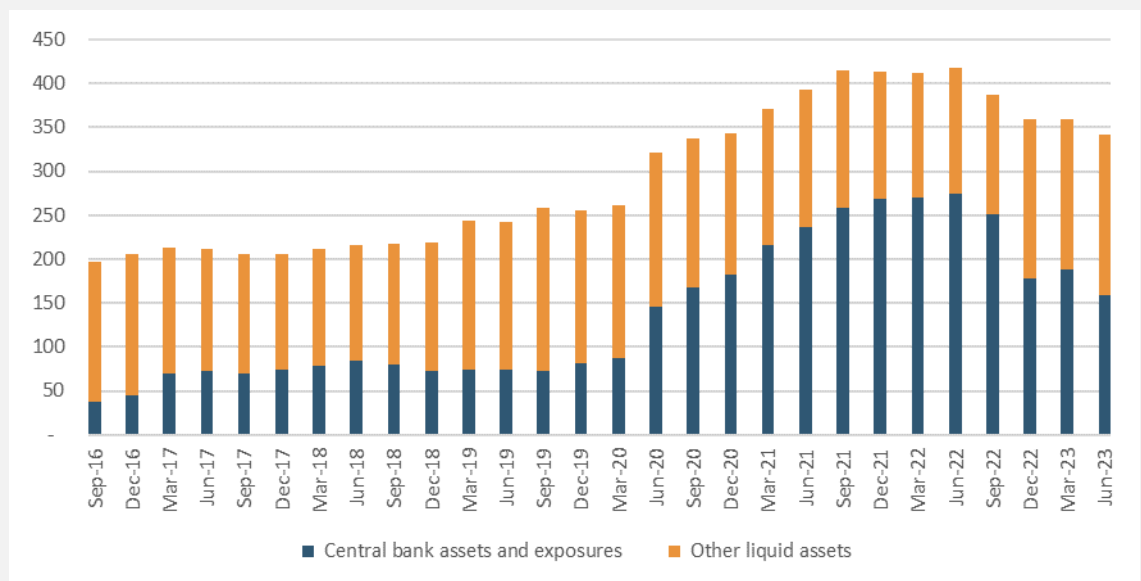
Source: Supervisory reporting and EBA calculations.

Repayments in central bank credit operations, in particular from TLTRO III, reduced the amount of central bank reserves in the system and had a negative effect on banks' LCR. The biggest share of TLTRO-3 matured in 2023. As discussed in detail in the box analysing the June 2023 repayment, when paying back the TLTRO-3 loans most banks drew on their LCR eligible deposits, including deposits at central banks, without fully replacing the TLTRO-3 loans by market-based funding. This was already forecast in banks' funding plans, as they only envisaged a partial substitution

for market-based and deposit funding. Also, banks' funding plans envisaged a declining LCR, which actually occurred particularly for banks with outstanding amounts of TLTRO as of 2023Q1.

Apart from the TLTRO repayment, central bank assets declined because of the quantitative tightening undertaken by the ECB. In December 2022, the European Central Bank (ECB) announced the start of the unwinding of its portfolio of assets purchased since 2015. Thus, the ECB reduced its holdings by EUR 15 billion per month between March and June 2023. Under this new scenario, banks would have to modify their funding strategies and, where necessary, the composition of their HQLAs in order to retain their liquidity buffers and to comply with the required composition of HQLA assets.

Composition of outflows and inflows

Net liquidity outflows are defined as the difference between liquidity outflows and liquidity inflows and are required to be positive.[25] Liquidity outflows are calculated by multiplying the outstanding balances of various categories or types of liabilities and off-balance-sheet commitments by the rates at which they are expected to run off or be drawn down.[26] Liquidity inflows are assessed over a period of 30 calendar days. They comprise only contractual inflows from exposures that are not past due and for which banks have no reason to expect non-performance within 30 calendar days. To prevent banks from relying solely on anticipated liquidity inflows to meet their LCR, and to ensure a minimum level of liquid assets holdings, the amounts of inflows that can offset outflows is generally capped at 75% of total liquidity outflows.[27] However, unlike the Basel LCR standard, the EU LCR regulation provides certain exemptions to this cap, either full or partial, although these are subject to a prior approval by competent authorities[28] and require compliance with certain conditions established in the regulation. These include a potential exemption for intragroup and intra-institutional protection scheme flows as well as exemptions for banks that specialise in pass-through mortgage lending or in leasing and factoring businesses. In addition, banks that specialise in financing the acquisition of motor vehicles or in consumer credit loans may apply a higher cap of 90%.

With data as of June 2023 the ratio of total liquidity outflows over total assets has decreased since June 2022. As of June 2023, on average, cash outflows (post-weight) represent approximately 17% (-0.46 p.p since June 2022) of total assets of the banks in the sample. G-SIIs and O-SIIs present higher shares (17.73% as of June 2023, -0.37% since June 2022) than 'other banks' (12.64% as of June 2023, -0.76 p.p since June 2022). The decrease in outflows is concentrated in excess operational deposits and operational deposits, and the composition has not changed significantly since June 2021. The share of outflows from retail deposits of total assets is similar for both groups

---

[25] Article 20 of the LCR DR.

[26] Article 22(1) of the LCR DR.

[27] Article 33 of the LCR DR (with the approval of the competent authority, specialised credit banks may be subject to a cap of 90% on inflows, and these banks may be fully exempt from the cap on inflows if their main activity is leasing and factoring business).

[28] Article 33 of the LCR DR.

of banks (around 2% of total assets both reporting dates). However, in total cash outflows, 'other banks' present a higher share of retail deposits outflows (14% of total cash outflows compared with 12% of total cash outflows for G-SIIs and O-SIIs). As expected, for both groups of banks (G-SIIs and O-SIIs and 'other banks'), the main component of the cash outflows is non-operational deposits (e.g. short-term deposits from financial and non-financial customers), which tend to have higher run-off rates compared to retail deposits and account for 4.8% of total assets for ´other banks´ and 5.8% of total assets for G-SIIs and O-SIIs. Excess operational deposits account for 0.7% for ´other banks´ and 1.2% for G-SIIs and O-SIIs. A similar composition of outflows is found when analysing results by country.

Figure 21 Composition of cash outflows (post-weight) relative to total assets (as of June 2023)
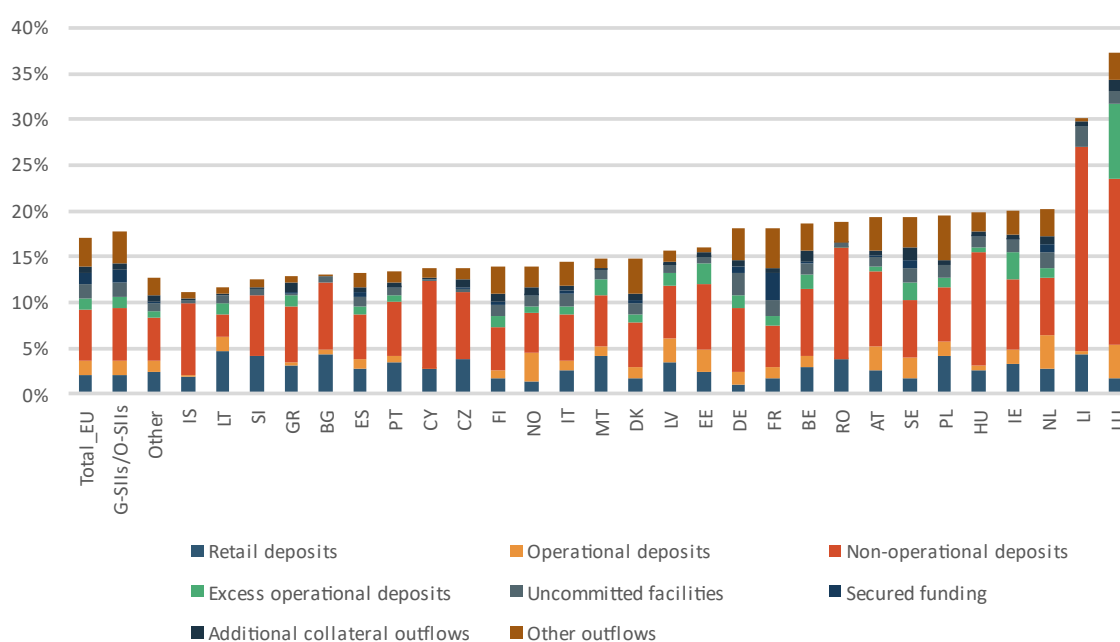
Source: Supervisory reporting and EBA calculations.

Furthermore, banks should take into account additional outflows that correspond to the collateral needs resulting from the impact of an adverse market scenario on banks' derivative transactions and other contracts, in case these are considered to be material.[29] The share of outflows from collateral swaps into total assets is around 0.5% of the total assets for both groups of banks.

---

[29] Article 423(3) of the CRR and Article 30(3) of the LCR DR.

Figure 22: Composition of cash outflows (pre-weight) relative to total assets (as of June 2023)
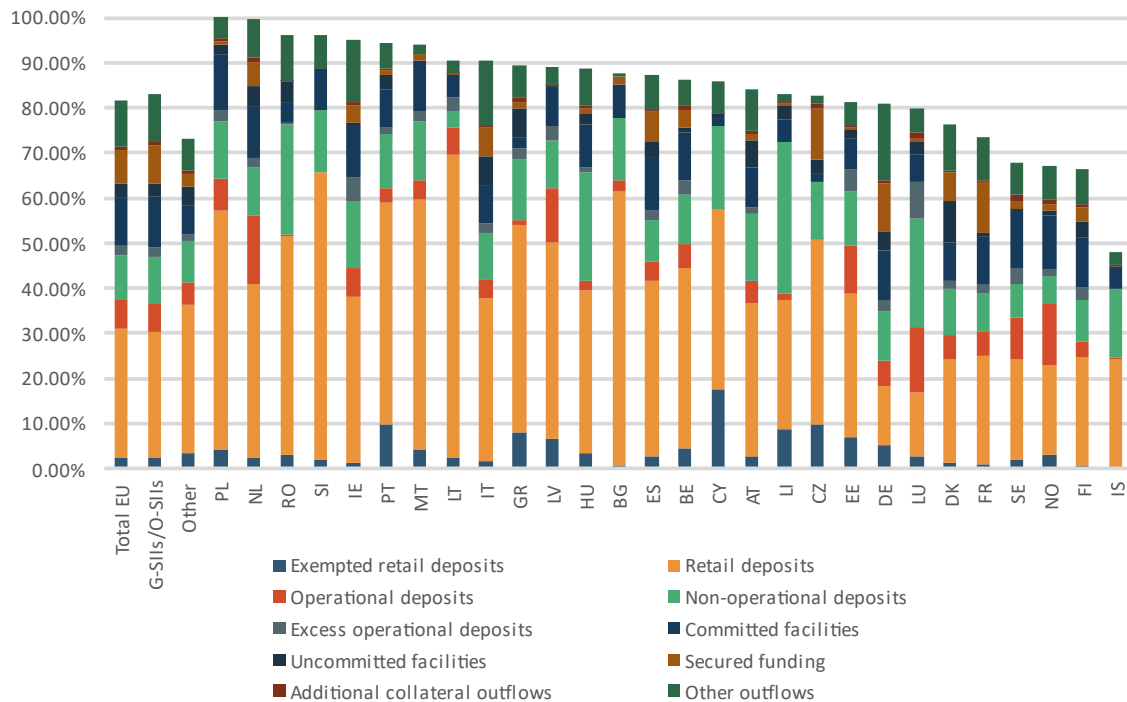
Source: Supervisory reporting and EBA calculations.

Figure 22 shows the share of cash outflows (pre-weight) over total assets. As expected and due to the high haircuts applicable to this category of outflows, outflows from retail deposits become the category with the highest share over total assets before the application of weights (around 29% of the total assets for all categories of banks). For both large and small banks, around 2.4% corresponds to retail deposits that are exempted from the calculation of LCR outflows. The share of retail deposits exempted from the calculation of LCR outflows becomes important in some countries like Cyprus (17.6% of total assets).

Cash inflows relative to total assets for G-SIIs and O-SIIs are 5% of total assets. This share is higher than for 'other banks' (2.9%), (Figure 23). The results by country show heterogeneity in the composition of inflows, with 16 countries showing a higher share of financial customer cash inflows, 5 countries showing a higher share of inflows from non-financial customers, 5 countries showing a higher share of inflows from secured lending and 1 country showing a higher share of other inflows.

Figure 23: Composition of cash inflows (post-weight and before the cap) relative to total assets (as of June 2023)
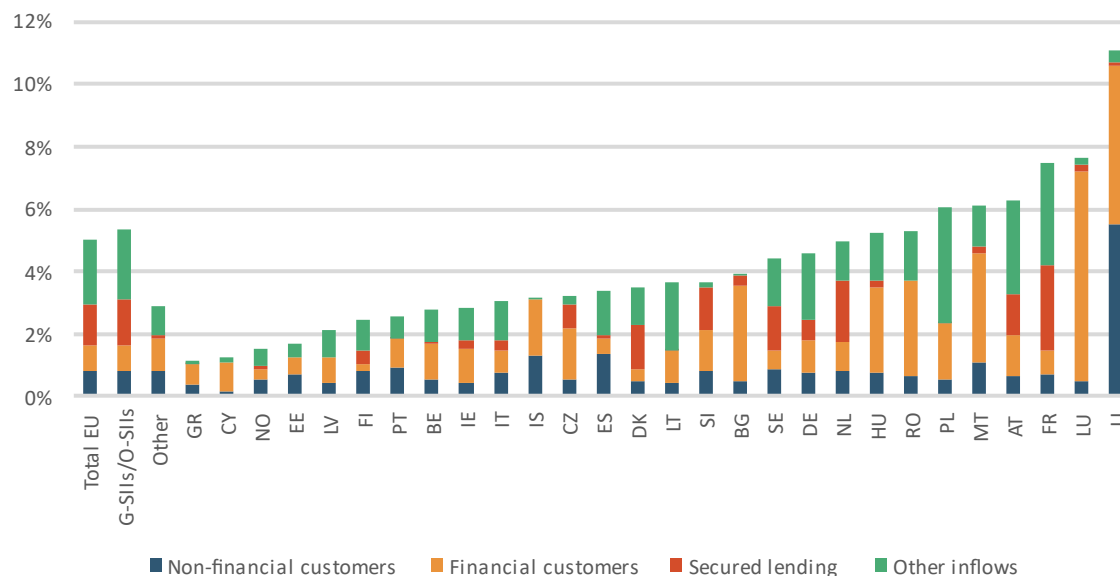
Source: Supervisory reporting and EBA calculations.

Figure 24 summarises the parameters of the LCR and shows the offsetting effect between outflows (indicated in blue) and inflows (indicated in orange) and then illustrates the extent to which the liquidity buffer exceeds the level of net liquidity outflows (portion above the dotted line).

The largest component reducing the LCR is outflows stemming from unsecured lending. This is in line with expectations, for two reasons. First, unsecured funding, especially non-operational deposits, constitutes a large part of banks' outflows. Second, the applicable outflow rates for these financial products are high. More specifically, outflows stemming from unsecured lending amount to around 11% of total assets. Within this category, non-operational deposits are the most important category (5.6% of total assets). Operational and retail deposits (which have lower run-off rates) account for only 3.6% of total assets (2.1% for retail deposits and 1.5% for operational deposits).

Figure 24: Dynamics of the liquidity buffer, outflows and inflows (as a share of total assets), June 2023
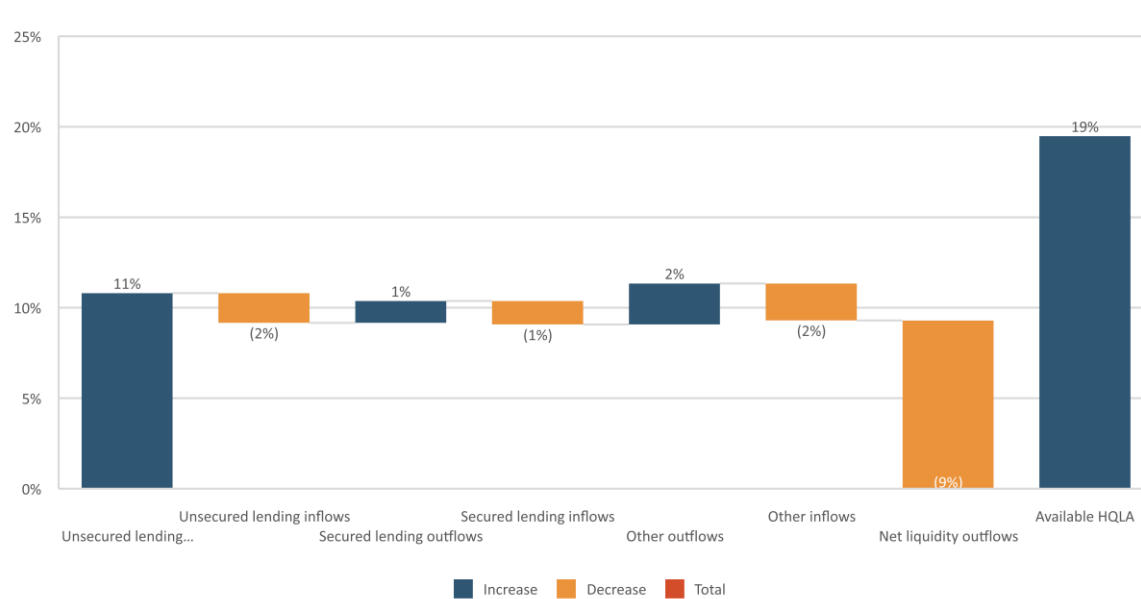
Source: Supervisory reporting and EBA calculations.

The low share of outflows from secured funding relative to total assets (1%) is driven by two aspects:

- Secured funding transactions that are conducted with the central banks receive a 0% outflow rate (irrespective of the liquidity quality of the underlying collateral), hence the column in Figure 24 for outflows from secured lending represents only secured transactions with counterparties in the interbank market.

- In addition, on average, most secured funding transactions that are conducted with other counterparties (and that fall into the LCR time horizon) are secured by liquid assets, and those transactions are subject to lower outflow rates (e.g. 0% outflow rate for secured funding transactions backed by Level 1 assets, and 15% outflow rate for secured funding transactions backed by Level 2A assets).

The final column represents the liquidity buffer that banks hold to meet their net liquidity outflows and also shows that banks hold, on average, a liquidity buffer of 19% of their total assets.

Analysis of the LCR by business model

The impact of the LCR may also differ depending on bank-specific business models, mostly because banks with different business models tend to follow different funding strategies. Therefore, the categorisation of banks by business model used in this report[30] also takes into account their specific funding structures. Table 1 indicates the main sources of funding that are generally used by banks under different business models, according to the aforementioned categorisation. Nevertheless, this list is not comprehensive and other sources of funding may be used by specific business models. Some of the business models defined in this report cannot be linked to any specific source of funding. If this is the case, the relevant row has been greyed out in Table 1.

Table 1: Main sources of funding by business model

Business model		Main sources of funding			
		Deposits from retail clients	Wholesale funding	Derivatives	Covered bonds
Universal banks	Cross-border universal banks	✓	✓	✓(+)	✗
	Local universal banks	✓	✓	✓(-)	✗
Retail-oriented banks	Consumer credit banks				
	Cooperative banks	✓	✗	✗	✗
	Savings banks	✓	✗	✗	✗
	Mortgage banks	✓	✗	✗	✗
	Private banks				
Corporate-oriented	Corporate-oriented				
Other - specialised banks	Custodian banks				
	Pass-through	✗	✗	✗	✓
	Public development banks				
	Other specialised banks				

Cross-border universal banks and local universal banks both use derivatives products as a source of funding, although this type of funding is generally more common for cross-border universal banks. In Table 1, if a source of funding appears with a cross for a specific business model, it means that banks of that specific business model are generally less likely to obtain funding from that specific source. Custodian banks have a specific funding structure that relies predominantly on client operational deposits. The operational deposits are kept by clients at custodians for payment and securities settlement purposes.

A different funding strategy will determine the structure of the banks' liabilities and could affect their LCR levels via the net liquidity outflows that are linked to those liabilities (the denominator of the LCR). Indeed, the comparison between two banks with exactly the same size and composition of total assets but with different funding structures will (evidently) show different LCR levels. If a

---

[30] See Table 6 in Annex 1 (business model categorisation).

bank sources its funding predominantly from retail deposits, it shows a lower level of net liquidity outflows than if the bank relies on wholesale funding. This is because the latter type of funding is subject to higher run-off rates.

Data confirms that there is a wide dispersion in the LCRs across different business models in the EU banking sector (Figure 25). A sample of 372 banks was used to analyse the impact of the LCR requirement across different business models. Subsidiaries are included in the analysis to take into account the diversity of business models within the overall banking groups (subsidiaries with the same business model as their parent company have been excluded from the analysis to avoid double counting). One caveat to the analysis is the representativeness of the sample, since there is a high concentration of banks in some business models while there are only few banks in some of the others.[31] Results should therefore be interpreted with caution and should be contrasted with the sample size of the relevant business model category.

For all business models, the LCR exceeds, on average, the minimum requirement of 100%. Retail-oriented banks (an average LCR of 211% in December 2022 and 230% in June 2023) present the highest LCRs, well above the EU average. Contrarily to the evolution of the EU average, retail-oriented banks and banks classified in other business models increased their average LCR, reaching a level of 230% and 202% as of June 2023, respectively. The rest of the business models declined their LCR in the same period. Other specialised banks experienced the biggest LCR reduction (from 187% in December 2022 to 178% in June 2023), followed by corporate-oriented banks that reduced their LCR to a level of 165% as of June 2023 (from 171% as of December 2022) and universal banks that reduced their LCR to a level of 156% as of June 2023 (from 161% as of December 2022).

---

31 Custodian banks, public banks, mortgage banks and pass-through banks are the business models with lower representation. The sample broken down by business model category is shown in Table 13 in the Annex. The definitions of the business models are presented in Table 17 in the annex.

Figure 25: LCR across business models — balanced sample
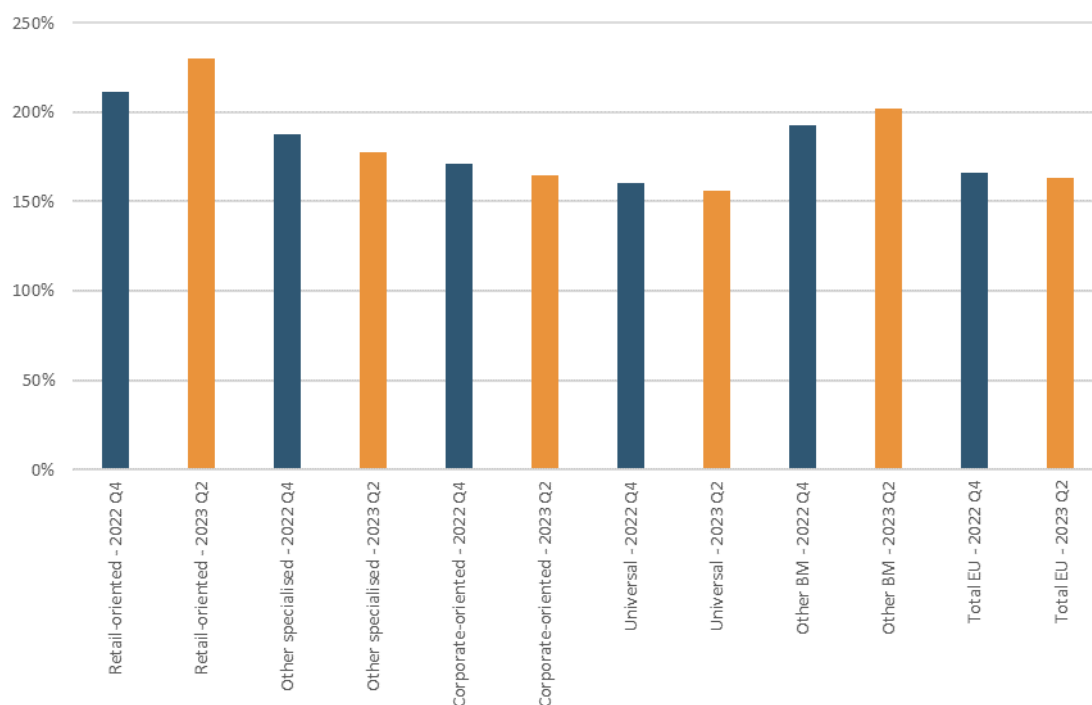
Nevertheless, looking only at LCR levels, it is difficult to understand the implications of the different business models. The ratio of HQLA to net liquidity outflows shows which business models tend to primarily achieve their target LCR levels by adjusting HQLA levels as opposed to those that pursue their LCR levels by adjusting net liquidity outflows. Universal banks show HQLA ranges from 4% to 62% of total assets and ratios of net liquidity outflows to total assets of between 2% and 33%. Banks with low ratios of HQLA or net liquidity outflows to total assets are not those with low LCR ratios. Instead, universal banks with LCR ratios below 140% (well below sample average) have HQLA ratios above 15% of total assets and net liquidity outflow ratios above 10% of total assets. None of the universal banks with low liquidity, measured as a ratio of HQLA below the sample average (19.5% as of June 2023), reports an LCR below 140%.

Other business models, such as retail-oriented banks, show even higher dispersions (with HQLA ranging from 1% to 88% of total assets and ratios of net liquidity outflows to total assets ranging from 1% to 50%). However, none of the retail-oriented banks that report a ratio of HQLA below the sample average has a LCR below 140% as of June 2023.

Figure 26: HQLA and net liquidity outflows (as shares of total assets), per business model (as of June 2023)
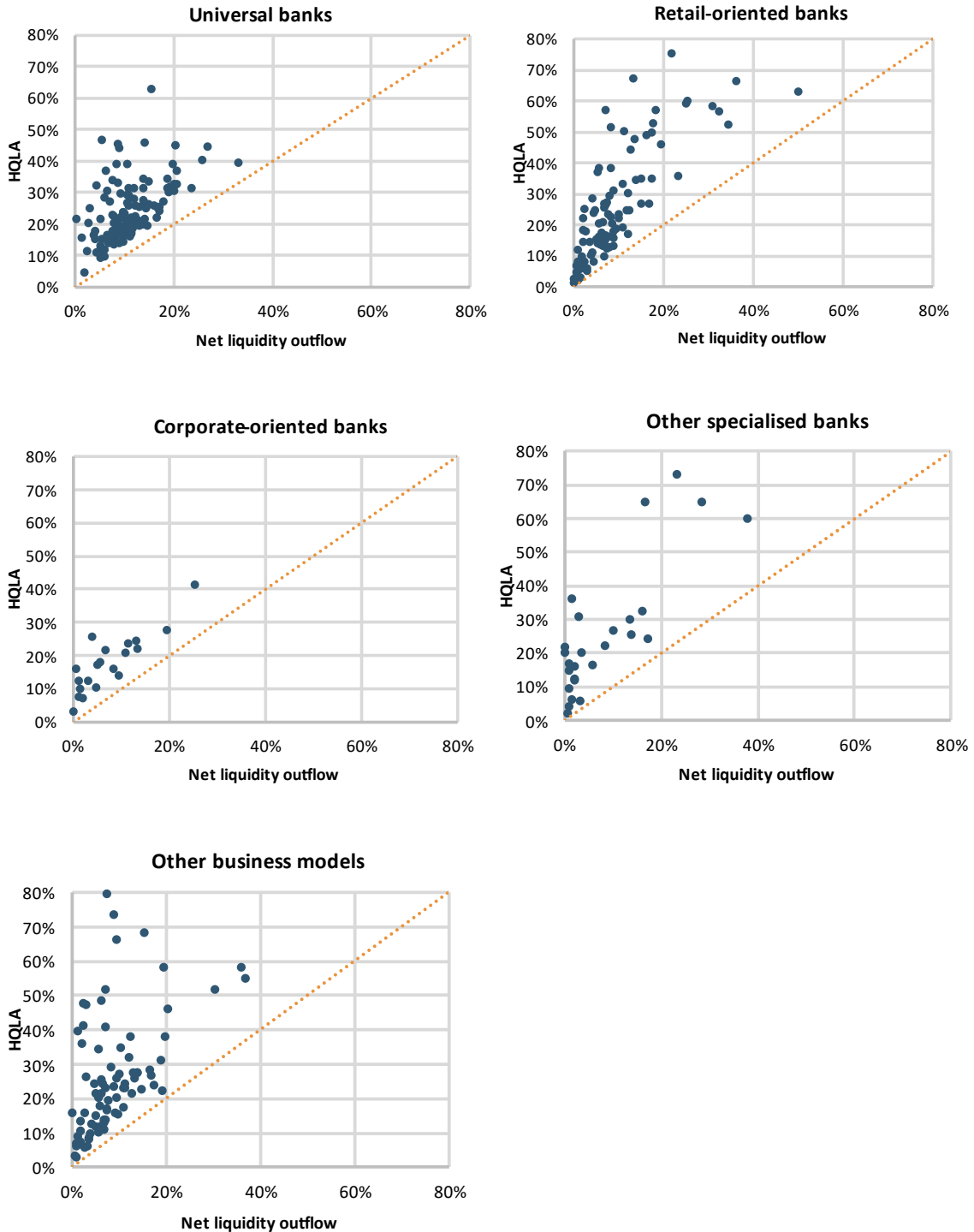
The composition of liquidity outflows may help to explain whether the structure of the LCR is influenced by the business model. Figure 27 shows the comparison between the composition of eligible LCR outflows before and after the application of haircuts. The highest share of outflows for custodians is explained by the share of operational deposits (58% of total assets as of June 2023). For cooperative banks, saving banks, other business models and local universal banks the data confirms that the highest share of outflows is related to retail deposits (61%, 52%, 52% and 46% of total assets, respectively). This means that these business models see the highest reductions in outflows after the application of haircuts.

For corporate-oriented banks, cross-border universal banks and local universal banks, the data confirms that the share of wholesale funding is also important. For these banks, the share of non-operational deposits over total assets is 15%, 14% and 13% of total assets, respectively. As these business models also have an important share of retail deposits (26%, 32% and 46% of total assets, respectively), they benefit from a strong reduction in outflows after the application of haircuts, although this reduction is proportionally less significant than for those business models that obtain higher shares of retail funding. Cross-border universal banks and corporate-oriented banks also have an above average share of committed facilities (10% and 9% of total assets, respectively). As a result, the reduction of liquidity outflows after the application of haircuts is somewhat less important for this business model than for those with higher shares of retail deposits.

Public banks and pass-through banks show the lowest reductions of outflows after the application of haircuts. These business models do not have (or have very low levels of) outflows related to retail deposits (0.01% and 3% of total assets, respectively) that fall within the scope of the LCR, i.e. the 30-calendar-day time horizon.

Figure 27: Comparisons of pre- and post-weight cash outflows relative to total assets, per business model, June 2023
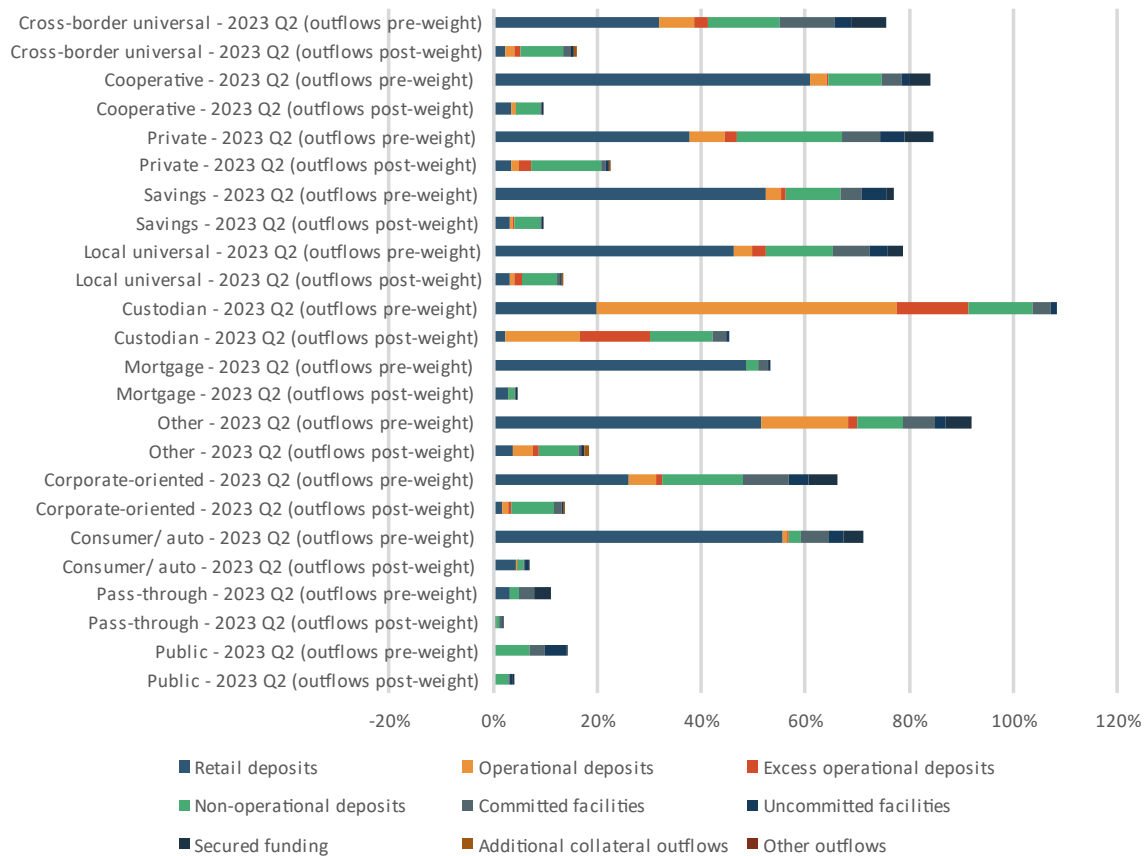
Source: Supervisory reporting and EBA calculations.

Figure 28 shows the evolution of cash outflows (post-weight) between December 2022 and June 2023. As shown in Figure 21, cash outflows (post-weight) slightly declined for the total sample in the first half of 2023. This decline was driven by the main business models, as the amount of cash outflows with respect to total assets decreased for seven business models (custodian, cross-border universal, local universal, private, savings, cooperative and pass-through) and increased in the rest (consumer/auto, public, mortgages, corporate-oriented and other business models).

Figure 28: Composition of cash outflows (post-weight) relative to total assets by business model — balanced sample
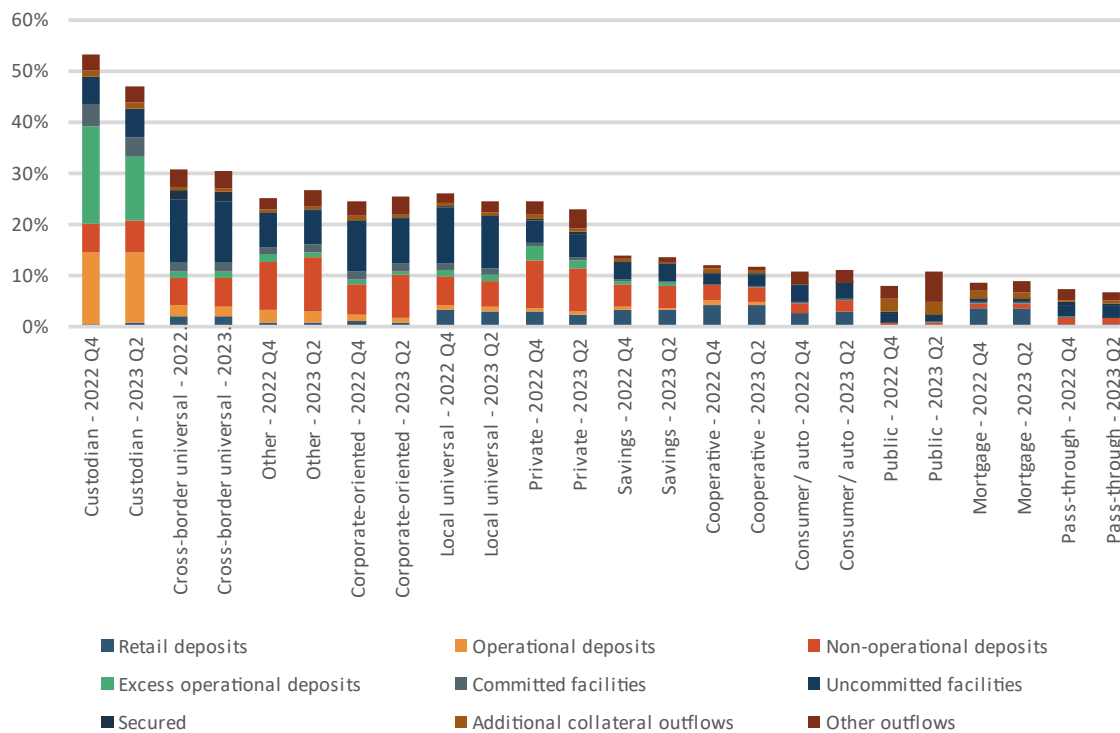
Source: Supervisory reporting and EBA calculations.

The share of cash inflows (post-weight and before the cap) relative to total assets is, on average, less than 8% across business models, except for custodian banks (around 9.4% for the two reporting dates).

Figure 29: Composition of cash inflows (post-weight and before the cap) relative to total assets, per business model — balanced sample
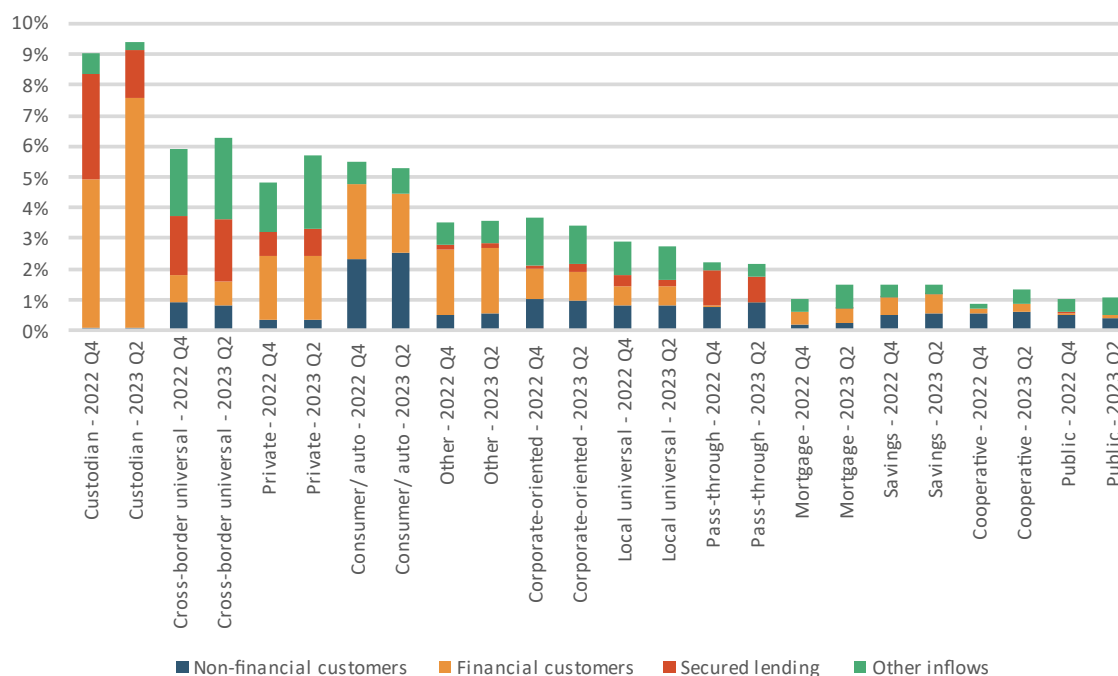
Source: Supervisory reporting and EBA calculations.

Taken together, as of June 2023, the composition of liquid assets per business model (Figure 30) and the overall high level of the LCR confirm that the liquidity buffer is of high quality (as defined in the CRR). The composition of HQLAs shows a high share of Level 1 assets in all business models, and HQLAs constitute a similar share (between 6% and 62%) of total assets across most business models. Pass-through banks show the lowest share of HQLAs (around 6% over total assets) and use a higher proportion of Level 1 covered bonds than the remaining business models, in line with the specific funding structure of this business model. For most categories of business models, cash and central bank reserves account for the higher share of total assets, except for cooperative banks, savings banks, public banks and cross-border universal for which Level 1 securities are the main component. In the first half of 2023, liquid assets declined for private, local universal, savings and pass-through. All of them declined cash and central bank reserves with the exception of cross-border universal banks.

Figure 30: Composition of liquid assets (post-weight and before the cap), relative to total assets, per business model — balanced sample
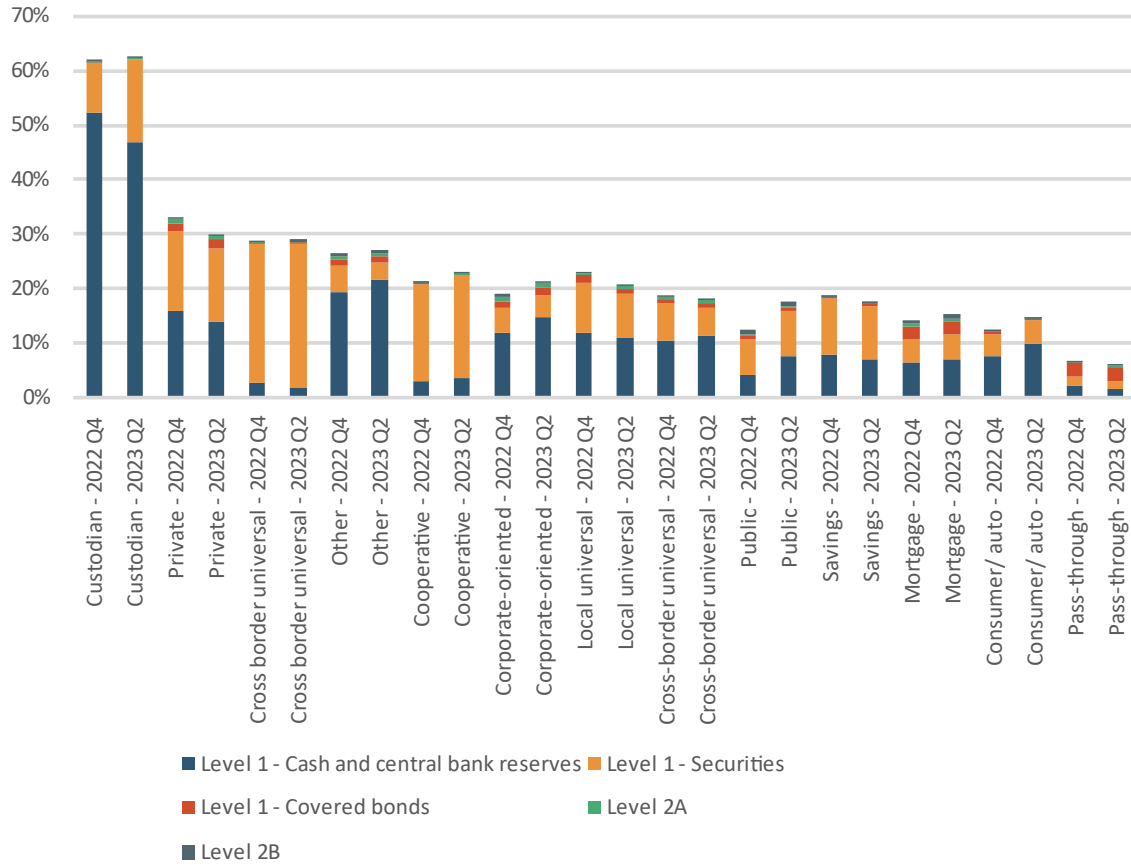
Source: Supervisory reporting and EBA calculations.

LCR — analysis of currency mismatch

Rationale for the analysis

Banks regularly finance their assets in a currency that is different from that in which the assets are denominated. There are several reasons for this, ranging from diversification, price and supply factors to structural drivers.

In the aftermath of the global financial crisis, currency mismatch in funding and the liquidity of asset buffers became important aspects to consider. In 2011, the European Systemic Risk Board (ESRB) published a recommendation on US dollar denominated funding of credit institutions (ESRB/2011/1) and significant currency-denominated funding of credit banks (ESRB/2011/2). In addition, Article 8(6) of the LCR DR requires banks to ensure that the currency denomination of their liquid assets is consistent with the distribution by currency of their net liquidity outflows. Where appropriate, competent authorities may require credit institutions to restrict currency mismatches by setting limits on the proportion of net liquidity outflows in a currency that can be met during a stress period by holding liquid assets not denominated in that currency.

In normal times, it is expected that banks can easily swap currencies and can raise funds in foreign currency markets. However, the ability to swap currencies may be constrained during stressed conditions (as seen during the financial crisis). For instance, counterparty credit risk and currency-specific liquidity risk can cause significant dislocations in foreign exchange (FX) swaps markets, preventing the smooth transfers of liquidity internally from one currency to another. Indeed, this became particularly obvious following the banking turmoil after the failure of three medium-sized banks in the United States – Silicon Valley Bank, Signature Bank and later First Republic – as well as the takeover of Credit Suisse in Switzerland, which translated in a very significant widening of the USD-EUR cross currency basis swaps mid-March 2023.[32] Such widening implies that USD funding has become more expensive for Euro area banks.

Moreover, the analysis of the overall maturity mismatch and liquidity coverage between assets and liabilities across all currencies is useful in order to disentangle and assess possible large funding/outflow risks for some specific currencies. The risk profile of an institution in a specific currency could be blurred by different maturity mismatches across currencies. LCR reporting broken down by significant currencies allow for monitoring of the inherent currency risk in the institution's LCR requirements.

The analysis below uses an indicator of the LCR ratio to compare total figures across all currencies against figures per individual significant (foreign) currency[33] (limited to euro, US dollar and sterling

---

[32] See Figure 53 of the 2022 EBA Risk Assessment report.

[33] Article 415(2) of the CRR indicates that a currency is considered significant if the currency-denominated liabilities are higher than 5% of total liabilities. The analysis is limited to foreign significant currencies, meaning that only significant

pound). First, the analysis shows the LCR by significant currencies as of June 2023. Second, the analysis shows the indicator of the liquidity buffer over net cash outflows developed per significant currency and it studies any currency patterns in the liquidity profiles of banks. The analysis sheds light on the banks' liquidity coverage by individual significant currencies.[34]

LCR by significant currencies

The weighted average LCR by all significant currencies (domestic and foreign) across the sample of EU/EEA banks stood at 163% as of June 2023, with none of the banks reporting levels below 100%. The LCR in EUR as a significant currency stood at 157%, with only 10 banks out of the 153 reporting the LCR in EUR as a significant currency (both domestic and foreign) showing a level below 100%. The LCR in USD as a significant currency stood at 97%, with 51 banks out of the 95 reporting the LCR in USD as a significant currency (both domestic and foreign) showing a level below 100%. The LCR in GBP as a significant currency stood at 108%, with 15 banks out of the 30 reporting the LCR in GBP as a significant currency (both domestic and foreign) showing a level below 100%.

For most countries, the total LCR is higher than the LCR when considering only each individual significant currency (euro, USD and GBP), meaning that banks are likely to hold a higher liquidity buffer in relation to their net cash outflows in the national currency than in significant (foreign) currencies. Thus, at aggregate level, the surplus in liquidity coverage in all currencies more than offsets the liquidity shortfall in other significant currencies. Such differences between the liquidity surplus and the net cash outflows in a given currency are particularly relevant for USD and GBP. Indeed, a number of banks showed LCR USD and LCR GBP significantly below the 100% threshold and in some cases close to 0% while none of the banks of the sample presented an overall LCR below 100%.

The EU liquidity regulation requires banks to ensure consistency between liquid assets and net liquidity outflows in the LCR that are denominated in the same currency. Low levels of LCR in one significant currency may create problems during stress periods when liquidity sources may become constrained and the FX swaps markets may become difficult to access. Indeed, the rising geopolitical tensions in Europe during 2022 and the banking turmoil of the first quarter of 2023 led to a widening of the USD-EUR cross currency basis swaps, making USD funding more expensive for Euro area banks. Such a situation might pose a risk for some banks in case they need to quickly fill liquidity gaps in USD. In these cases, the competent authorities may make use of the discretion in Article 8 of the LCR DR which states that competent authorities may limit significant excesses of net outflows denominated in a significant or reporting currency (Article 8(6) of the LCR DR). Possible specific limits or quantitative restrictions may be implemented to correct mismatches in material cases.

---

currencies that are different from the legal currency in the country of origin of each individual bank are included, i.e. a UK bank with positions in euros, pounds sterling and US dollars over 5% of total liabilities will be considered in the analysis only for euros and US dollars but not for pounds sterling.

[34] The results are presented at an anonymised institution level and at aggregated level. An institution is included in the analysis under a specific indicator only if the relevant data is available for the total figures in the reporting currency and in at least one of the significant (and foreign currencies).

Table 2: LCR by significant currencies, June 2023

Country	EUR	USD	GBP	All significant currencies
AT	170	46	n.a.	**166**
BE	178	90	n.a.	**168**
BG	654	n.a.	n.a.	**302**
CY	n.a.	n.a.	n.a.	**378**
CZ	n.a.	n.a.	n.a.	**320**
DE	163	65	n.a.	**146**
DK	140	7	n.a.	**186**
EE	n.a.	n.a.	n.a.	**186**
ES	192	153	n.a.	**174**
FI	163	n.a.	n.a.	**173**
FR	144	88	48	**149**
GR	231	n.a.	n.a.	**212**
HU	147	n.a.	n.a.	**184**
IE	172	49	110	**170**
IS	n.a.	n.a.	n.a.	**164**
IT	n.a.	182	n.a.	**172**
LI	96	118	n.a.	**201**
LT	n.a.	n.a.	n.a.	**817**
LU	156	66	48	**171**
LV	186	259	n.a.	**196**
MT	354	n.a.	n.a.	**416**
NL	148	120	66	**159**
NO	170	n.a.	n.a.	**161**
PL	116	210	n.a.	**225**
PT	243	86	n.a.	**242**
SE	170	177	n.a.	**164**
SI	n.a.	n.a.	n.a.	**285**
Other	296	180	120	**284**
EU Average	**157**	**97**	**108**	**163**

Source: Supervisory reporting and EBA calculations. The countries included have at least 3 banks in any of the significant currencies presented in the table, including in all significant currencies. Three countries (HR, RO, SK) have been excluded because they have less than three banks in any of the columns presented in the table. Countries that have the LCR informed in one significant currency but not in the others is because they have more than three banks reporting that significant currency (or the total significant currency) that do not reach the threshold to report the other significant currencies.

Analysis of the parameters of the LCR by significant currencies

The objective is to test whether there are any currency-specific patterns in the liquidity profiles of banks. The indicator demonstrates whether the difference between the ratio of the liquidity buffer

and net cash outflows for a specific foreign currency is more pronounced than the same ratio for all currencies.

$$LCR\ by\ currency = \frac{Liquidity\ buffer_{currency}}{Outflows_{currency} - Min(Inflows_{currency}, 0.75 \times Outflows_{currency})}$$

Where currency = reporting currency (all currencies), euro, US dollar, sterling pound.

Currency mismatches in EUR

A total of 71 banks (of which 37 are G-SIIs/O-SIIs and 34 are 'other banks') reported euro as a significant (foreign) currency. Figure 31 shows a bank-by-bank comparison between banks' LCR in all currencies and LCR levels in euro as a significant (foreign) currency. The LCR level in all currencies are shown in the y-axis while the x-axis shows the LCR in euro as a significant (foreign) currency.

There is some evidence of a different pattern when euro is the significant currency. 23 banks out of the 37 banks classified as G-SIIs and O-SIIs presented an LCR$_{EUR}$ lower than the LCR$_{all\ currencies}$, which is a higher figure compared to the previous year (when only 14 banks out of 33 showed LCR in EUR below the LCR in total currencies). These banks are seen in the top left corner of the chart. However, only 8 banks presented an LCR$_{EUR}$ below 100% which is an improvement compared to June 2022 (9 banks).

With regards to other banks, 20 out of the 34 banks classified as 'other banks' presented an LCR$_{EUR}$ lower than the LCR$_{all\ currencies}$ (above the figure of June 2022, which was at a level of 9 out of 25) and 5 banks presented an LCR$_{EUR}$ below 100% (while none of the banks presented an LCR$_{EUR}$ below 100% as of June 2022). These banks are located north-west of the diagonal line in Figure 31.

Figure 31: Liquidity buffer over net cash outflows where the significant currency is euro (*x*-axis) compared with the same indicator for the reporting currency (all currencies; *y*-axis), G-SIIs and O-SIIs (left) and other banks (right), June 2023

Source: Supervisory reporting and EBA calculations.

Figure 32 shows the evolution of the proportion of banks in the sample with LCR_{EUR} below $LCR_{all\ currencies}$ (blue line) and the proportion of banks in the sample with LCR_{EUR} below 100% (orange line). The chart shows, on the one hand, a significant increase in the share of banks with LCR_{EUR} below $LCR_{all\ currencies}$ and, on the other hand, a decline in the number of banks with LCR in EUR below 100%. The proportion of banks with LCR_{EUR} below 100% decreased from 25% observed as of June 2022 to 13% as of June 2022.

Figure 32: Evolution of the comparison between the positions in LCR in EUR and LCR in all currencies — balanced sample [35]
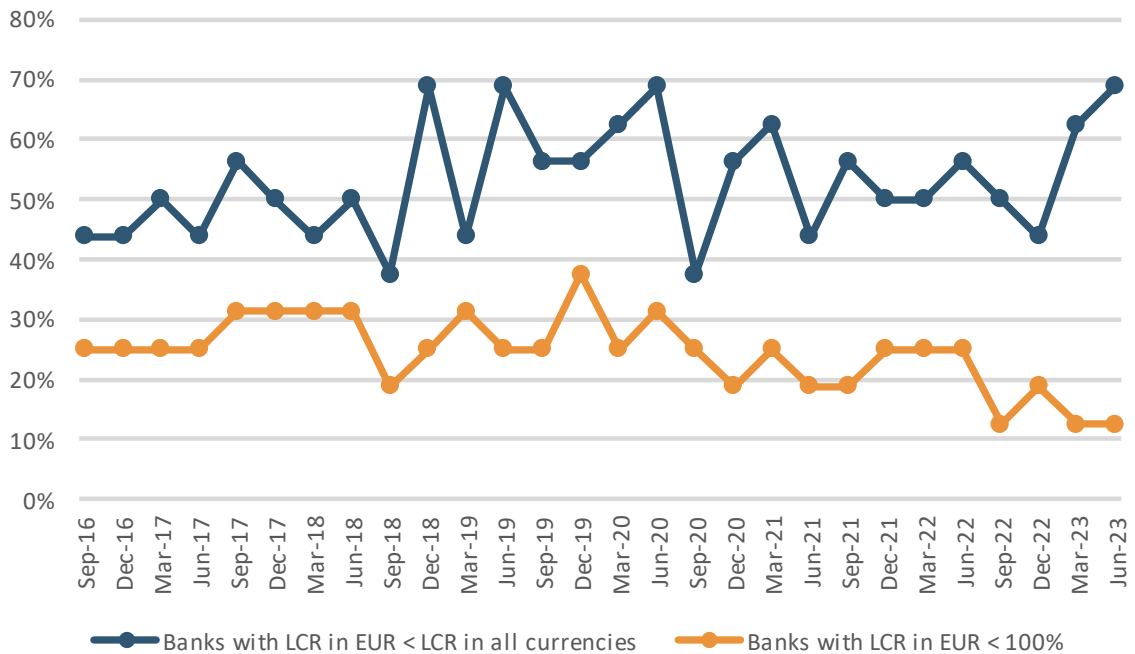
Source: Supervisory reporting and EBA calculations.

Figure 33 analyses the evolution of the weighted average level of LCR_{EUR} and $LCR_{all\ currencies}$ for a balanced sample of banks[36]. Since September 2016, LCR_{EUR} has been on average higher than the average of $LCR_{all\ currencies}$. As of June 2023, the average LCR_{EUR} is well below the $LCR_{all\ currencies}$, contrarily to the previous year when the average of LCR_{EUR} was in line with the $LCR_{all\ currencies}$.

Figure 34 shows the evolution of the distribution[37] of LCR_{EUR} and $LCR_{all\ currencies}$ between September 2016 and December 2020/June 2022. It can be observed that LCR_{EUR} values are significantly above 100%, with some exceptions. The dispersion in LCR levels has narrowed since December 2016 but more significantly for $LCR_{all\ currencies}$ than for LCR_{EUR}.

---

[35] Results based on a consistent sample of 16 banks that reported LCR_{EUR} data across reference dates.

[36] Some considerations need to be taken into account when interpreting distribution graphs in this section: The blue bars represent the $LCR_{all\ currencies}$ while the orange bars represent LCR_{EUR}.

[37] The top line of the blue/orange box shows the 75th percentile, whereas the bottom line of the blue/orange box shows the 25th percentile. The top line outside the box represents the maximum observation while the bottom line outside the box represents the minimum observation.

Figure 33: Evolution of average LCR in EUR vs average LCR in all currencies — balanced sample

Source: Supervisory reporting and EBA calculations.

Figure 34: Evolution of the distribution of the LCR in EUR vs the distribution of the LCR in all currencies — balanced sample
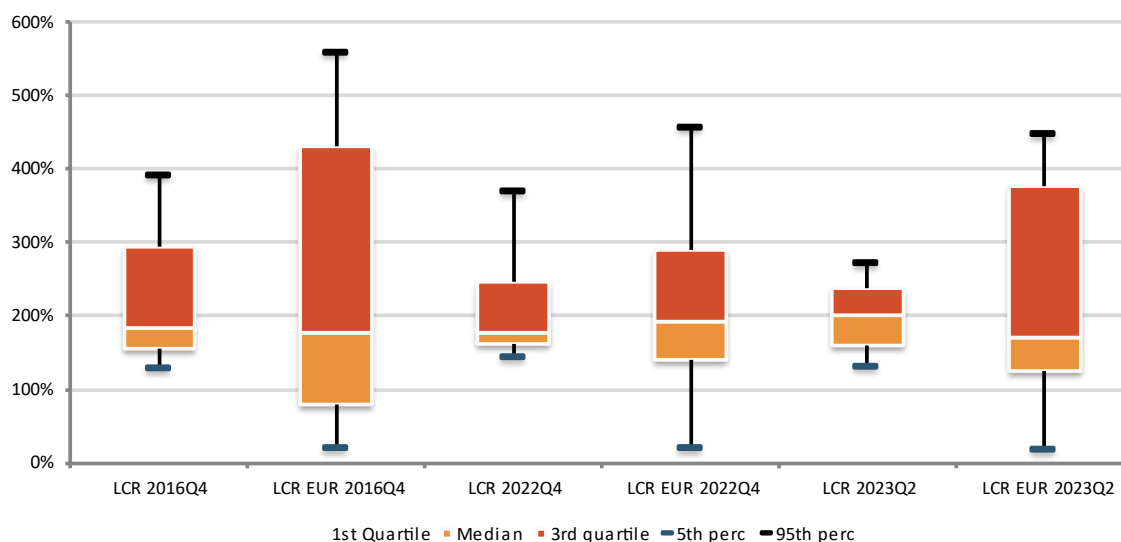
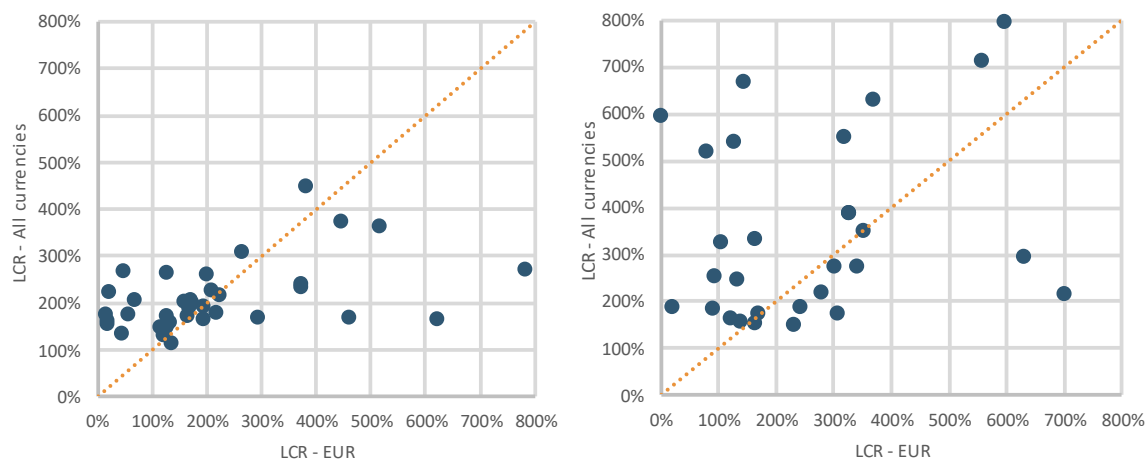Source: Supervisory reporting and EBA calculations.

Currency mismatches in USD

A total of 110 banks (of which 60 are G-SIIs/O-SIIs and 50 are 'other banks') reported US dollar as a significant (foreign) currency. Figure 35 shows a bank-by-bank comparison between banks' LCR in all currencies and LCR levels in dollar as a significant (foreign) currency. The LCR level in all

currencies are shown in the y-axis while the x-axis shows the LCR in dollar as a significant (foreign) currency.

There is clear evidence of a different pattern when US dollar is the significant currency. With regards to G-SIIs and O-SIIs, 44 banks out of the 60 banks presented an LCR USD lower than the LCR for all currencies as of June 2023, which is a similar figure compared to the previous year (June 2022), and 34 banks presented an LCR USD below 100%, remaining almost stable compared to the previous exercise. Therefore, from the side of G-SIIs and O-SIIs there is no deterioration in June 2023 compared to the year before.

With regards to other banks, 37 banks out of the 50 banks classified as 'other banks' presented an LCR USD lower than the LCR for all currencies, and 27 banks presented an LCR USD below 100%. In total, 8 banks showed an LCR USD close to zero. These banks are located close to the y axes in Figure 35.

Figure 35: Liquidity buffer over net cash outflows where the significant currency is US dollar (*x*-axis) compared with the same indicator for the reporting currency (all currencies; *y*-axis), G-SIIs and O-SIIs (left) and other banks (right), June 2023.

Source: Supervisory reporting and EBA calculations.

Figure 36 shows the evolution of the proportion of banks in the sample with LCR_{USD} below $LCR_{all\ currencies}$ (blue line) and the proportion of banks in the sample with LCR_{USD} below 100% (orange line). Since September 2016, the number of banks that have LCR_{USD} below $LCR_{all\ currencies}$ has steadily declined. The proportion of banks with LCR_{USD} below $LCR_{all\ currencies}$ is higher in 2023 compared to December 2022. The proportion of banks with an LCR_{USD} below 100% also declined between September 2016 and December 2021, but more recently showed and increase between December 2021 and December 2022 (from 30% of banks in the sample with LCR_{USD} below 100% as of December 2021 to 45% as of December 2022). In the first half of 2023, the proportion of banks with LCR_{USD} below 100% slightly declined but remained at levels above 2021.

Figure 36: Evolution of the comparison between the positions in LCR in USD and LCR in all currencies — balanced sample [38]
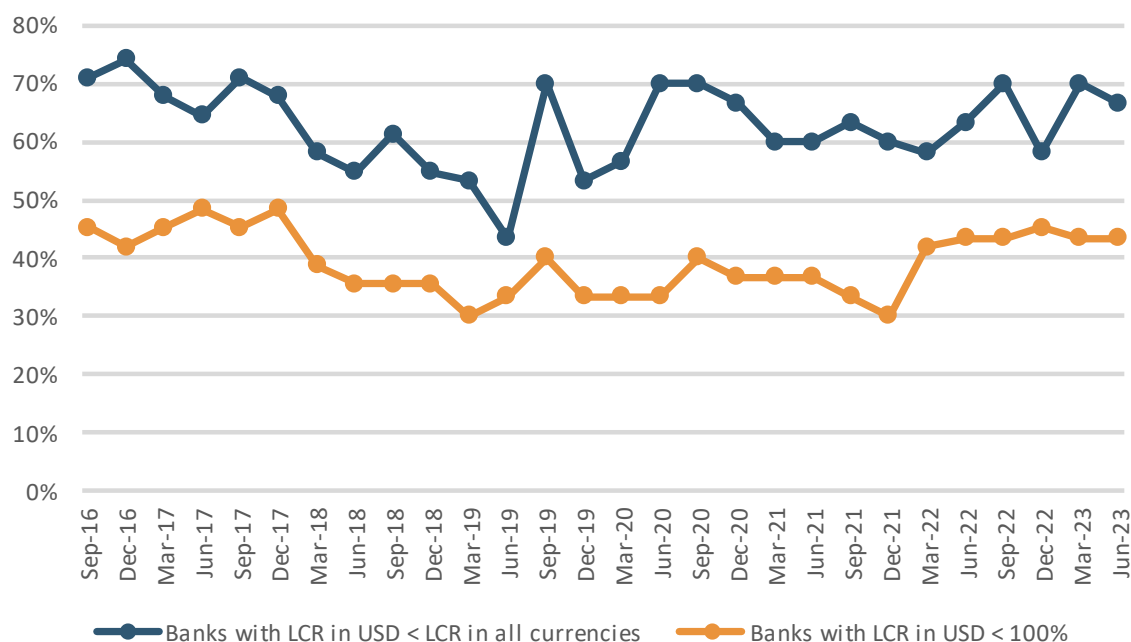
Source: Supervisory reporting and EBA calculations.

Figure 37 analyses the average level of LCR_{USD} and $LCR_{all\ currencies}$[39]. Since September 2016, the average LCR_{USD} level has been lower than the average $LCR_{all\ currencies}$ level, and below 100% since March 2021. However, by December 2022 the average level of LCR_{USD} had increased beyond 100% and remained at those levels during the first half of 2023. The gap between the two ratios narrowed significantly between June 2018 and March 2020 but has increased since then with differences above 50 percentage points. The increase in the gap between the two variables is driven by, on one hand, the upward tendency of the $LCR_{all\ currencies}$ until December 2021, driven by the central bank funding operations carried out in 2020 and 2021. On the other hand, LCR_{USD} showed a decreasing trend since December 2020 until March 2022.

Since March 2022 until June 2023, the LCR_{USD} showed an increase in all reporting dates showing a level of 102% for a balanced sample of banks as of June 2023. The average LCR_{USD} was 102% as of June 2023 for a common sample of banks across all reference dates, thus above 100% and significantly below the $LCR_{all\ currencies}$ (151%). Therefore, the USD liquidity situation of EU/EEA banks as of June 2023 has improved compared to previous reporting dates of the year 2022.

---

[38] Results based on a consistent sample of 32 banks that reported LCR_{USD} data across reference dates.

[39] Some considerations need to be taken into account when interpreting distribution graphs in this sector: The blue bars represent the $LCR_{all\ currencies}$ while the orange bars represent LCR_{EUR}.

Figure 37: Evolution of average LCR in USD vs average LCR in all currencies — balanced sample
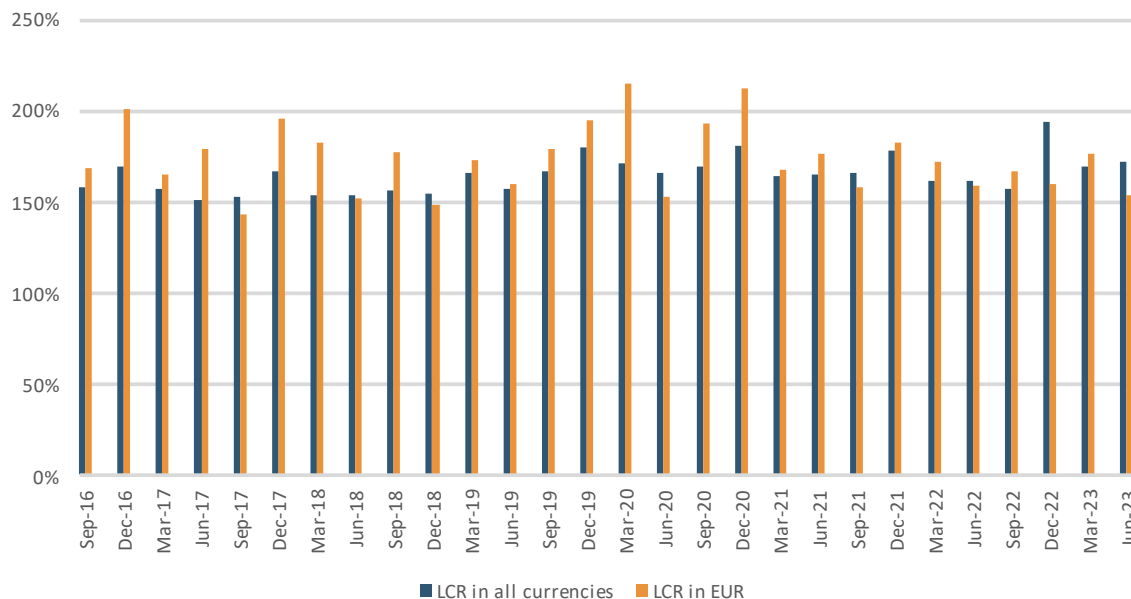

Source: Supervisory reporting and EBA calculations.

Figure 38 shows the evolution of the distribution[40] of LCR_{USD} and $LCR_{all\ currencies}$ between September 2016 and December 2022/June 2023. A greater dispersion in the LCR_{USD} levels can be observed in the three last reporting periods compared to the earlier years. The median and the 25th percentile is always lower for the LCR_{USD} levels. Although on average LCR in USD has increased in June 2023 compared to December 2022, the minimum value remains at 0% such that several banks report no liquidity in USD. As of June 2023, even if the weighted average LCR_{USD} is close to 100%, the 25th percentile remains significantly below such threshold (at 71%) and a number of banks showed LCR_{USD} close to 0%. Even if the EU liquidity regulation does not require banks to hold LCR levels in foreign currencies above 100%, low levels of LCR_{USD} may cause problems during volatile markets, as banks may face difficulties to swap currencies and raise funds on USD FX markets at reasonable prices. The combination of low levels of LCR_{USD} and the rising costs for USD funding following the widening of the USD-EUR cross currency basis swaps during the banking turmoil of the end of the first quarter of 2023 might pose a risk for some banks, in case they need to quickly fill liquidity gaps in USD.

---

[40] The top line of the blue/orange box shows the 75th percentile, whereas the bottom line of the blue/orange box shows the 25th percentile. The top line outside the box represents the maximum observation while the bottom line outside the box represents the minimum observation.

Figure 38: Evolution of the distribution of the LCR in USD vs the distribution of the LCR in all currencies — balanced sample
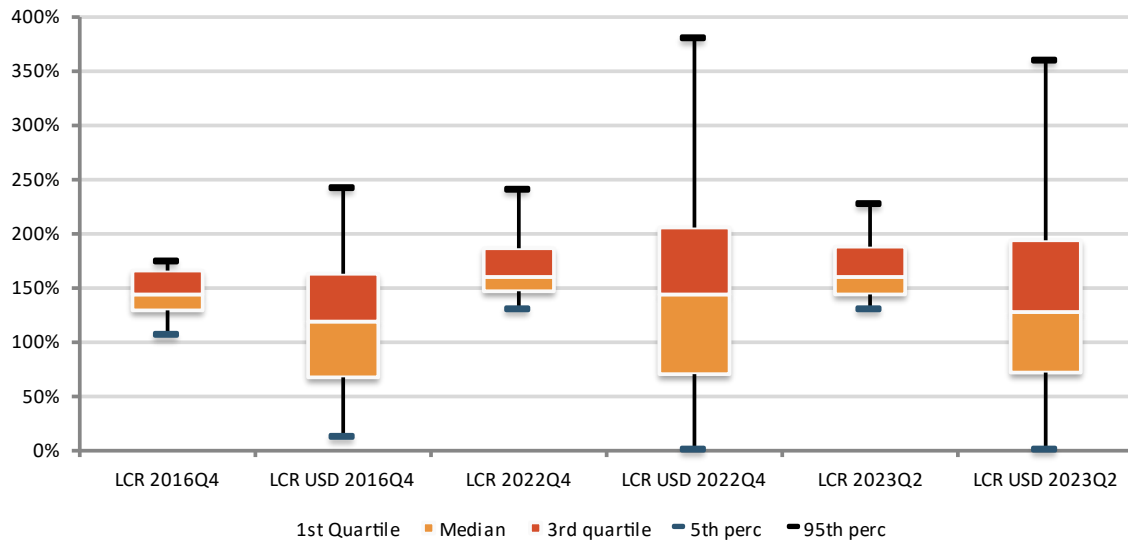
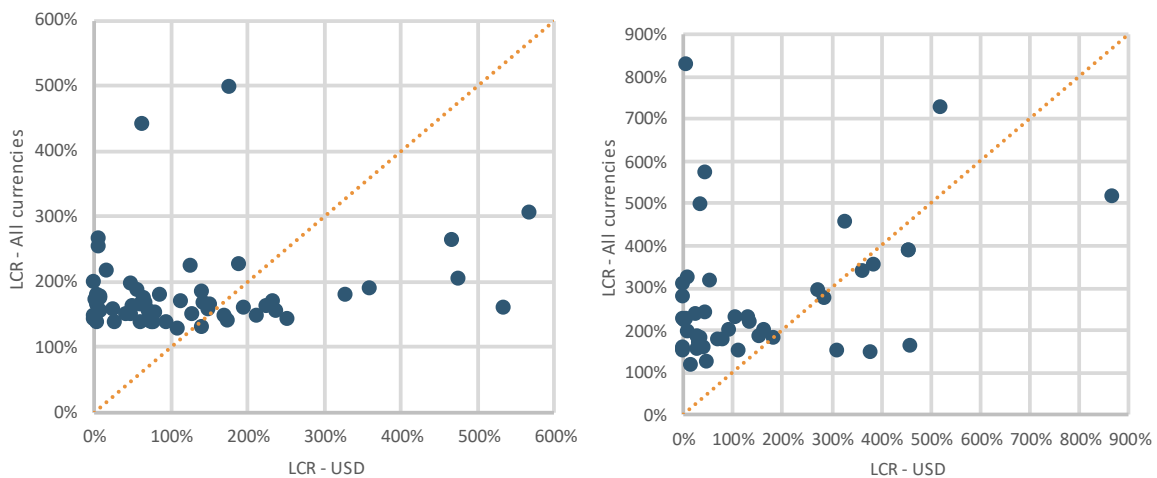Source: Supervisory reporting and EBA calculations.

Currency mismatches in GBP

A total of 26 banks (of which 15 are G-SIIs/O-SIIs and 11 are 'other banks') reported GBP as a significant (foreign) currency. Figure 39 shows a bank-by-bank comparison between banks' LCR in all currencies and LCR levels in euro as a significant (foreign) currency. The LCR level in all currencies are shown in the y-axis while the x-axis shows the LCR in euro as a significant (foreign) currency.

13 banks out of the 15 banks classified as G-SIIs and O-SIIs banks presented an LCR_{GBP} lower than the $LCR_{all\ currencies}$. 9 banks out of the 11 banks classified as 'other banks' presented an LCR_{GBP} lower than the $LCR_{all\ currencies}$. 8 banks reported LCR_{GBP} close to 0% (4 G-SIIs/O-SIIs and 4 other banks). There is some evidence of a different pattern when sterling pound is the significant currency, but this evidence is based on a reduced sample of banks that reported sterling pound as a significant (foreign) currency.

Figure 39: Liquidity buffer over net cash outflows where the significant currency is pound sterling (*x*-axis) compared with the same indicator for the reporting currency (all currencies; *y*-axis), G-SIIs and O-SIIs (left) and other banks (right), June 2023

Figure 40 shows the evolution of the proportion of banks in the sample with LCR_{GBP} below $LCR_{all\ currencies}$ (blue line) and the proportion of banks in the sample with LCR_{GBP} below 100% (orange line). The evolution shows that the proportion of banks with LCR_{GBP} below $LCR_{all\ currencies}$ and the proportion of banks below 100% showed a slow but downward tendency between September 2016 and September 2020; this tendency changed in September 2020 when both variables increased. In the first half of 2023, the proportion of banks with LCR below 100% has significantly declined and is at the minimum level of the last 10 quarters. The proportion of banks with LCR_{GBP} below $LCR_{all\ currencies}$, declined from December 2022 to June 2023.

Figure 40: Evolution of the comparison between the positions in LCR in GBP and LCR in all currencies — balanced sample [41]
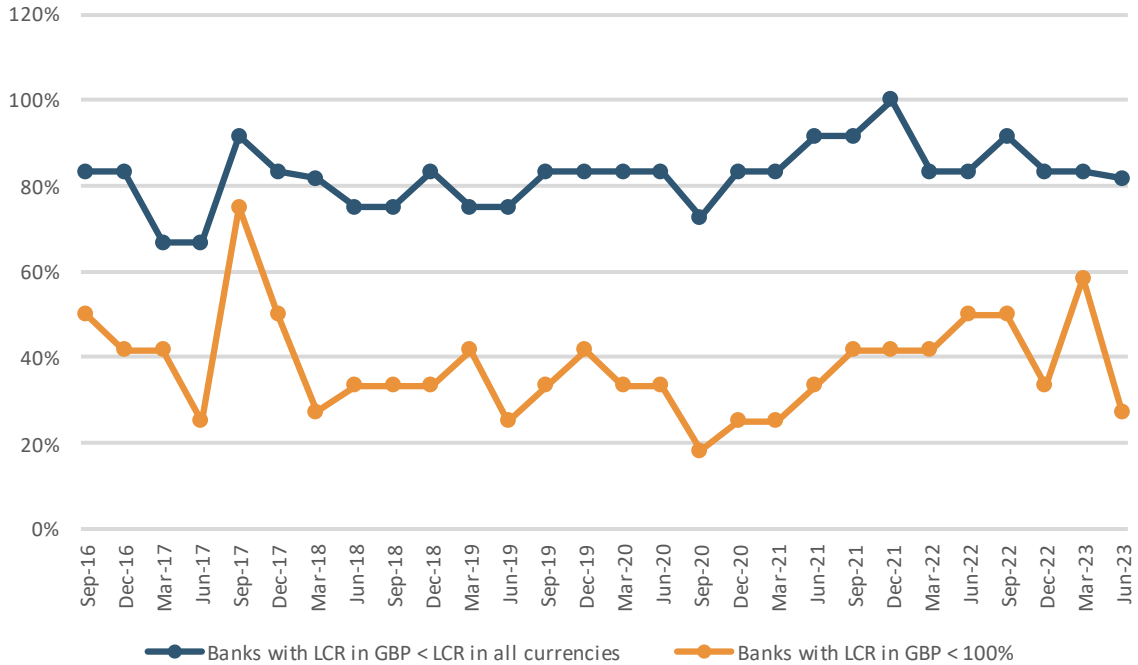
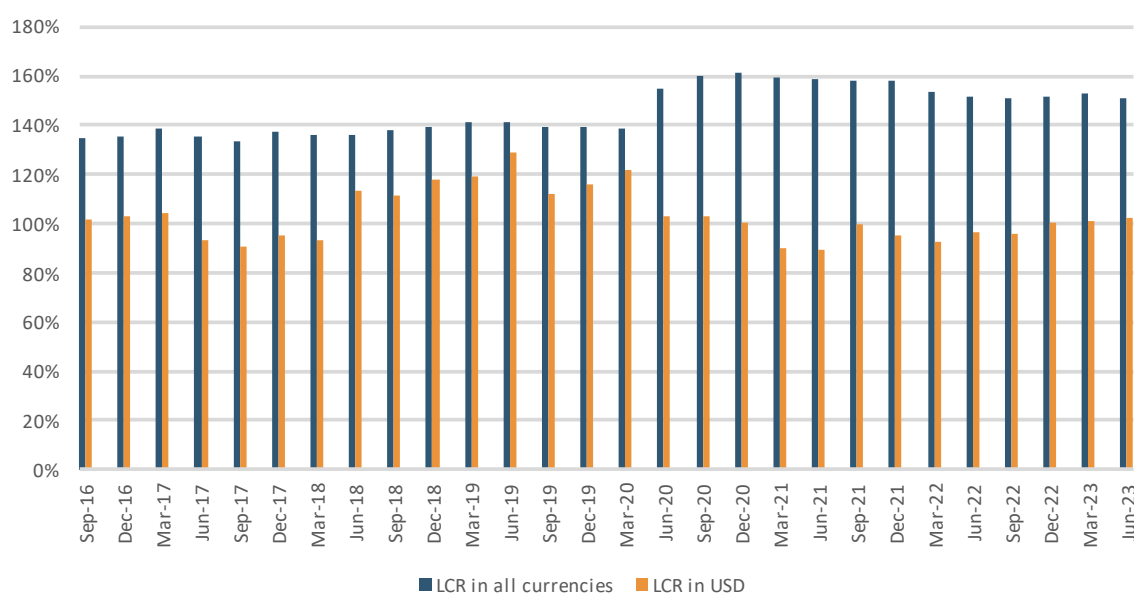Source: Supervisory reporting and EBA calculations.

Figure 41: Evolution of average LCR in GBP vs average LCR in all currencies — balanced sample
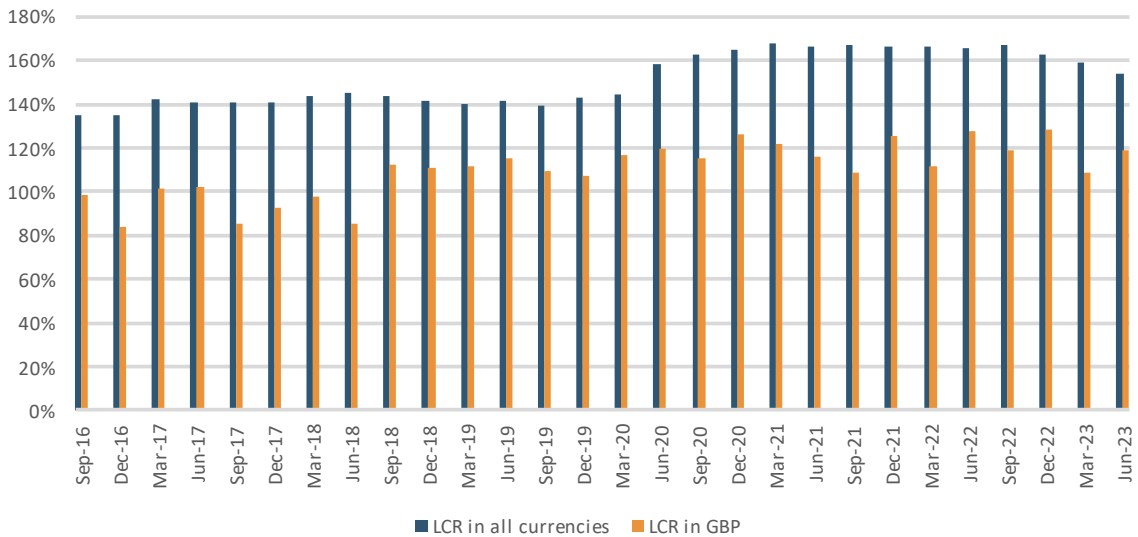
Source: Supervisory reporting and EBA calculations.

Figure 41 analyses the average level of LCR GBP and LCR in all currencies. Since September 2016, the average LCR GBP level is below the average level of LCR all currencies. As of June 2023, the average LCR GBP is 119% for the balanced sample of banks, significantly below the LCR for all

[41] Results based on a consistent sample of 13 banks that reported LCR$_{GBP}$ data across reference dates.

currencies (154%). Also, in the first half of 2023 the level of LCR in GBP has declined, contrarily to the upward evolution of the LCR in USD.

Figure 42 shows the evolution of the distribution of LCR GBP and LCR in all currencies between September 2016 and December 2022/June 2023. A greater dispersion in the LCR in GBP levels can be observed with data as of June 2023, in which the median and the 25th, 75th percentile are lower for the LCR GBP compared to LCR in all currencies and there are banks with LCR GBP equal to zero. As of June 2023, the 25th percentile stood at 59% while the median was 103%. Similarly to banks that showed low levels of LCR USD, banks with low LCR GBP may phased problems in times of stress as banks' ability to swap currencies and raise funds in GBP might be deteriorated. However, these results are based on a sample of 12 banks that reported LCR GBP data across reference dates and should therefore be interpreted with caution.

Figure 42: Evolution of the distribution of the LCR in GBP vs the distribution of the LCR in all currencies — balanced sample

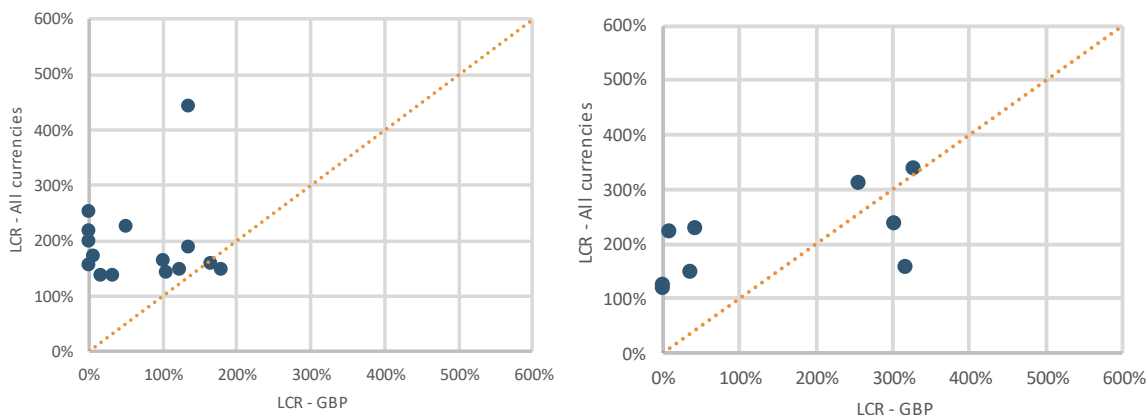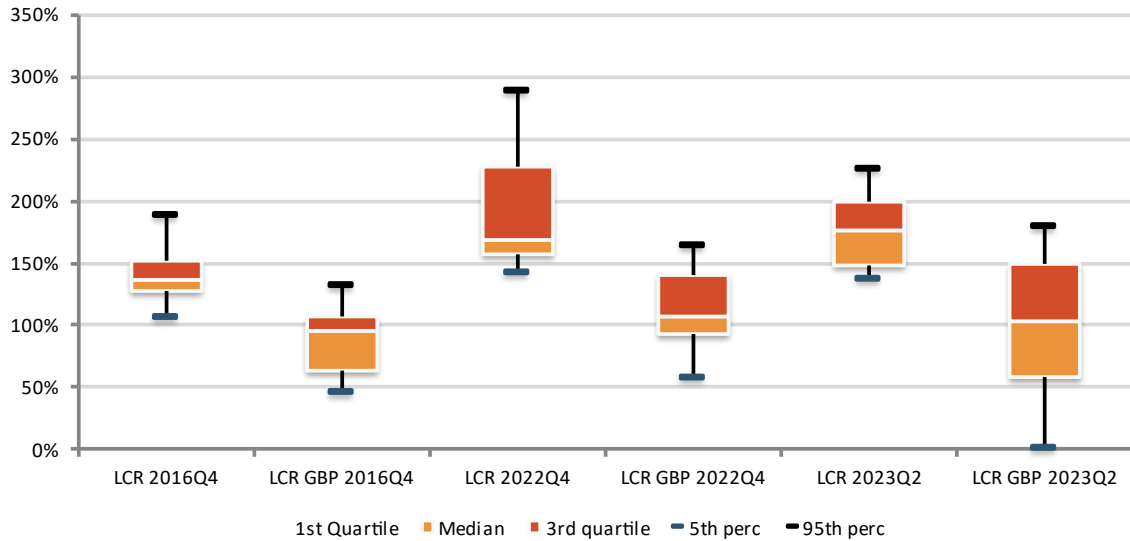Source: Supervisory reporting and EBA calculations.

LCR — impact on lending

Rationale of the analysis

In its 2012 position paper, the EBA Stakeholder Group raised the concern that banks could be forced to channel a meaningful part of their funding towards LCR eligible assets (for example, through acquisition of government securities or holdings of additional deposits with the central bank) rather than to lending to the non-financial sectors. Indeed, banks have two ways of improving their LCR: either by increasing the amount of HQLA by acquiring additional eligible liquid instruments, or by replacing non-LCR eligible assets, such as loans, with HQLAs.

This section analyses the relationship between the banks' lending behaviour and the minimum LCR requirements as introduced in Basel III. In particular, the focus is on lending to households (mortgage loans and consumer loans) and to non-financial companies (NFCs hereafter). As in the other sections in this Report, the analysis is based on COREP/FINREP data. The analysis takes in consideration that banks' lending activity can be influenced by several additional factors such as regulatory requirements on the capital side, banks' financial health and the general macroeconomic conditions.

A standard empirical approach for the evaluation of the impact of the introduction of a new regulation is the Difference in Difference method (DiD). This approach requires data about a treatment group (banks subject to the new regulation) and a control group (banks not subject to the new regulation) observed before and after entering into force of the new rules. For example, in the BIS working paper 473/2014, the authors exploit data regarding UK banks. They take advantage of the fact that already in 2010 the UK Financial Services Authority introduced a regulation requiring to hold a sufficient stock of high quality liquid assets (HQLA) but not all banks were made subject to this liquidity regulation.

Two practical problems prevented to adopt the DiD for this Report. First, the LCR entered into force in 2015 but banks have started to report the LCR figure in Corep only in 2016. Albeit in 2015 the minimum LCR was set to 60% (increased up to 100% in 2018) we know that already in September 2016 (the first reference date available in Corep) most of the banks were already compliant with the 100%[42]. This means that working with Corep data, we could not define the control group because, at the first available reference date, all the banks were subject to the LCR. Moreover, we don't have information regarding the period prior to the introduction of the LCR. Second, while it is certainly interesting to know if the LCR had an effect on lending at the moment of its introduction, it would not be possible to infer from there that the LCR still has an effect nowadays. In other words, the DiD does not fit the needs for a monitoring exercise.

---

[42] The transition period was precisely set to avoid negative/unintended consequences, such as an abrupt negative impact on lending.

We analyse the relationship between the variations of the stock of bank lending[43] at a given point in time with the level of the LCR that was observed at the beginning of the period. The underlying economic intuition is that banks need some time to react to eventual liquidity problems so that the possible impact on the lending side can be observed only after a while, which is a typical lagged effect. Non-performing exposures have been excluded from the analysis so that changes in the loan aggregates can be more easily considered as proxies of the banks' lending policy[44]. The main risk in regression analysis is that the identified relationship maybe spurious because of endogeneity and simultaneity problems. A standard approach to circumvent the problem is to rely on lagged variables[45].

We present different versions of the same model by introducing in the underlying data some filters to control for outliers or other phenomena. This approach permits on one hand to observe the results obtained on the original data set and on the other to do some sensitivity analysis. We also used the Chamberlain (1980) estimator to account for potential fixed effects[46].

Data

The analysis is based on a panel of 91 banks[47] from 21 countries that reported FINREP and COREP data within the period 2016-2022, subsidiaries were excluded. In December 2022, these banks accounted for the 70% of the total assets of the EU banking system. For the purposes of this study, only the end-of-year figures have been considered and since lagged variables are considered, the number of observations is 546[48].

The weighted average LCR of the banks included in the sample was steadily higher than 100% and increasing over the observed period. The aggregate stock of outstanding loans to the real economy (performing loans toward households and NFCs[49]) for the 91 banks was EUR 9,4 trillion at end of 2016. It increased by 31% between 2016 and 2022 (4,6% on average on annual basis). At bank level, it can be observed a huge variability of the yearly growth rate of the lending level. This is partially

---

[43] The lending to real economy, or the stock of lending activities, has been defined as the amount of outstanding performing loans to households and NFCs. The amounts have been obtained from FINREP as the sum of both components.

[44] The dynamic of the stock of defaulted assets is less influenceable by the banks' decisions at least in the short term.

[45] While in a model like yt = βxt+et there exists the possibility that xt and et are not independent or that the causal relationship between yt and xt could go in the opposite direction (i.e. it is xt that causes yt), in a model like yt = βxt-1+et the problem is less material because in this case the explanatory variable xt is preconditioned in respect to both et and yt.

[46] While in the context of linear models with panel data, it is possible to resort to the within or the first difference transformation to account for fixed effects, for non-linear models this is no longer the case. For the specific case of logistic models, Chamberlain (1980) derived an estimator that is asymptotically unbiased also in the presence of fixed effects. The main drawback of the Chamberlain estimator is that it exploits only the observations for which the target variable has changed from a period to another. These are called the informative observations and usually their number is lower compared with the sample size.

[47] See detailed sample in Table 15.

[48] 91 banks x 6 years.

[49] The data is retrieved from the Finrep template F 18.00.a (Gross carrying amount/Nominal amount).

explained by merger and acquisition operations but also by the presence in the sample of banks having a limited level of loans toward households and NFCs so that small variations in nominal terms can produce high variations in relative terms. Both for the LCR and the variation of the loans, it is possible to observe anomalous values, however most of the observations are found in a range for the LCR going from 100% to 250% and for the variation of the loans from -10% to 15% (see the figure below).

Figure 43: Scatter plot: Variation in the stock of loans vs LCR
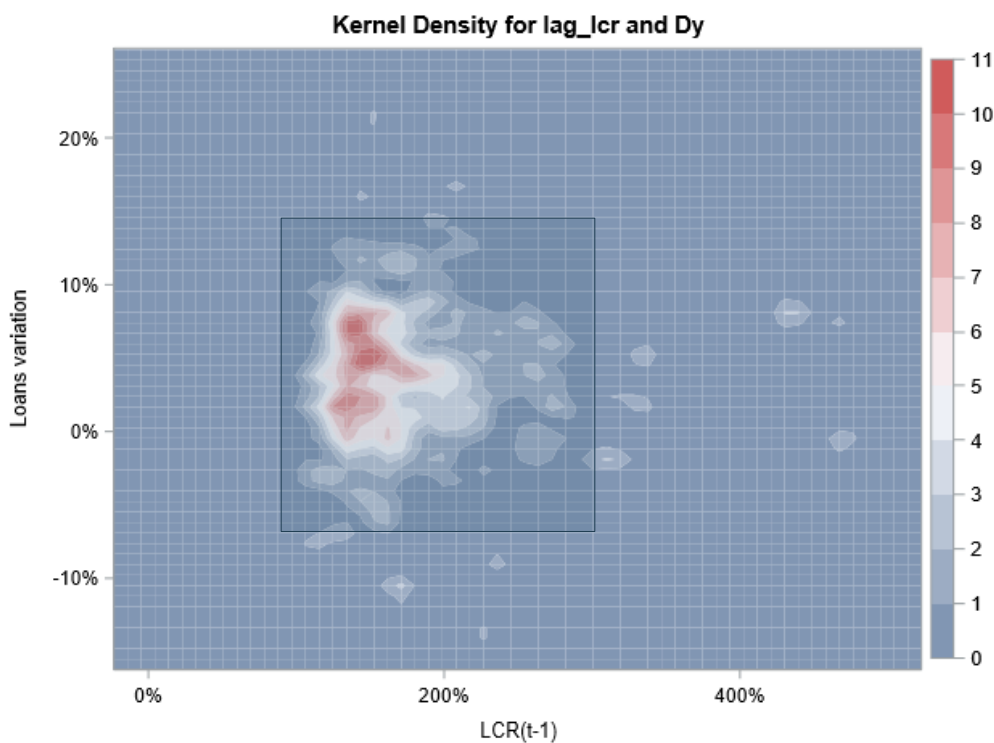
Source: Supervisory reporting and EBA calculations.

Regression analysis

The table below shows the results of a regression analysis (pooled OLS) where the dependent variable is the annual variation of the lending activity for each bank and the explanatory variables are the value of the LCR and size[50] of the bank at the beginning of the year. As it can be seen (P-value well above common acceptance thresholds), the relationship between the lending and the LCR appears not statistically significant. We know that already in 2016 the LCR was not binding for most of the banks and this could justify the absence of a relationship with banks decisions. However, this report showed that the LCR level has continued to increase every year, even after most of the banks' have reached the regulatory minimum. This suggests that the banking industry could be pursuing a target level for LCR higher than the regulatory minimum. If the banks indeed choose to target an LCR higher than the regulatory minimum, it is still possible that liquidity

---

50 Log of the total asset

constraints have an impact on the banks' lending decisions even if the minimum LCR is seemingly met.

Table 3: Linear regression, dependent variable: annual variation of lending

Variable	Parameter Estimate	Pr > |t|
Intercept	0.4076	0.7008
LCR$_{t-1}$	0.0371	0.3343
Size$_{t-1}$	-0.0134	0.7408

Source: Supervisory reporting and EBA calculations.

In order to study the relationship between the lending activity and the LCR when the LCR is below the median,a dummy variable is built to distinguish banks which LCR is below the median of the distribution of the LCR reported by the banks included in the sample. Also, the considered dependent variable is a dummy variable that is equal to 1 when the banks' annual variation of the lending is negative (i.e. when the bank reduced the amount of lending toward firms and households) and zero otherwise. Table 4 shows the results of a logistic regression where the modelled event is the probability that a bank decreases the stock of loans. The parameter associated with the dummy variable LCR(t-1) < Median is positive and statistically significant (P-value ≈ 2%), denoting a higher probability that banks reduce their lending activity when the LCR is lower than the median.

We ran two alternative regressions. In the first case, a number of banks were excluded because their anomalous annual variation in terms of total assets or because the limited amount of loans in comparison with the total assets. We also ran a regression using the Chamberlain (1980) estimator that is known to be asymptotically robust against the possible presence of individual (fixed) effects. The number of informative data points is 270 against 546 available observations. The statically significance of the parameter associated with the dummy variable LCR(t-1) < Median is confirmed in the first case (P-value ≈ 1.5%) but less evident in the second case.

Table 4: Logistic regression, dependent variable: probability to reduce the amount of lending

Variable	Basic regression Parameter Estimate	Pr > |t|	Filtering outliers Parameter Estimate	Pr > |t|	Chamberlaine estimator Parameter Estimate	Pr > |t|
Intercept	1.2507	0.5712	3.6206	0.1421		
LCR$_{t-1}$ < Median	0.6682	0.0196	0.7212	0.0153	0.7035	0.0791
Size$_{t-1}$	-0.1241	0.1595	-0.2162	0.0282	-1.5276	0.1238

Source: Supervisory reporting and EBA calculations.

The eventual relationship identified between the lending activity and the LCR could be spurious in the sense that the LCR could be correlated with other explanatory variables. To control for this, we also carried out a multivariate analysis to verify the robustness of the relationship. The Additional control variables added to the logistic regression are related to the banks' capital position (CeT1 ratio); profitability (ROE); riskiness of the assets (RWA density and NPL ratio); business model (Total

Loans over Deposits and performing loans toward households and NFCs over performing loans and Fee over Net Operative Profits) and others. Overall, 15 additional indicators where considered. With the aim of reducing the number of estimated parameters, the Principal Component Analysis was used. We considered the first seven principal components which represented more than 80% of the total variability. The model included a variable defined at the country level that measures the annual variation of the GDP.

We also added the lag of the dependent variable. This entails to reduce the sample by one year. The inclusion of lags of the dependent variable enables to consider possible dynamic adjustment processes typical of many economic phenomena. The associated parameter is positive and significant (P-value < 1%) indicating for banks experiencing a lower loans growth rate in a given year, it is easier to observe a lower growth rate also in the subsequent year. Along with this model specification, the parameter associated with the dummy variable LCR(t-1) < Median remains positive but its significance decreases (P-value ≈ 11%).

Table 5: Logistic regression, dependent variable: probability to reduce the amount of lending

Variable	Parameter Estimate	Pr > |t|
Intercept	0.0644	0.9842
lag Dependent Variable	0.9214	0.0097
LCR_{t-1} < Median	0.5868	0.1152
$Size_{t-1}$	-0.099	0.4442
Factor1	0.3237	0.0177
Factor2	0.1106	0.3199
Factor3	-0.4347	0.0451
Factor4	-0.1684	0.276
Factor5	0.1131	0.432
Factor6	-0.2123	0.247
Factor7	-0.494	0.0009
GDP_{t-1}	6.5934	0.0875

Source: Supervisory reporting and EBA calculations.

Conclusions

For the period 2016-22, a sample of 91 major EU banks was considered. Even if for most of the banks considered the LCR was above the minimum requirement during the observed period, it was possible to verify that banks with lower LCR had a higher probability of experiencing a negative growth rate of the loans. However, once accounted for additional control variables, the relationship appears less statistically significant. This analysis suggests the possibility that banks are aiming at a

The unwind mechanism of the LCR

Rationale of the analysis

The unwind mechanism[51] is embedded in the calculation of the excess liquid asset amount (ELAA), which is the amount of liquid assets that is held in excess of the limits provided in the LCR Regulation and that is deducted from the current holdings of high-quality liquid assets (HQLA) when calculating the LCR liquidity buffer. These caps are intended to reduce the reliance on less-liquid assets as part of the LCR liquidity buffer. Therefore, the ELAA is not calculated based on the actual holdings of HQLA. Instead, the Article 17(2) of Delegated Regulation (EU) 2015/61 as amended by the Delegated Regulation (EU) 2018/1620 (hereinafter the Regulation) requires adjusting the amounts of Level 1, Level 2A and Level 2B assets by unwinding[52] all secured funding, secured lending or collateral swap transactions, that are involving HQLA on at least one leg of the transaction and that are maturing within 30 calendar days. In doing so, the resulting "adjusted" amounts reflect the stock of Level 1, Level 2A and Level 2B assets that an institution would hold if it had not entered these short-term secured transactions.

In that sense, the unwind mechanism aims to avoid an unsustainable inflation of the liquidity buffer by preventing credit institutions from using short-term secured funding transactions (including repos and collateral swaps) to circumvent the caps on the Level 1 covered bonds, Level 2A and Level 2B assets, and to unsustainably increase the liquidity buffer via short-term secured transactions. For example, without the unwind mechanism and through repo transactions, credit institutions could swap Level 2 assets (to which limits apply within the LCR framework) with Level 1 assets (which is allowed in unlimited amounts among the HQLA). Credit institutions are not asked to actually resolve these short-term contracts but only to simulate the economic impact of the resolution of these contracts. In other terms, in the context of the calculation of the ELAA, credit institutions are asked to evaluate the composition of their holdings of HQLA under the hypothesis that all the short-term contracts involving HQLA are not rolled over.

Although there is general agreement about the purpose of the unwind mechanism — i.e. to hinder credit institutions from improving the LCR by borrowing liquid assets against less liquid assets

---

[51] In this section, the term "unwind mechanism" is generally used to indicate the "unwind" of secured transactions in order to calculate the adjusted stock of Level 1, Level 2A and Level 2B that serve as the basis for applying the caps.

[52] In finance, the term 'to unwind' is used to refer to the process of closing out a trading position; the term tends to be used when the trade is complex. The term 'unwinding' is more likely to be used when the buying or selling occurs over multiple transactions. For the purpose of this note, 'unwinding' means assuming that all short-term secured transactions (< 30 calendar days) are maturing, i.e., assuming no roll-over at all.

through short-term transactions — concerns have been raised about the possibility that the unwind mechanism may have some unintended consequences. For example, the effect of the unwind mechanism in the event of reverse repo operations can raise some doubts. Furthermore, the unwind mechanism intervenes in the complex system of cap and floor foreseen in the quantification of the LCR liquidity buffer and its effect is not easily understood.

Data

This Section offers an analysis of the impact of the unwind mechanism for a sample of major European credit institutions (institutions hereinafter). The impact is evaluated in terms of both the quantification of the Level 1 component of HQLA (the numerator of the LCR) and the quantification of the LCR itself. The analysis is extended for a period of over 6 years, i.e. from the end of 2016 to Q2 of 2023. The analysis also leverages on the extended number of institutions for which the EBA has started to collect data under the EUCLID project starting from end 2020. Thanks to this, the analysis extends also to less significant and local institutions with a second sample that has been analysed separately.

The empirical analysis is based on common reporting (COREP) data stemming from 120 major institutions in each year (first sample) and from 2,715 smaller institutions (second sample), representative of the 27 EU Member States and 3 EEA/EFTA states. Unless stated otherwise, all average figures are weighted. The Table below shows the average size of the institutions in the two samples[53]. In the sample of the major institutions the average of the Total Assets is about 230 bln of euro while in the second sample it is less than 3 bln. In both samples the average LCR is well above the regulatory minimum. In the Annex it is provided the detail of the composition of the two samples in terms of countries.

Table 6: Samples of major and smaller Institutions, June 2023

	Major Instit.	Smaller Instit.
Nr of inst.	120	2,718
Assets (bln) / Nr of inst.	229.9	2.3
LCR avg	159.3%	205.6%

---

[53] Since not all institutions report Finrep information to the EBA, the Total Assets (Template F.01 row 380) has been proxied with the total exposures amount used for the computation of the Leverage Ratio (Template C.47 row 290). This definition is broader than the Total Assets because it also encompasses the off-balance sheet exposures transformed into credit equivalent through the application of credit conversion factors. This implies that it can be expected with this definition the figures are likely to be somehow higher than what could be obtained with the Finrep definition.

Impact of the unwind mechanism on L1 excluding EHQCB

As of the reporting reference date of the end of June 2023, the impact of the unwind mechanism was, at aggregate level, negative for major institutions and positive for the samples of smaller institutions in a sense that the adjusted amount of Level 1 assets excluding EHQCB [54] was lower/higher than the reported amount, with an reduction of EUR 18 bln for the first sample and an increase of EUR 54 bln for the second. This result implies that for the institutions in the samples, at aggregate level and in net terms, the amount of reverse repos practically matched the amount of repos for major institutions while it exceeded the amount of repos for smaller banks. Figure 44 depicts the effect of the unwind mechanism on the amount of Level 1 assets excluding EHQCB.

Figure 44: Extent of the unwind mechanism regarding L1 excl EHQCB, June 2023

---
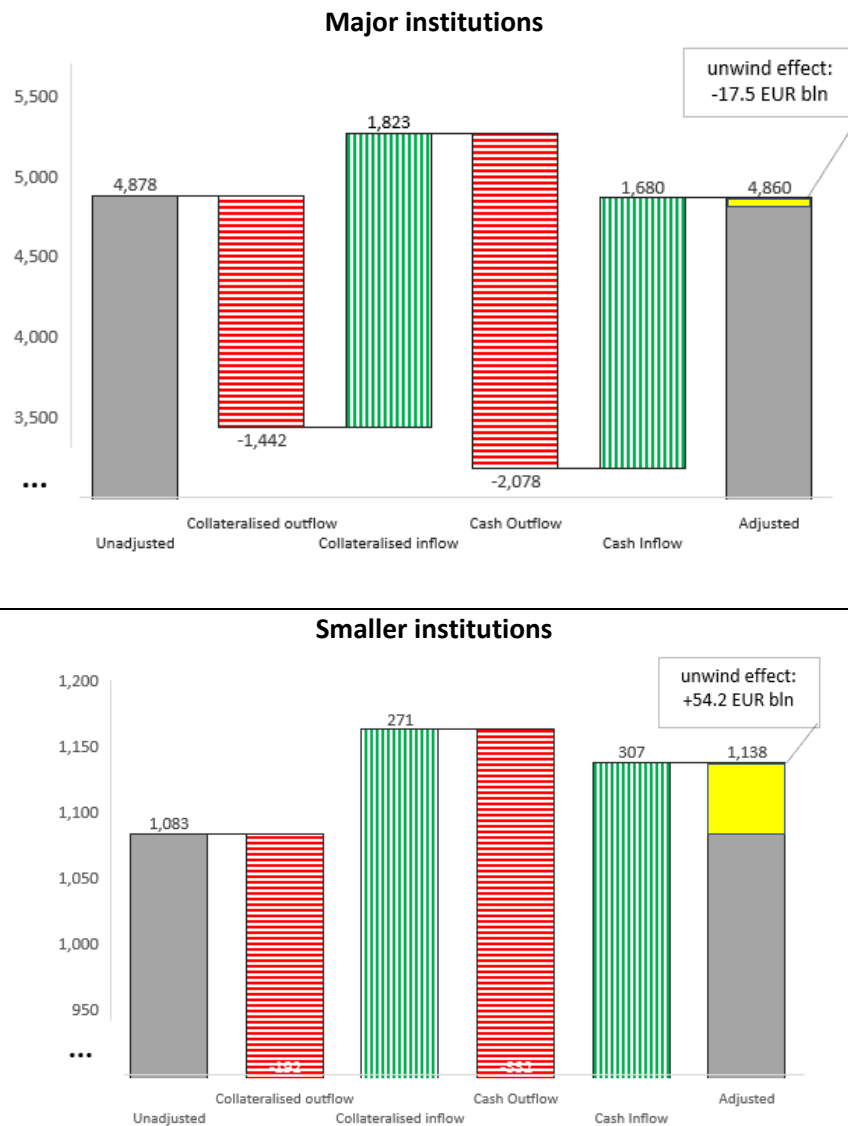
[54] Extremely High-Quality Covered Bonds

For the Major institutions the unwinding of short-term operations produced an increase of the adjusted amount of Level 1 assets excluding EHQCB in respect to the reported amounts in the period Q1 2018 to Q3 2020 (see Figure 45). Before 2018, the unwinding produced a decrease (in respect to the reported amounts) in the amount of adjusted Level 1 assets excluding EHQCB. It is worth remembering that, in Q3 2017, the ECB conducted a refinancing operation to provide additional, longer-term, refinancing to the financial sector maturing in March 2021. In May 2020 the impact of the unwind mechanism became negative for near 200 bln but in June of the same year the impact turned again to be positive until then end of the year. For most of the 2021 the impact of the unwinding was practically null (less than 1% in relative terms) and it turned to be positive starting from the end of the year. In May 2023 the impact of the unwind mechanism became negative (this could relate to the reimbursement of the TLTRO-III) but in June the impact was again null. For the sample of Small institutions, the effect of the unwind mechanism produced a limited increase of Level 1 assets excluding EHQCB (in comparison with the reported amount) for most of the observed period.

Figure 45: Extent of the unwind mechanism regarding L1 excl EHQCB since 2016

Smaller institutions
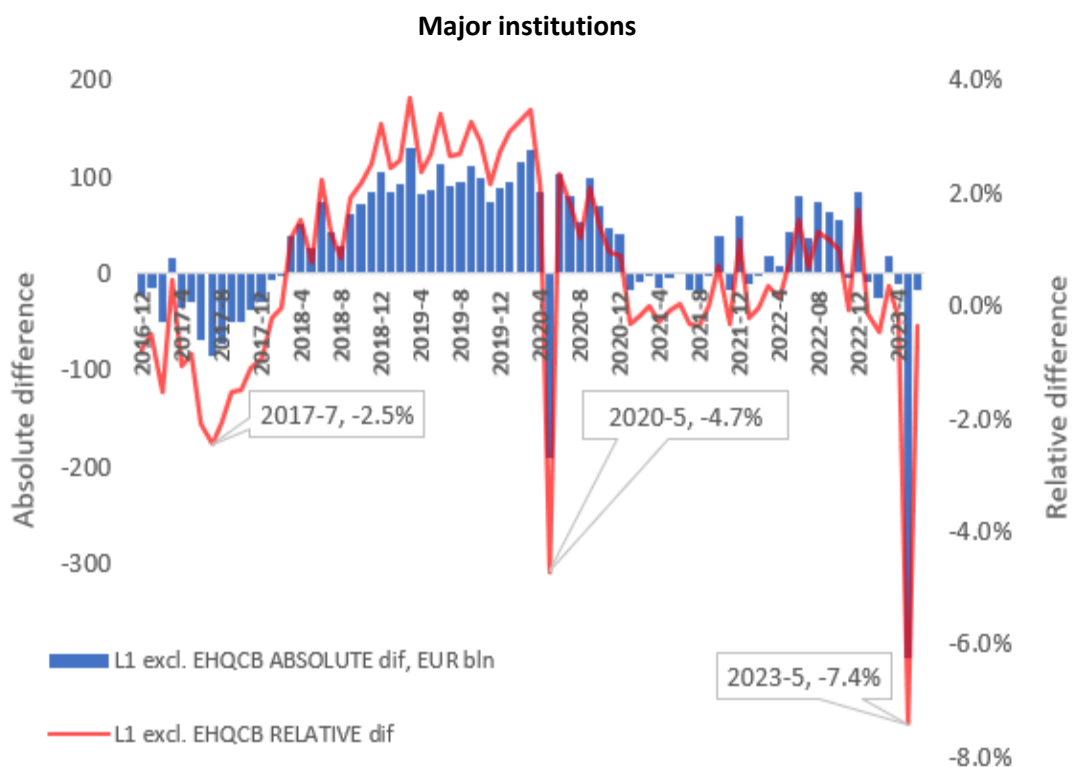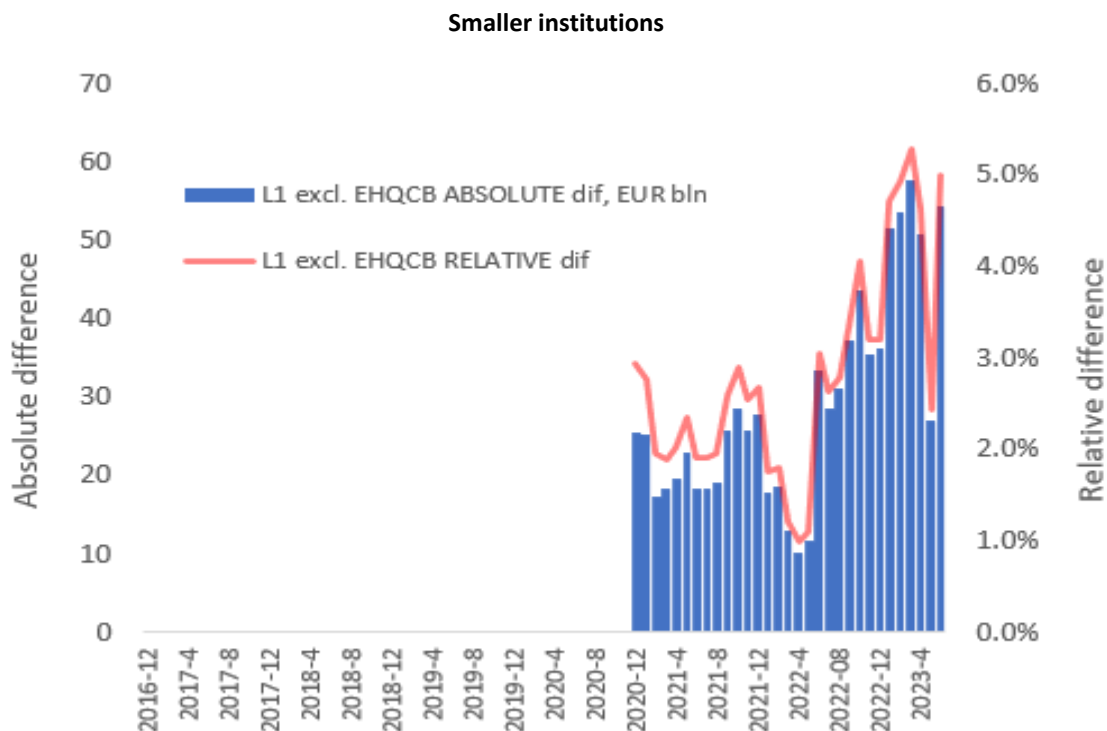
Impact of the adjustment calculation on the LCR

Even if the unwind mechanism has a non-zero effect (the adjusted amount of L1 assets differs from the actual amount), it does not necessarily have an impact on the overall level of the liquidity buffer or the LCR. This would only be the case where – based on the adjusted amounts of liquid assets – the institutions were constrained by the caps envisaged in the Regulation, thus requiring a deduction (the ELAA) from the current – unadjusted – holdings of liquid assets. Where the caps are not binding, the ELAA would be zero. The formulae for the determination of the liquidity buffer composition (adjustment calculation) does only induce a change to the liquidity buffer when at least one of the caps on non-Level 1 assets, applied to the adjusted amounts after the unwind, are breached. For instance, if the effect of the unwind mechanism is "positive" for all categories of HQLA, the effects on individual HQLA categories can neutralise each other. Also, if a bank has no non-Level 1 assets (reported or adjusted), the unwind mechanism is irrelevant for the overall liquidity buffer (as there is nothing that can be capped).

The table below shows the impact of the unwind mechanism on the LCR at institution level. In most cases, the LCR is not influenced at all by the unwind mechanism. For example, in May 2023 where the impact of the unwinding on the L1 assets was significant for the sample of Major institution (see Figure 45), the LCR was not influenced by the unwinding mechanism. Considering all the reference dates and both samples, a negative impact (a decrease of the LCR) has been observed in a limited number of cases and in most of them the LCR was below or above the regulatory minimum

both with and without the application of the unwind mechanism. Only in 5% of the cases the LCR was higher than 100% without the unwind mechanism and lower with the unwind mechanism.

Table 7: Impact of the unwind mechanism on the LCR at bank level

nr of instit	Major insit.			Smaller instit.		
	LCR increases	LCR unchanged	LCR decreases	LCR increases	LCR unchanged	LCR decreases
31/07/2017	3	119	5			
31/12/2017	1	120	4			
31/12/2018	1	129	2			
31/12/2019	3	126	1			
31/05/2020	.	128	1			
31/12/2020	2	132	.	4	2,380	5
31/12/2021	.	126	.	1	2,254	2
31/12/2022	.	119	1	3	2,719	5
31/05/2023	.	119	.	5	2,661	53
30/06/2023	.	120	.	4	2,708	3

The functioning of the adjustment calculation in specific situations

In this sub-section, some practical and theoretical situations where the unwind mechanism may produce unwarranted results are analysed. First consider a credit institution that has no HQLA at all. At the reporting date, the credit institution may make an overnight collateral swap, borrowing Level 2B assets against non-HQLA. In this case, the adjusted value of any HQLA category would be zero, i.e. no excess amounts would be calculated. Hence, the credit institution would report a positive liquidity buffer amounting to the liquidity value of the borrowed Level 2B assets, although it has no Level 1 assets and the Level 2B assets have to be returned within the LCR horizon. However, this arbitrage would be possible only if such a transaction was made with the domestic central bank otherwise, the credit institution would need to report a liquidity outflow. It was not possible to find similar situations in the two samples observed. This implies that, at least for the period and for the institutions used for this report, this situation is not relevant and only theoretical.

Second, consider a credit institution that conducts a secured funding operation with the domestic central bank using non-HQLA collateral. If the maturity of this operation falls within the LCR horizon, the operation will need to be included in the unwind. Where the funds initially received through the secured funding operation have been reused and invested in assets other than Level 1 EHQCB (for example for grating loans) and provided the credit institution does not report any other current holdings of Level 1 assets excl. EHQCB, the adjusted amount of Level 1 assets excl. EHQCB may become negative. This is because, unlike in the Basel standards, the EU LCR regulation does not provide for a floor (of zero) for the individual categories of adjusted amounts of liquid assets. It was

possible to find, overall (the entire period with monthly frequency and both samples), just 8 institutions presenting negative value for the amount of Level 1 assets excluding EHQCB after the application of the unwind mechanism and in most of these cases, the LCR was null. Most of these situations were observed before the 2019.

Even if there is no evidence that the absence of the zero floor has a detrimental impact, it could be argued that it is unjustified that the adjusted amount can become negative. Indeed, the motivation of the unwind mechanism is to avoid circumventing the caps referred to in the LCR regulation, but, if the assets received have been reused for non-HQLA purposes (such as granting loans), then the transaction has not been used to circumvent the limits and so there is no reason to penalise the institution. However, a negative adjusted amount provides some valuable information. It indeed reveals that part of the assets received though a short-term transaction is not available, because it is committed to a, possibly, long-term transaction.

Third, in the event of a reverse repo, a credit institution with excess liquidity uses part of its HQLA to obtain assets providing higher returns but with lower liquidity levels. In the following table it is reported the number of banks for which the adjusted L1 assets are higher than the reported L1 assets after the application of the unwinding. It is also reported the variation of the average LCR because of the application of unwind mechanism. As it can be seen, the effect is quite limited. More details are provided in the subsequent table where it is reported the detail of the institutions involved in reverse repo operations for which the impact of the unwind mechanism on the LCR is material. For the sample of Major institutions, it can be noticed that the level of the LCR is well above the minimum both with and without the application of the unwind mechanism. In the sample of small institutions, it is possible to see cases where impact of the unwind mechanism is material, in particular the unwinding shapes a material increment of the LCR, however these cases are negligible in relative terms.

Table 8: Banks involved in reverse repo operations, effect of the unwind mechanism on the LCR

Sample	date	nr of instit.	% of Net Liq Outflow (*)	LCR	effect of the unwinding on the LCR
Major instit.	31/07/2017	46	40.4%	148.8%	0.13%
	31/12/2017	41	49.6%	141.9%	0.17%
	31/12/2018	53	65.0%	142.2%	0.22%
	31/12/2019	55	59.6%	145.7%	0.48%
	31/05/2020	42	30.1%	159.5%	0.00%
	31/12/2020	54	53.4%	175.8%	0.12%
	31/12/2021	43	55.6%	171.4%	0.00%
	31/12/2022	42	52.4%	160.1%	0.00%
	31/05/2023	31	22.7%	168.7%	0.00%
	30/06/2023	45	49.4%	158.6%	0.00%
Smaller instit.	31/12/2020	97	19.7%	229.7%	1.48%
	31/12/2021	66	24.1%	176.7%	1.91%
	31/12/2022	87	22.4%	186.2%	2.35%
	31/05/2023	101	28.3%	203.0%	2.06%
	30/06/2023	74	28.1%	191.2%	2.10%

(*) the percentage is referred to the sample and period

Table 9: detail of the banks involved in reverse repo operations for which the effect of the unwind mechanism is material

	date	nr of instit.	% of Net Liq Outflow (*)	LCR with the unwind	LCR without the unwind
	31/07/2017	3	0.3%	249.8%	228.9%
	31/12/2017	1	0.1%	383.5%	322.8%
	31/12/2018	1	0.2%	219.0%	140.1%
	31/12/2019	3	0.6%	190.9%	143.4%
	31/12/2020	2	0.3%	289.5%	264.4%
Smaller instit.	31/12/2020	1	0.3%	241.4%	67.3%
	31/12/2021	1	0.2%	280.4%	71.7%
	31/12/2022	3	0.3%	234.8%	71.8%
	31/05/2023	4	0.3%	340.0%	169.1%
	30/06/2023	3	0.3%	308.0%	129.1%

(*) the percentage is referred to the sample and period

Fourth, a sale-and-lease-back structure is an operation in which the institution sells non-HQLA assets and uses the cash received in a reverse repo. It is essentially an operation which changes the formal ownership but not the liquidity risk profile. What may happen in this case is that the amount of liquid assets is unchanged in comparison with the initial situation however, due to the unwinding, the cash amount is considered as if it were at hand[55]. In the situation where only Level 1 excluding EHQCB assets and non-HQLA assets are involved, it should be observed that the adjusted amount of Level 1 excluding EHQCB assets increases in respect to the reported amount but the variations

---

[55] In other terms it is possible that a credit institution uses short term reverse repo to optimize the LCR, in this case the amount of level 1 assets excluding EHQCB will increase after the unwind.

of the adjusted amounts of Level 1 EHQCB, Level 2 A and Level 2 B in respect to the reported amounts is zero. It was possible to detect similar situations in the two samples considered but, in practically all that cases, the LCR was above 100% and the impact of the unwinding on the LCR was negligible.

Conclusions

In the observed period and with the available samples of credit institutions, it was not possible to detect material impacts on the level of the LCR of the institutions. In aggregate terms, it was possible to find that the unwind mechanism has an effect on the determination of the adjusted amount of Level 1 assets, and this effect can be positive or negative, whereas the effect on the LCR is mostly null (i.e. the ELAA was zero). A few cases were detected in which the unwind mechanism caused a reduction in the LCR, but the effect was not economically meaningful in most of them[56]. Some theoretical situations where the unwind mechanism could produce unwarranted results have been studied and, in particular, it was shown that their materiality is limited. The case of reverse repo operations has been studied because in this case the unwind mechanism may produce an increase in the amount of HQLA. However, it has been empirically shown that the materiality of these situations is currently limited.

These findings appear to be due to the predominant use of Level 1 assets excluding EHQCB, far above the regulatory minimum of 30% of the overall liquidity buffer, by banks, which makes an excess of other HQLA categories over the respective caps relatively unlikely. However, this situation may be the result of certain special conditions on funding markets (e.g. the liquidity provision by central banks) that may cease in the future. Under the current conditions, empirical analysis of the impacts of the unwind mechanism is biased by the high share of long-term refinancing operations with the central bank (TLTROs, PELTROs) in institutions secured funding transactions. However, as soon as central banks cut back long-term refinancing operations, the relevance of short-term funding operations secured with non-level 1 assets that are subject to the unwind will become more prevalent. Thus, it has to be observed whether the practical relevance of unwarranted effects of the unwind mechanism may increase when the current funding conditions change.

---

[56] It must be mentioned that the possibility to waive the unwind mechanism introduced in Delegated Regulation (EU) 2015/61 should provide sufficient flexibility to deal with such idiosyncratic situations.

Conclusions

Banks' liquidity monitoring has gained importance following the banking turmoil after the failure of three medium-sized banks in the United States (Silicon Valley Bank, Signature Bank and later First Republic). The deterioration of liquidity during the second half of 2022 and in early 2023, following the disclosure of large unrealised losses in the bank's bond portfolio, triggered the failure of SVB. Apart from the deterioration, SVB did not have appropriate collateral and operational arrangements in place to obtain liquidity and supervisors identified fundamental shortcomings in basic risk management of liquidity risk[57].

In the first half of 2023, EU banks show declining LCR ratios, continuing the trend that started in the first quarter of 2022. On average, the LCR ratio is still well above the minimum requirement because banks have significantly increased their LCR ratios since September 2016. The decline in banks' LCR is explained by the banking turmoil of the first quarter of 2023, together with the reduction in EU central banks' asset purchase portfolios and the decline in excess liquidity from the maturing of the ECB's TLTRO operations.

Monitoring the evolution of banks' LCR levels becomes particularly relevant amid the current environment of higher interest rates (which may affect the market value of liquid instruments), as well as the gradual removal of excess liquidity through the expected maturity of TLTROs and the announced unwinding of past asset purchases. Although EU/EEA banks continued to show strong LCR levels in the first half of 2023, an extension of the current trend is expected to push LCR levels further down.

Like in the previous years, EU banks continue to hold higher liquidity buffers, in relation to their net cash outflows, in their domestic currencies than in other significant (foreign) currencies. The liquidity position in USD has improved as of June 2023 compared to the one observed as of December 2022, both in terms of the average LCR and the share of banks that reported LCR in USD below 100%. With regards to the liquidity in GBP, the LCR in GBP has declined but the share of banks that reported LCR in GBP below 100% has declined.

At the aggregate level, the surplus in liquidity coverage in all currencies offsets the liquidity shortfall in other significant currencies. However, low levels of LCR in one significant currency may generate issues during stress periods when liquidity may be constrained and the FX swaps markets may become difficult to access. Banks need to ensure consistency between liquidity buffers and net outflows for each currency in which they operate. Against this background, competent authorities should consider making greater use of their discretion to restrict currency mismatches. This can be done e.g. by setting limits on the size of the net liquidity outflow in a foreign currency that can be met by holding liquid assets not denominated in that currency.

For the period 2016-23, a consistent sample of major EU banks showed LCR ratios well above the 100% minimum requirement. This notwithstanding, it was possible to identify a relationship

---

[57] BCBS: Report on the 2023 banking turmoil (October 2023).

between the lending activities and the level of the LCR. In detail, it was possible to verify that banks with a lower LCR than the median had a higher probability of experiencing a growth rate of the loans lower than the other banks. This suggests that the banks may be pursuing targets for the LCR that are higher than the regulatory minimum. However, once additional control variables are accounted for, the relationship appears less statistically significant.

It was further possible to find that the LCR unwind mechanism influences the determination of the adjusted amount of Level 1 assets, and this effect can be positive or negative, whereas the effect on the LCR is mostly null. These findings appear to be due to the predominant use of Level 1 assets excluding EHQCB, far above the regulatory minimum of 30% of the overall liquidity buffer, by banks, which makes an excess of other HQLA categories over the respective caps relatively unlikely. However, this situation may be the result of certain special conditions on funding markets (e.g. the liquidity provision by central banks through TLTROs) that may cease in the future.

Annex

Table 10: Number of banks included in the June 2023 analysis[58]

Country	All banks	Of which: Subsidiaries	G-SIIs/O-SIIs	Of which: Subsidiaries
AT	16	1	3	0
BE	11	0	4	0
BG	5	1	3	0
CY	4	0	1	0
CZ	4	0	1	0
DE	25	2	10	1
DK	10	0	5	0
EE	8	1	1	1
ES	39	5	4	0
FI	11	0	3	0
FR	24	1	7	0
GR	8	0	4	0
HR	1	0	1	0
HU	10	6	7	5
IE	6	0	3	0
IS	2	0	2	0
IT	43	1	4	0
LI	3	0	3	0
LT	9	1	2	1
LU	15	4	2	0
LV	6	1	4	1
MT	5	1	3	1
NL	19	0	5	0
NO	21	1	0	0
PL	14	6	9	5
PT	16	3	7	2
RO	7	5	6	5
SE	24	0	3	0
SI	5	1	1	0
SK	1	0	0	0
Total	**372**	**41**	**108**	**22**

Source: Supervisory reporting and EBA calculations.

---

[58] Results that are shown by total/group of banks (total EU/GSIIs, O-SIIs and others) do not include subsidiaries. However, results by country do include subsidiaries.

Table 11: Total asset coverage by country as of June 2023 (in percentage)[59]

Country	% Coverage
Austria	68%
Belgium	62%
Bulgaria	18%
Cyprus	72%
Czech Republic	15%
Germany	50%
Denmark	85%
Estonia	71%
Spain	96%
Finland	84%
France	98%
Greece	97%
Croatia	7%
Hungary	93%
Ireland	62%
Italy	90%
Lithuania	61%
Luxembourg	14%
Latvia	22%
Malta	63%
Netherlands	88%
Poland	74%
Portugal	91%
Romania	68%
Sweden	72%
Slovenia	75%
Slovakia	1%

Source: Supervisory reporting and EBA calculations.

---

[59] The information on total assets by country has been obtained from the Statistical Data Warehouse of the European Central Bank (ECB). The information provided in this table should be interpreted with caution as data on total assets by country includes local banking groups, local standalone banks, EU and non-EU subsidiaries and EU and non-EU branches. This may lead to an underestimation of the % coverage for some countries with a significant presence of branches and non-EU subsidiaries as they are outside the scope of this report. No data was available for non-EU countries; these have been excluded from Table 11. The coverage has been calculated based on the latest information available in the ECB DW which at the time of drafting this report was referenced to December 2021. For CZ and HR the numerator of the ratio uses data as of June 2022 as no data was available as of December 2021.

Table 12: Number of banks included in the evolution analysis[60] if the balanced sample criterion applies, June 2023

Country	All banks	G-SIIs/O-SIIs
AT	4	2
BE	5	3
BG	1	1
CY	1	1
DE	14	8
DK	4	4
EE	1	0
ES	10	4
FI	3	3
FR	9	6
GR	4	4
HU	1	1
IE	3	3
IT	9	4
LU	1	1
MT	2	2
NL	4	4
PL	1	1
PT	5	5
RO	1	1
SE	5	3
SI	1	1
Total	**89**	**62**

Source: Supervisory reporting and EBA calculations.

---

[60] All evolution analyses are shown by group of banks (total EU/GSIIs, O-SIIs and others) and, therefore, they exclude subsidiaries.

Table 13: Number of banks included in the analysis by two reference dates[61] if the balanced sample criterion applies

Country	All banks	G-SIIs/O-SIIs
AT	15	3
BE	11	4
BG	4	3
CY	4	1
CZ	4	1
DE	22	9
DK	10	5
EE	7	0
ES	34	4
FI	11	3
FR	23	7
GR	8	4
HR	1	1
HU	3	2
IE	6	3
IS	2	2
IT	41	4
LI	3	3
LT	6	1
LU	11	2
LV	5	3
MT	4	2
NL	19	5
NO	19	0
PL	8	4
PT	13	5
RO	2	1
SE	24	3
SI	4	1
SK	1	0
Total	**325**	**86**

Source: Supervisory reporting and EBA calculations.

---

[61] Results that are shown by total/group of banks (total EU/GSIIs, O-SIIs and others) do not include subsidiaries. However, results by country do include subsidiaries.

Table 14: Number of banks submitting liquidity coverage data (by business model), June 2023

Country	All banks	Of which: Subsidiaries
Consumer/ auto	28	4
Cooperative	22	0
Corporate-oriented	23	0
Cross-border universal	36	6
Custodian	6	1
Local universal	110	18
Mortgage	8	0
Other	21	2
Pass-through	2	0
Private	41	5
Public	7	0
Savings	20	0
N/A	48	5
Total	**372**	**41**

Source: Supervisory reporting and EBA calculations.

Table 15: Number of banks included in analysis in section 'LCR — impact on lending', June 2023

| Country	ISO code	Banks
Austria	AT	5
Belgium	BE	4
Bulgaria	BG	1
Cyprus	CY	2
Germany	DE	15
Denmark	DK	4
Estonia	EE	1
Spain	ES	10
Finland	FI	3
France	FR	9
Greece	GR	1
Hungary	HU	1
Ireland	IE	4
Italy	IT	9
Malta	MT	2
Netherlands	NL	5
Poland	PL	1
Portugal	PT	5
Romania	RO	1
Sweden	SE	6
Slovenia	SI	2
Total		**91**

Source: Supervisory reporting and EBA calculations.

Table 16: Number of banks included in analysis in section 'The unwind mechanism of the LCR'

Country	ISO code	Smaller banks	Major banks
Austria	AT	346	6
Belgium	BE	15	5
Bulgaria	BG	12	1
Cyprus	CY	5	2
Czech Republic	CZ	15	.
Germany	DE	1,191	18
Denmark	DK	44	4
Estonia	EE	5	2
Spain	ES	57	10
Finland	FI	7	4
France	FR	77	12
Greece	GR	10	4
Croatia	HR	12	.
Hungary	HU	8	1
Ireland	IE	8	6
Iceland	IS	.	3
Italy	IT	116	10
Liechtenstein	LI	10	.
Lithuania	LT	12	1
Luxembourg	LU	47	3
Latvia	LV	6	1
Malta	MT	14	2
Netherlands	NL	22	6
Norway	NO	39	3
Poland	PL	503	2
Portugal	PT	20	5
Romania	RO	9	1
Sweden	SE	99	7
Slovenia	SI	5	1
Slovakia	SK	4	.
Total		**2,718**	**120**

Source: Supervisory reporting and EBA calculations.

Figure 46: Households (above) and non-financial corporations (below) deposits of Euro area MFIs from Euro area counterparties (EUR tn)
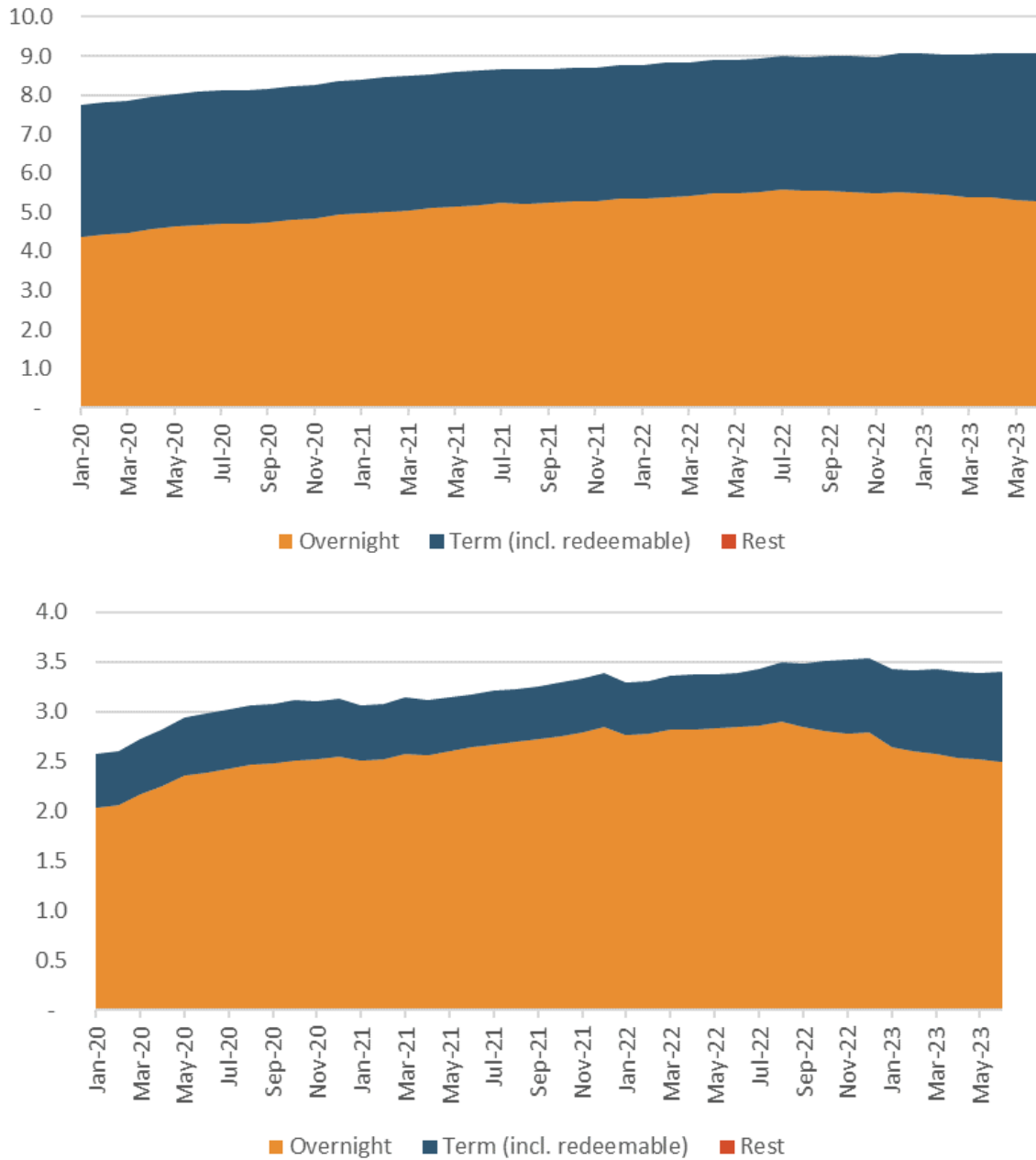
Source: ECB Statistical Data Warehouse and EBA calculations.

Table 17: Definition of business models

Type of business model	Business model	Label	Qualitative description of the business model		
			Main activities	**Main funding**	**Ownership/legal structure**
Universal banks	Cross-border universal bank	Cross-border universal	Engaged in several banking activities including retail, corporate and capital market operations Major cross-border operations	Diversified source of funding including deposits from clients, wholesale funding and derivatives liabilities Significant part of funding can come from foreign investors Taking or not taking retail deposits	Major cross-border cooperative banks: owned by depositors All others: no specification
	Local universal bank	Local universal	Engaged in several banking activities including retail, corporate and capital market operations Operating predominantly in their domestic market	Diversified source of funding including deposits from clients, wholesale funding and derivatives liabilities Predominantly funded in their domestic market Taking or not taking retail deposits	Major cross-border cooperative banks: owned by depositors All others: no specification
Retail banks	Consumer credit banks (including automotive banks)	Consumer/auto	Originating and servicing consumer loans to retail clients	No specification	No specification
	Co-operative banks/savings and loan associations	Cooperative	Originating and servicing loans to local community individuals and businesses	Retail deposits	Owned by depositors
	Savings banks	Savings	Retail banking (payments, savings products, credits and insurances for individuals and small and medium-sized enterprises)	Retail deposits	No specification
	Mortgage banks taking retail deposits (including building and loan associations from Germany – *Bausparkasse*)	Mortgage	Originating and servicing mortgage loans to retail clients	Retail deposits	No specification Building societies: subject to specific statutory requirements with respect to activities and purpose
	Private banks	Private	Wealth management services to high net worth individuals and families	No specification	No specification
Corporate-oriented banks	Corporate-oriented (including leasing and	Corporate-oriented	Financing domestic and international trade Specialise in products such as letters of credit,	No specification Taking or not taking retail deposits	No specification

Other specialised banks	factoring, merchant banks)		bank guarantees and collection and discounting of bills		
	Custodian institutions (including CSDs, which are subject to CSDR)	Custodian	Custodian services (holding securities in electronic or physical form on behalf of corporate and individual investors for safekeeping) Other services such as account administration, transaction settlements, collection of dividends and interest payments, tax support and foreign exchange	No specification	No specification
	Institutions not taking retail deposits (including pass-through financing)	Pass-through	Originating and servicing loans (including mortgage loans) Includes pass-through financing	No retail deposits Issuance of covered bonds or other types of securities liabilities	No specification
	Public development banks	Public	Financing public sector projects or the provision of promotional credit or municipal loans	No specification	Majority owned by the state or public sector. Subject to specific statutory requirements with respect to the purpose and/or activity
	Other specialised banks	Other	Banks not included in the above categories (residual category) This category should include among other business models: * Islamic finance * cooperative central banks * CCPs	No specification	No specification

Source of detailed business model categories: Cernov and Urbano (2018), "Identification of EU bank business models: A novel approach to classifying banks in the EU regulatory framework", EBA Staff Paper N 2 - June 2018.
Grouping by 'Type of business model' based on EBA criteria.