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

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EBA EUROPEAN BANKING AUTHORITY

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Abbreviations

CCP	central counterparty
CET1	Common Equity Tier 1
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	pounds sterling
GDP	gross domestic product
GSIIs	global systemically important institution
HQCB	high-quality covered bond
HQLA	high-quality liquid asset
LCR	liquidity coverage ratio
NFC	non-financial company
NP	net profit
OLS	ordinary least squares
O-SII	other systemically important institution
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) over the net liquidity outflows arising during a 30-calendar-day stress period. The analysis is based on Common Reporting (COREP)[1].

On average, the LCR is well above the minimum requirement and is increasing, driven by HQLA investment.

At end-December 2018 the weighted average LCR across the sample of EU banks stood at 149%, which implies ratios well above the minimum LCR requirement of 100%. The compliance with the ratio has steadily improved since September 2016 when data first became available[2]. The upwards trend has been driven by an increase in the banks' holdings of HQLAs, while net liquidity outflows have remained relatively stable over the same period. Only four banks in the monitoring sample had LCR levels below 100%. As allowed by the regulation, these institutions made used of their liquidity buffers during times of stress, resulting in the LCR dropping below 100%[3]. The LCR level of global systemically important institutions (GSIIs) stood at 145% and that of other systemically important institutions (O-SIIs) at 144%. The weighted average LCR of the remaining banks was higher at 183%. The average LCR level for the majority of the countries was within the 100-200% range. These averages mask some important differences in banks' LCR levels within countries.

Specific funding structures could drive different LCR compositions across business models.

The observation that LCRs tend to be well above 100% holds across business models. However, their compositions differ. Some business models that have funding coming predominantly from wholesale markets show higher net liquidity outflows and tend to fulfil their LCR targets by holding higher amounts of HQLAs. This is particularly dominant among custodian banks. At the current juncture, no single reason for the observed high LCR levels can be identified, although several factors may contribute to it, including precautionary buffers, easy monetary conditions and local regulatory requirements.

Banks finance their assets in different currencies. LCR

Many EU banks tend to finance part of their assets in a different currency than the one in which the assets are denominated. This

[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.
[2] First reference date for which COREP data, based on the LCR DR, is available.
[3] The possibility of making used of liquid assets during times of stress (resulting in an LCR below 100%) is foreseen under Article 412(1) of the CRR (and Article 4(3) of the LCR DR) as maintaining the LCR at 100%, which, under such circumstances, could produce undue negative effects on the credit institution and other market participants.

levels considering items denominated exclusively in US dollars and pounds sterling are, in general, lower.

gives rise to an inherent risk of currency mismatch in the LCR. The regulation requires banks to ensure that the currency distribution of their liquid assets is consistent with the currency distribution of their net liquidity outflows. Among the significant (foreign) currencies, the US dollar (USD) and the pound sterling (GBP) are those that show the lowest LCR levels for EU banks. As the ability of banks to swap currencies and to raise funds in the foreign currency markets may be impaired during times of stress, significant currency mismatches should be followed closely by competent authorities. Therefore, they should consider making greater use of their discretion to restrict currency mismatches by setting limits on the amount of net outflows denominated in significant reporting currencies.

There is no clear evidence of an impact of the LCR regulation on the lending to the economy.

The analysis of the potential impact of the LCR regulation on bank lending shows that a negative relationship can be identified between the level of the LCR and the probability of banks reducing their lending activity. However, controlling for additional variables such as the level of capital and the non-performing loan ratio leads to a non-statistical significance of this relationship, thus leading to much less conclusive results.

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)). In this regard, 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 sixth publication of the EBA report under Article 509(1) and the fourth 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[4]. As in the previous reports, the analysis is based on COREP data. The current report uses figures as of end-December 2018, covering a sample of 136 banks (173 banks including subsidiaries) in 28 EU Member States and two European Economic Area / European Free Trade Association states that report COREP data to the EBA on a regular basis[5].

The sample covers both globally active and other significant institutions (GSIIs and O-SIIs), as well as other banks, and the report provides breakdowns by different business models across the EU. In terms of total assets, the sample covers approximately EUR 30 trillion (EUR 31 trillion including subsidiaries) or, on average, 83% of the total assets of the EU banking sector[6]. Country data should be interpreted with caution because differences in the representativeness of the sample across countries may affect data comparability.

The report includes a detailed assessment of the LCR key components (HQLA, net liquidity outflows). The analysis of currency mismatches investigates whether the banks' liquidity coverage in foreign (and significant) currencies differs from their overall LCR.

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[7], which also include subsidiaries of EU parent institutions[8]. Unless stated otherwise, all average figures are weighted.

[4] See definition of significant and foreign currency in Section 4.
[5] 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.
[6] The information on total assets of the EU has been obtained from the Statistical Data Warehouse of the European Central Bank (ECB).
[7] To ensure confidentiality, figures by country breakdown are shown only if there are at least three banks that reported data in each specific country.
[8] The number of banks by country breakdown included in the different analyses is provided in the Annex.

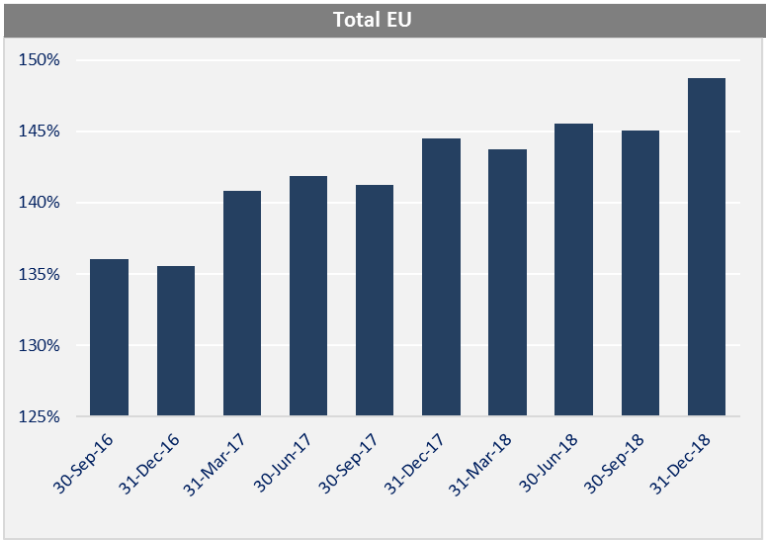
Analysis of the LCR and its components

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%[9]. 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[10] shows that banks have made significant efforts to increase the level of the LCR and to reduce the shortfall in liquid assets. The LCR, on average, follows an increasing trend and has been above the 100% level since September 2016. In December 2018, the weighted average LCR for the sample of banks used for this report was 149% (Figure 1). At the same time, the liquidity shortfall has decreased from over EUR 26.7 billion in September 2016 to EUR 15.7 billion in December 2018. The number of banks with a shortfall decreased from seven in September 2016 to four in December 2018.

Figure 1: LCR evolution (weighted average)

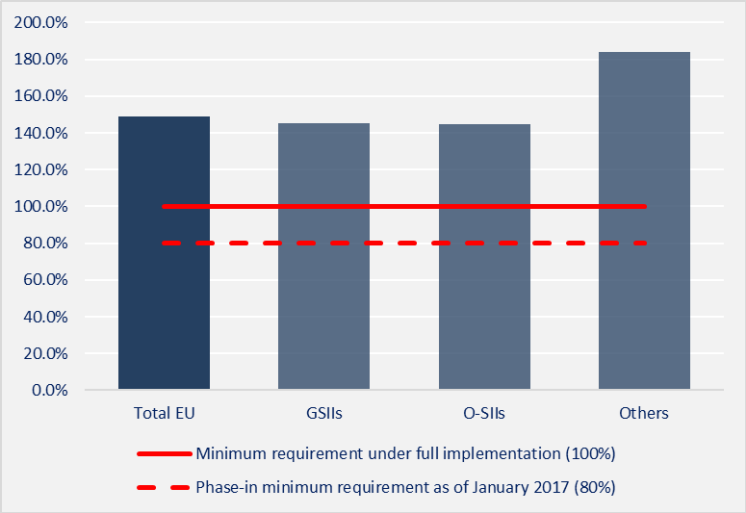


[9] In accordance with Article 412 of the CRR and Article 4(3) of the Commission Delegated Regulation (EU) 2015/61, credit institutions can make use of their liquid assets to cover their net liquidity outflows under stressed circumstances, even if such a use of liquid assets may result in their liquidity 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.

[10] The time series uses a consistent sample of 115 banks (excluding subsidiaries; results are shown for total EU, GSIIs and O-SIIs). The results are reported in terms of volumes or in changes from previous period references 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.

On average, GSIIs and O-SIIs have lower LCR (145% and 144%, respectively) than other banks (183%). In the sample, only four banks out of 136 (excluding subsidiaries) did not meet the 100% LCR minimum requirement. Moreover, the LCR dispersion across 'other banks' is greater than across GSIIs and O-SIIs. This reflects the heterogeneity of banks in the group classified as 'other' in terms of size and business models.

Figure 2: Weighted average LCR across bank groups (GSIIs, O-SIIs and others)



Differences are also found when analysing the weighted average LCR levels across countries. The majority of countries have LCR levels between 100% and 200%. Nevertheless, some countries present very high average LCR levels, such as Slovenia, Malta and Romania that have ratios above 300%. Bulgaria, Latvia and Lithuania have ratios above 200%, while only one country, Greece, presents average LCR levels that are below 100%[11].

[11] Due to the sovereign debt crisis, Greek credit institutions made used of their LCR liquidity buffer, resulting in LCR levels that are below the 100% minimum requirement. The possibility of monetising liquid assets during times of stress (resulting in an LCR below 100%) is foreseen under Article 412(1) of the CRR (and Article 4(3) of the LCR DR), as maintaining the LCR at 100% under such circumstances could produce undue negative effects on the credit institution and other market participants. In accordance with Article 414 of the CRR (and Article 4(4) of the LCR DR), Greek credit institutions were required to submit plans for restoring compliance with the LCR requirement.

Figure 3: LCR across countries

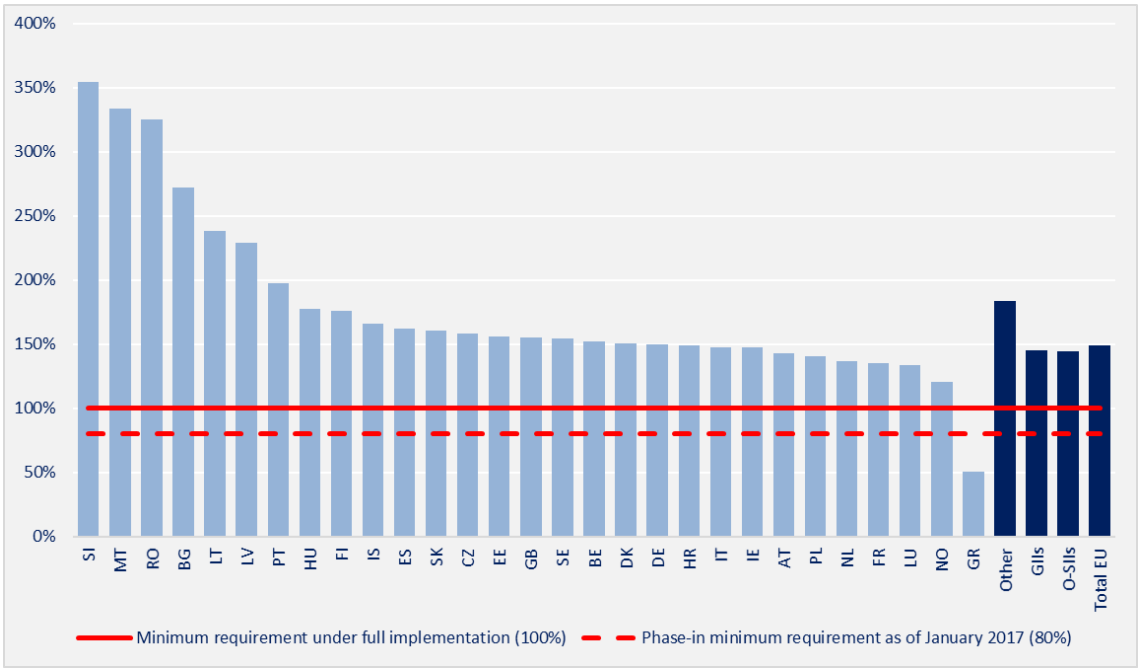


Figure 4: LCR dispersion across countries

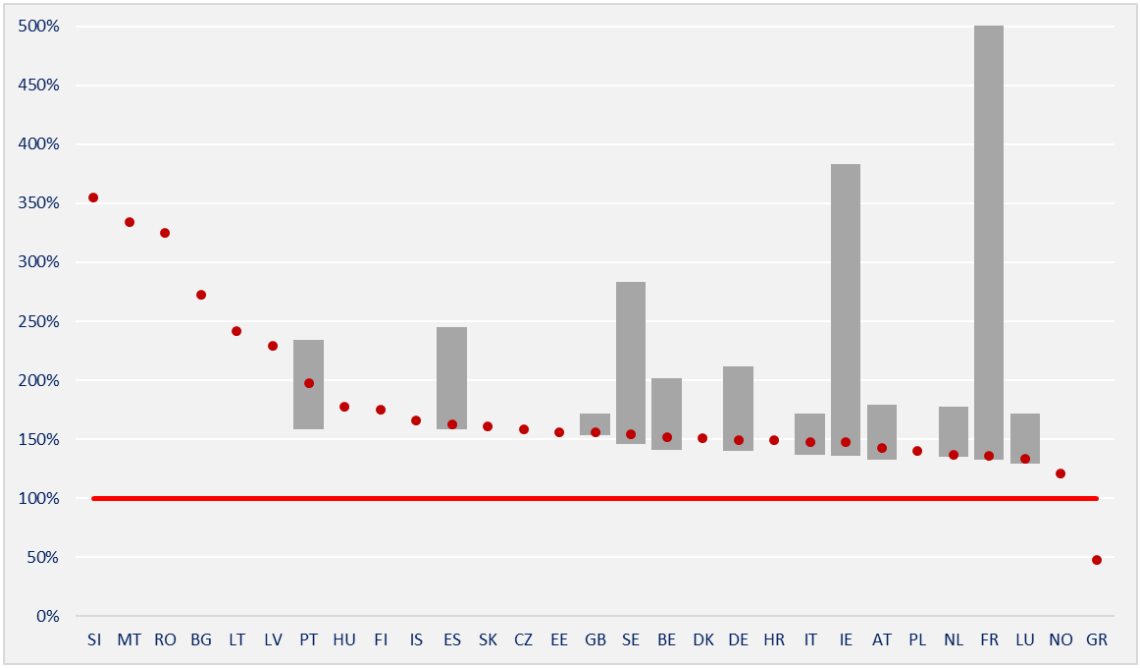


Figure 4 shows the dispersion of the LCR across countries. The top line of the grey box shows the 75th percentile, whereas the bottom line of the grey box is showing the 25th percentile[12]. The red points represents the weighted average LCRs[13]. The figure shows that there is dispersion in the banks' LCR levels even within countries. France is the country with the highest dispersion, followed by Ireland. The dispersion in both countries is driven by a single institution that reported very high LCR levels due to their specific business model. In many countries, the weighted average point tends to be closer to the 25th percentile, meaning that larger banks within the country have lower than average LCRs.

During 2018, the LCR level for GSIIs and O-SIIs followed an increasing trend. For other banks the evolution of the LCR shows quarterly volatility, as the there is a large increase (+1.005 basis points) from the first quarter to the second quarter, followed by a large decrease in the third quarter (–543 basis points) and again an important increase in the final quarter of the year (+959 basis points)

Figure 5: Evolution of the LCR by bank group (weighted average)

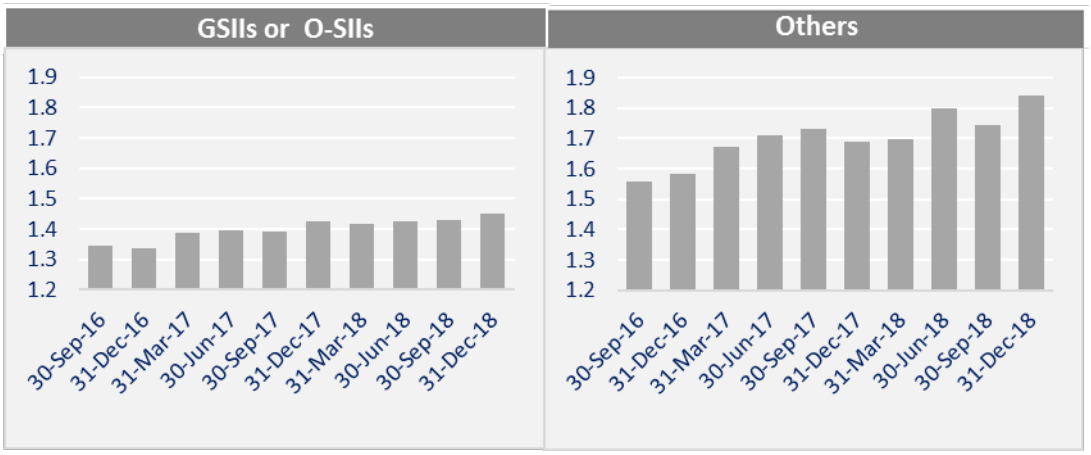


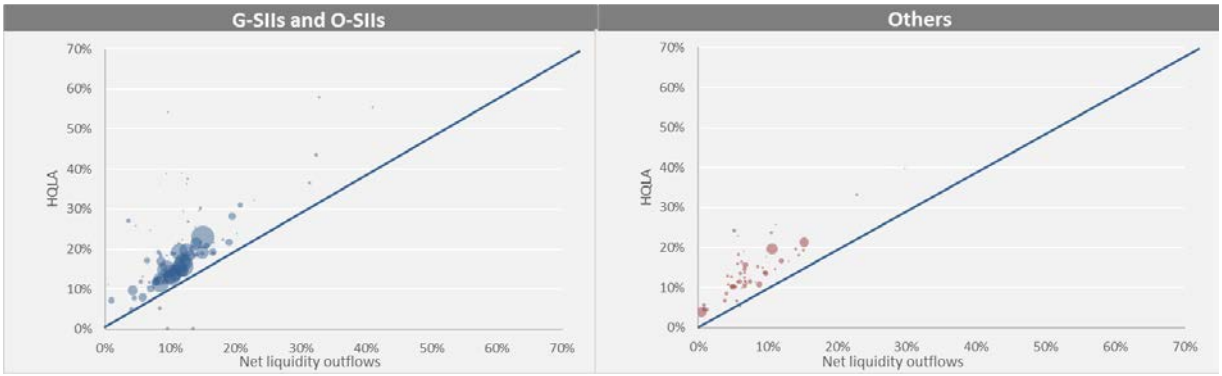
Figure 6 shows the interaction between HQLA and net liquidity outflows at individual bank level. The parameters are expressed as a share of total assets, and the size of the bubble indicates the banks' weights in terms of total assets. The bigger the bubble, the larger the bank and the greater the weight it takes in the weighted average values. The 45° line indicates equality between HQLA and net liquidity outflows, i.e. when the LCR is 100%.

Most banks in the sample are located above the line, suggesting that they have LCR levels that are adequately above the minimum requirement.

In terms of their position with respect to the 45° line, GSIIs and O-SIIs present a higher dispersion, as some of them show very high HQLA holdings and net liquidity outflows over total assets ratios.

[12] 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.
[13] For confidentiality reasons, for countries with between three and four observations, only the weighted average LCR is shown.

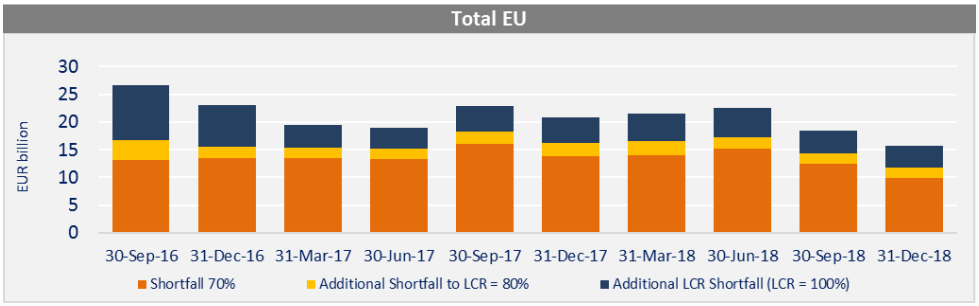
Figure 6: HQLA and net liquidity outflows (as a share of total assets) by group of banks



The efforts that banks have made to increase their LCR levels are also reflected in the evolution of the liquidity shortfall (Figure 7)[14], which, based on the fully loaded LCR minimum requirement (100%), has decreased from over EUR 26.7 billion in September 2016 to EUR 15.7 billion)[15] in December 2018. Consequently, the number of banks with an LCR below 100% also declined, from seven in September 2016 to four in December 2018.

Since September 2016, banks that were already compliant with the LCR minimum requirement have further increased their surplus, suggesting ongoing efforts to strengthen their liquidity profiles. As a result, in recent years, most banks in general have shown an LCR level well above the 100% minimum requirement. This is the situation for almost all countries in the EU and for all groups of banks.

Figure 7: Evolution of the liquidity shortfall (EUR billion) — balanced sample



[14] The shortfall calculated in this report is the sum of differences between the net liquidity outflows and the stock of HQLA 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.

[15] Note that the time series analysis showing volumes is based on a consistent sample of banks that submitted data for all reporting dates.

Why EU banks report LCRs that are well above the minimum requirement

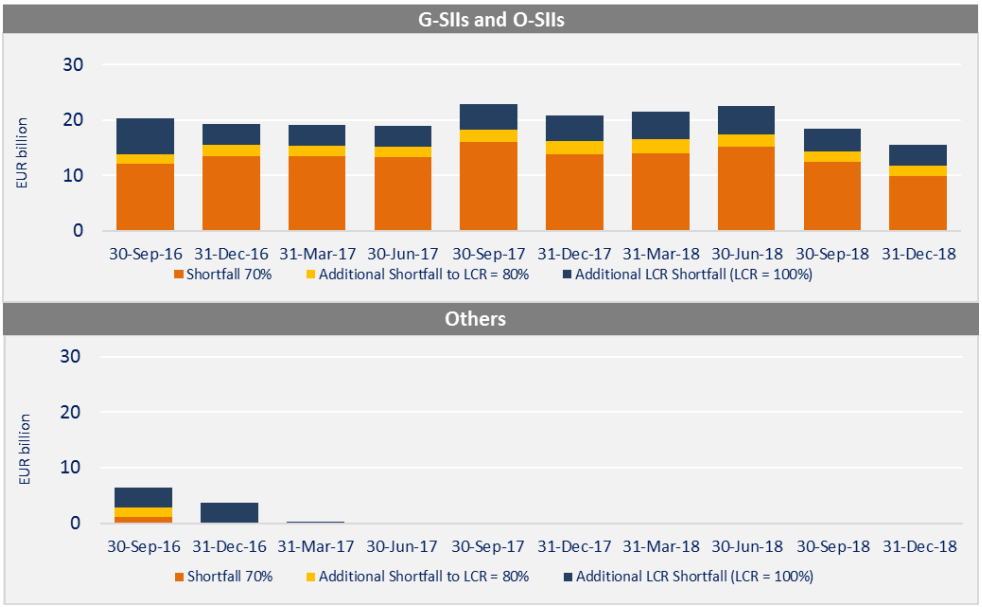
Banks across the EU report LCRs that are well above the 100% minimum requirement. The EU average LCR was 148.8% in December 2018 and high ratios are also shown in the average LCRs across individual countries and business models. Indeed, 13 out of 27 countries have an average LCR over 150%. Of these, six countries reported an average above 200%. Bank-by-bank data show that 62% of the banks in the sample report LCR values over 150%, and 32% of the banks have LCR values that are above 200%. Several factors may possibly contribute to these high LCR values.

- The LCR of certain banks has always been substantially higher than the 100% minimum LCR requirement. Depending on their business model and funding strategies, banks might have a balance-sheet structure that inherently contributes to a compliance above the minimum requirement.
- The current situation of low interest rates and ample liquidity conditions in most of the EU is expected to continue. Together with the past and ongoing central bank quantitative measures that provide credit easing and liquidity support (see the box on the interactions between non-standard monetary policy measures and the LCR liquidity buffer), the easy monetary conditions also contribute to high liquidity buffers by providing additional HQLA in the form of central banks' reserves (which may then be recycled into other forms of HQLA). Additionally, the current interest rate environment could have contributed to an increase in asset prices and therefore the market value of the HQLA.
- The LCR is a rather volatile ratio when compared with other prudential ratios, as it is designed to ensure that banks have the necessary assets available to face short-term liquidity disruptions over a 30-calendar-day period. The overall volatility of the LCR could be the result of high fluctuation in some of its components in particular (e.g. HQLAs are marked to market after the application of haircuts). In order to ensure an adequate LCR level at all times, banks may prefer to maintain high buffers to cover any movements in the LCR components that may be difficult to predict *ex ante*.
  As a consequence, banks' internal liquidity management policies may target a high level of LCR for precautionary reasons such as to avoid any risk of supervisory intervention. According to the LCR regulation, banks can monetise their liquid assets during stress periods, even if such use may result in a LCR falling below 100%. Nevertheless, the regulation also envisages mandatory notification to competent authorities if a reason can be identified that could lead to a non-compliance in the future, even if the bank is currently fully compliant with the LCR requirement. Such a notification results in the mandatory establishment of a liquidity restoration plan. In other words, observed high LCR buffers could be the result of banks trying to avoid the LCR dropping below 100% in the future, thus triggering supervisory action on the bank's liquidity management.

- The LCR may be used as an indicator of internal risk management where the target level may have been set above the 100% minimum requirement. Also, since the disclosure of the LCR is mandatory, any situation close to non-compliance could be interpreted by the funding markets as signalling potential liquidity distress. LCR values well above 100% would thus avoid any negative market reaction in a situation where the peer group levels are higher.
- Additional LCR requirements in the form of Pillar 2 add-ons might be applicable in some jurisdictions, forcing banks in those jurisdictions to pursue higher LCR levels.
- Finally, as LCR requirements apply both at the consolidated and at the individual level, the aggregation at the consolidated level of the individual-level liquidity buffers may lead to higher LCR levels in the absence of the use of liquidity waivers.

Three GSIIs/OSIIs banks and one bank that is not a GSIIs/OSIIs[16] reported a shortfall in December 2018.

Figure 8: Evolution of the liquidity shortfall by bank group (EUR billion) — balanced sample



The variation in the average LCR levels throughout 2018 is not specifically driven by variation in one or the other of the LCR components. The decrease in the average LCR during the first quarter of 2018 is due to an increase in the net liquidity outflows (denominator of the ratios). The increase in the second quarter of 2018 can be attributed to an increase in the liquid assets (HQLA) whereas the increase in the last quarter of 2018 is due to a reduction in the denominator of the ratio (Figure 9). Since September 2016 and apart from the evolution in the last quarter of 2018, banks have therefore continued to improve their overall liquidity profiles on the asset side. In line with previous

[16] The non GSII/O-SII bank that reported a shortfall as of end-December 2018 had already reported an LCR of over 100% in 2019.

EBA LCR reports, banks have stepped up their investment in liquid assets and, more precisely, replaced non-eligible assets with eligible liquid assets[17]. This tendency is clearer for non-GSII and non-O-SII banks, as these banks recorded relatively stable levels of net liquidity outflows but increasing holdings of HQLAs.

Figure 9: Evolution of the numerator and denominator of the LCR, September 2016 = 100% — balanced sample

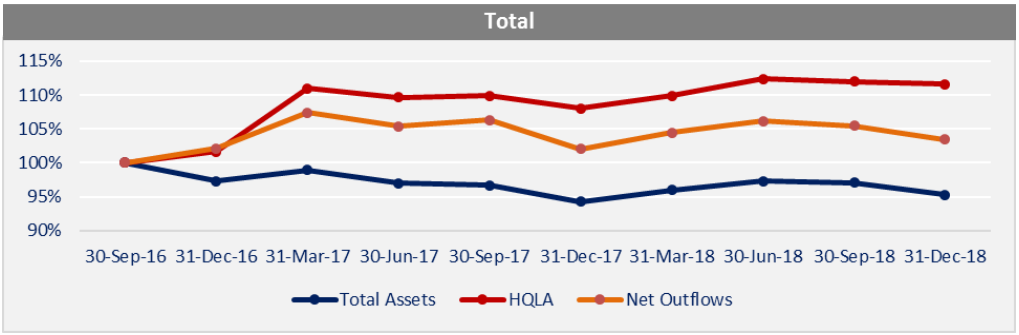
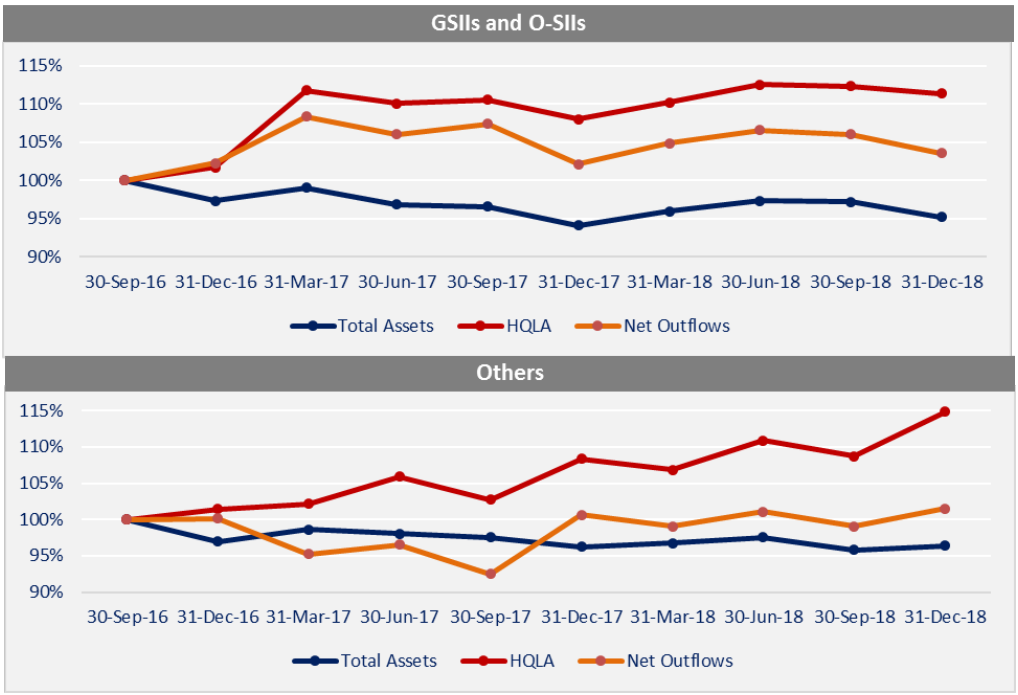


Figure 10: Evolution of the numerator and denominator of the LCR by bank group, September 2016 = 100% — balanced sample



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

[17] The EBA reports on impact assessment for liquidity measures under Article 509(1) of the CRR (2013, 2014 and 2017).

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.

The bulk of liquidity buffers consists of Level 1 assets in the form of cash, central bank reserves and securities (also EHQCBs). GSIIs and O-SIIs, on average, tend to hold higher shares of central bank reserves and lower levels of EHQCBs than other banks. Overall, the average liquidity buffer (before the application of the cap on liquid assets) is approximately 15.4% of total assets for all banks, and 15.5% for GSIIs and O-SIIs (Figure 11).

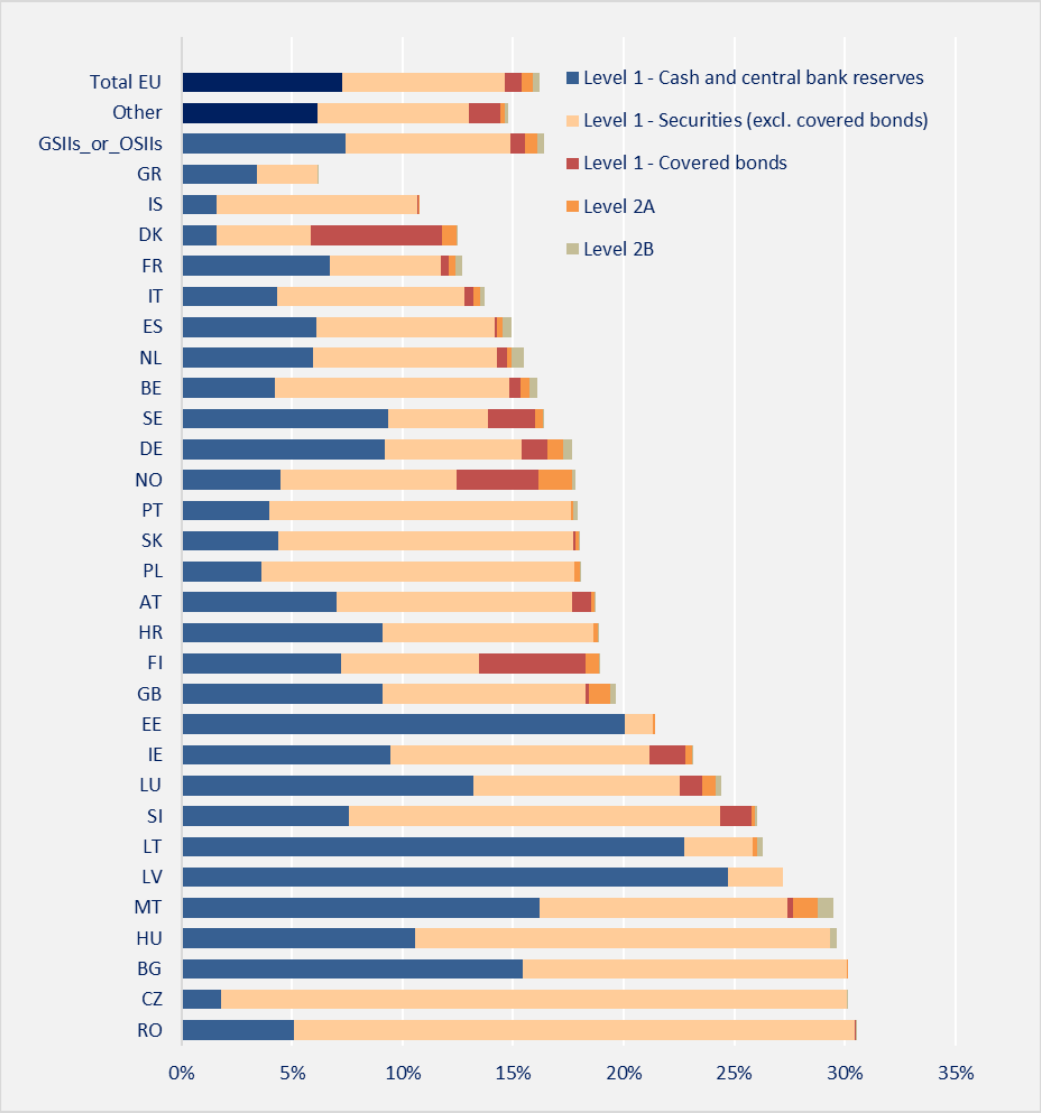
Article 17 of the LCR DR sets the minimum requirements for the composition of the liquidity buffer by asset category. A minimum of 30% of the liquidity buffer is to be composed of Level 1 assets, excluding EHQCBs. Aggregate Level 2 assets should not account for more than 40%, and Level 2B assets should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

On average, liquid assets before the above-mentioned cap on liquid assets consist mainly of Level 1 assets (more than 95%, or more than 90.4% when excluding EHQCBs, of the total liquidity buffer).

Within Level 1 assets, the share of securities (45%) is similar to the share of cash and reserves (44.7%). On average, EHQCBs represent a higher proportion (9%) for 'other banks' than for GSIIs and O-SIIs (4%). Eligible assets in Level 2 assets represent only 5% of the total liquidity buffer for all banks.

The composition of the liquid assets depends largely on the business models of the institution and also reflects differences across EU countries. While liquidity buffers comprise mainly Level 1 assets in all countries, banks in 57% of the countries rely largely on Level 1 securities (excluding covered bonds); banks in 40% of the countries rely on cash and central bank reserves. On average, Lithuania, Estonia and Latvia are the countries with a larger share of cash and central bank reserves in their total liquidity buffer (between 90% and 93% of the total liquidity buffer), whereas Czechia, Romania and Iceland have the biggest share of Level 1 securities (between 84% and 94% of the total liquidity buffer). Covered bonds contribute significantly to the liquidity buffer in Denmark (48% of the total liquidity buffer), in Finland (26%) and in Norway (21%).

Figure 11: Composition of liquid assets (post-weight and before the cap) relative to total assets

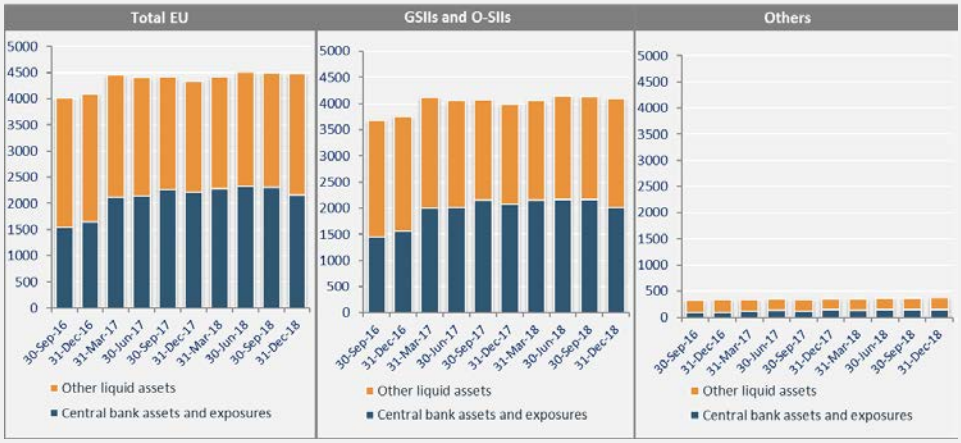


Interactions between non-standard monetary policy measures and the LCR liquidity buffer

Monetary policy operations can have direct implications on banks' liquid asset holdings. This is because liquidity provided by central banks is 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. In the euro area, the ECB's targeted longer-term refinancing operations (TLTROs) and the asset purchase programme, as well as the quantitative easing (QE) or asset purchase programmes carried out by other EU central banks since 2015, are indeed reflected in the evolution of the

banks' liquidity buffers. The contribution of central bank assets and exposures continued to increase from September 2016 to December 2018, particularly for GSIIs and O-SIIs (Figure 12).

Figure 12: Evolution of central bank assets and exposures over time (EUR billion) — balanced sample



The unconventional central bank policies raise some questions about how the level of liquid assets and the composition of the banks' HQLA portfolios could be affected by changes in central bank policies in the future.

In March 2019, the ECB announced a new series of quarterly targeted longer-term refinancing operations (TLTRO III), to be launched in September 2019. This means that the EU banks' exposures towards central banks can be expected to follow an upwards trend even if the 2018 EBA report on funding plans — which provide more details about banks' planned funding structures — showed a planned reduction in funding from public sector sources (including central banks), in favour of an increased reliance on market-based funding for the years 2018 to 2020.

An eventual end to the full allotment tender procedures in central bank credit operations and the winding down or phasing out of asset purchase programmes would reduce the supply of central bank reserves and slow down the upwards trend in central bank assets and exposures that was witnessed between September 2016 and December 2018. A reduction in the supply of central banks' reserves could mean, *ceteris paribus*, that banks' liquidity buffers would decline, even if it is unlikely that they drop the minimum requirement.

Nonetheless, under such a scenario the banks would at least be required to modify their funding strategies and, where necessary, the composition of their HQLAs, in order to keep the liquidity buffers unchanged.

Additionally, it is necessary to point out that the ECB's QE programme also increased the liabilities of banks vis-à-vis the non-bank sellers of assets under such programmes. This would increase banks' net cash outflows. Under such circumstances, the unwinding of the QE programme could thus reduce the numerator and the denominator of the LCR. The net effect on the ratio cannot be assess based on COREP data alone and is beyond the scope of this report.

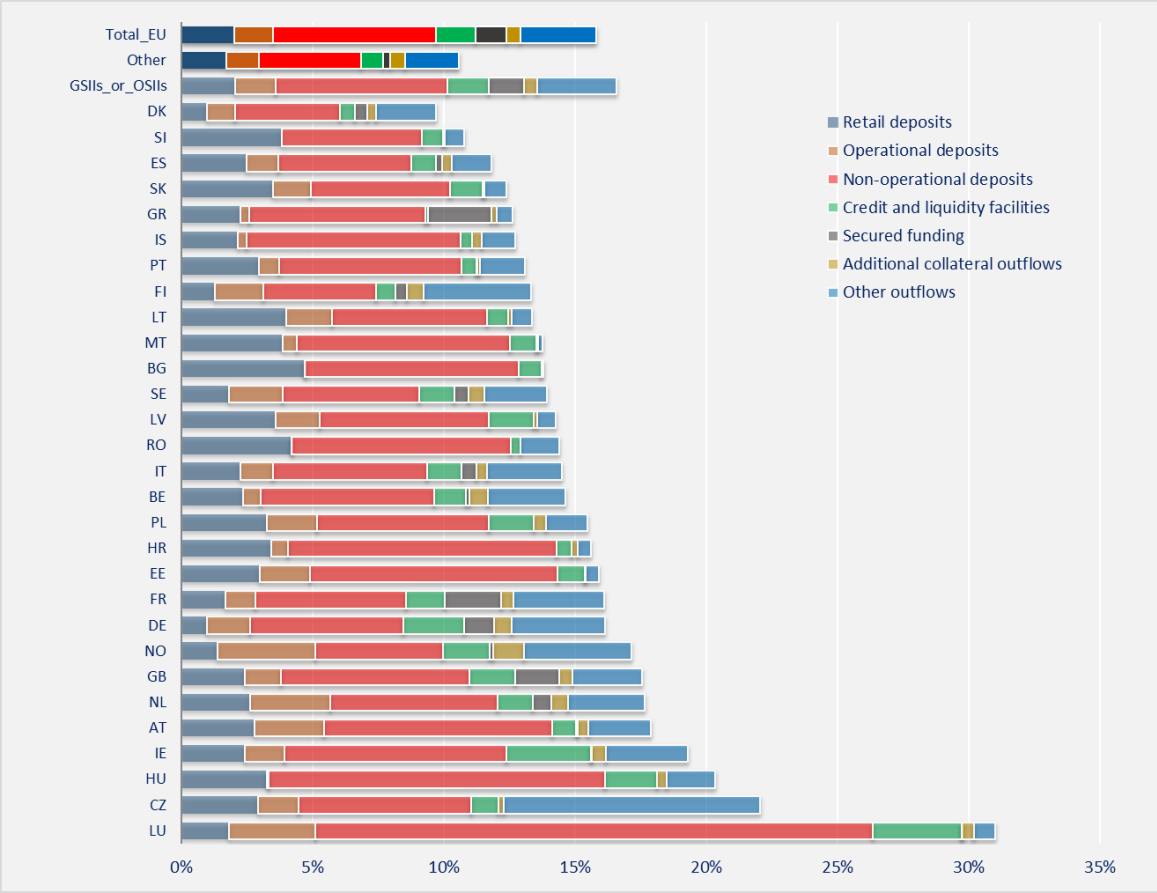
Composition of outflows and inflows

Net liquidity outflows are defined as the difference between liquidity outflows and liquidity inflows and are required to be positive[18]. 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[19]. 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 amount of inflows that can offset outflows is generally capped at 75% of total liquidity outflows. 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 the prior approval of competent authorities[20] and are subject to compliance with some conditions established in the regulation. This includes a potential exemption for intragroup and intra-institutional protection scheme flows and banks that specialise in pass-through mortgage lending or in leasing and factoring. In addition, banks that specialise in financing the acquisition of motor vehicles or in consumer credit loans may apply a higher cap of 90%.

On average, cash outflows (post-weight) represent approximately 16.0% of total assets of the banks in the sample. GSIIs and O-SIIs present a higher share (16.5%) than 'other banks' (10.5%). The share of outflows from retail deposits of total assets is nearly the same in both groups of banks (around 2% of total assets). However, relative to total cash outflows, 'other banks' present a higher share of retail deposits (16.11% of total cash outflows compared with 12.39% of total cash outflows for GSIIs and O-SIIs). As expected, for both groups of banks (GSIIs and O-SIIs and other banks), the main component of the cash outflows is non-operational deposits (e.g. short-term deposits from financial customers), which tend to have higher run-off rates and account for 6% of total assets. The same composition of outflows is found when analysing results by country.

[18] Article 20 of the LCR DR.
[19] Article 22(1) of the LCR DR.
[20] Article 33 of the LCR DR.

Figure 13: Composition of cash outflows (post-weight) relative to total assets



Furthermore, banks should take into account an additional outflow that corresponds to the collateral needs that would result from the impact of an adverse market scenario on credit banks' derivative transactions and other contracts, in case these are considered to be material[21].Figure 13 shows the share of additional collateral outflows in total assets (around 0.5% of the total assets for both groups of banks). As a percentage of total outflows, the share of additional collateral outflows is 3.0% for GSIIs and O-SIIs and 5.5% for others.

As described above, the recognition of liquidity inflows is, in the absence of exemptions, limited to 75% of total liquidity outflows[22]. In this sample, two banks benefited from a higher cap of 90% and four banks benefited from a full exemption of certain inflows from the cap.

In addition, it is worth mentioning that the amount of outflows represented in Figure 13 is already net of inflows if they meet the conditions to be considered as interdependent inflows and if the approval of the competent authority is granted. This is because, in this specific case, the LCR DR allows the calculation of outflows that are already net of these inflows[23]. Bank-by-bank analysis shows that there are currently seven banks with inflows reported as being interdependent[24].

[21] Article 423(3) of the CRR and Article 30(3) of the LCR DR.
[22] 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).
[23] Article 26 of the LCR DR.
[24] Note that the cell in COREP that contains the information about the amount of interdependent inflows, is a memo item. This number represents the number of banks with interdependent inflows that provided this information.

Assessment of secured funding transactions with central banks

Central bank-related funding transactions have to be backed by eligible collateral. This means that they are considered to be secured funding transactions that may affect the LCR if the remaining maturity of the transactions is less than 30 calendar days. However, unlike interbank secured funding transactions, no cash outflows will be assigned to transactions where the lender is a central bank. The underlying rationale is the assumption that, in times of stress, the central bank is expected to roll over any secured funding transactions, as long as the relevant collateral is central bank eligible, disregarding the LCR liquidity quality of these assets pledged as collateral[25]. In contrast, secured short-term transactions with other counterparties are subject to an outflow depending on the liquidity quality of the underlying collateral. In terms of the LCR, the impact of this differentiated treatment is significant where collateral is less liquid: an outflow rate of 0% is applied to all transactions with central banks, whereas in the case of transactions with other counterparties an outflow rate of 100% of the amount due is applied.

At end-December 2018, 74 banks reported secured funding transactions with any type of counterparty. Of these, 53 reported secured funding transactions with a central bank (39 were either GSIIs or O-SIIs, and 14 were classified as 'other banks').

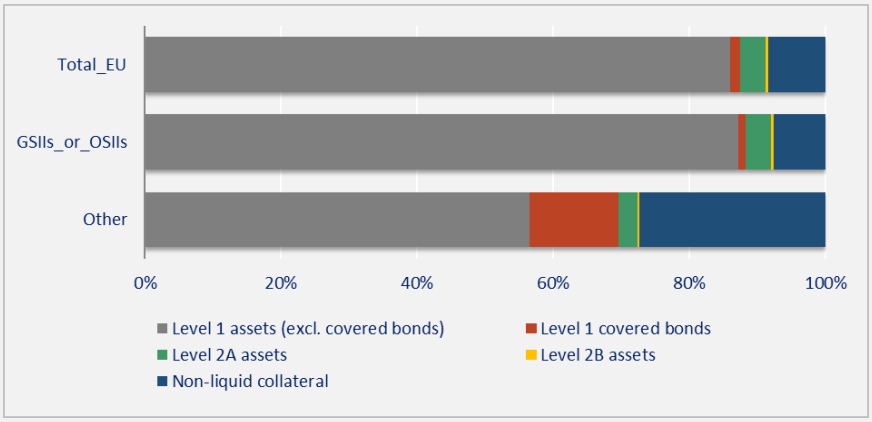
Given the preferential treatment of secured funding transactions with central banks in the determination of the net cash outflows, some banks may benefit from the difference between the list of central bank eligible assets for collateral and liquid assets in terms of liquidity coverage requirements. Banks that benefit from this treatment are those that use non-liquid assets as collateral to draw central bank funding. While an outflow rate of 0% is applied to these transactions with central banks, an outflow rate that is equivalent to the haircut of the underlying collateral is applied to transactions with other counterparties (e.g. 0% if the transactions are backed by Level 1 assets (excluding covered bonds), 7% if collateralised by Level 1 covered bonds, and up to 100% if collateralised by non-HQLAs).

In line with previous reports, the composition of the collateral posted for secured funding transactions maturing within 30 days[26] with central banks present material differences across banks. For GSIIs and O-SIIs, a large part of the collateral posted for these transactions is Level 1 assets, excluding EHQCBs (87% of the total). The Level 1 covered bonds and the non-liquid collateral represent only 1.1% and 3.7% of the total collateral posted, respectively. On the contrary, for 'other banks' the share of the collateral posted for these transactions that is Level 1 assets is lower (56% of the total). In comparison with previous reports, for banks that are neither G-SIIs and nor OSIIs there is a change in the composition of collateral posted for secured funding transactions with central banks. The average share of non-liquid collateral posted for this type of transaction has declined significantly from 82%[27] in the results shown in the previous EBA report on liquidity measures (October 2018) to 27% in the results shown in this report. The

[25] Still, these transactions affect the calculation of the unwinding of secured funding and lending transactions, which is relevant for the calculation of the cap on liquid assets. The latter may be relevant if the bank (i) conducts a significant amount of short-term central bank operations, (ii) provides less liquid collateral and (ii) has reinvested the cash received into illiquid assets.
[26] Information from COREP 73, which includes information of expected outflows in the following 30 days.
[27] EBA Report on liquidity measures published in October 2018

reason for this decrease is the inclusion of a new non-GSII/non-O-SII bank that has considerable weight within this group of banks and has no securities financing transactions with central banks using non-liquid asset as collateral.

Figure 14: Composition of collateral posted for secured funding transactions with central banks



Despite this average reduction, banks would report higher cash outflows if they were to conduct secured funding transactions via interbank repurchase agreement (repo) markets. Nevertheless, the amount of repo transactions in the total assets for this category of banks is small, so the overall impact of such a change would still be limited.

Cash inflows relative to total assets for GSIIs and O-SIIs are 5.3% of total assets. This share is higher than for other banks (2.6%). (Figure 15)

The results by country show heterogeneity in the composition of inflows, with 17 countries showing a higher share of financial customer cash inflows and 11 countries showing a higher share of other inflows. Malta shows the highest share of financial customer inflows (90.1% of total inflows), whereas Netherlands and Finland have the highest share of other inflows (around 45%).

Figure 15: Composition of cash inflows (post-weight and before the cap) relative to total assets

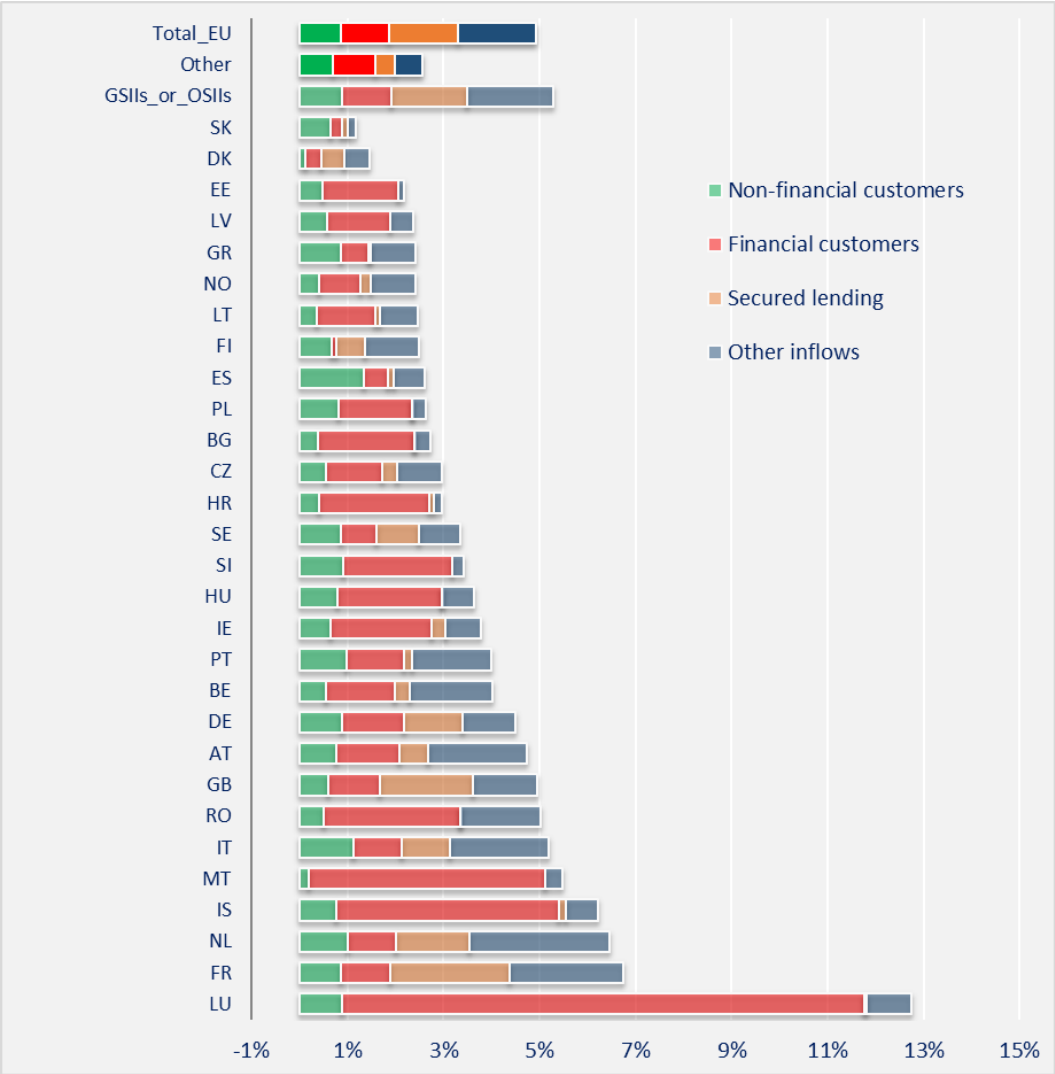


Figure 16 summarises the parameters of the LCR and shows the offsetting between outflows (indicated in dark blue) and inflows (indicated in grey) and then illustrates the extent to which the liquidity buffer exceeds the level of net liquidity outflows (portion above the dotted line).

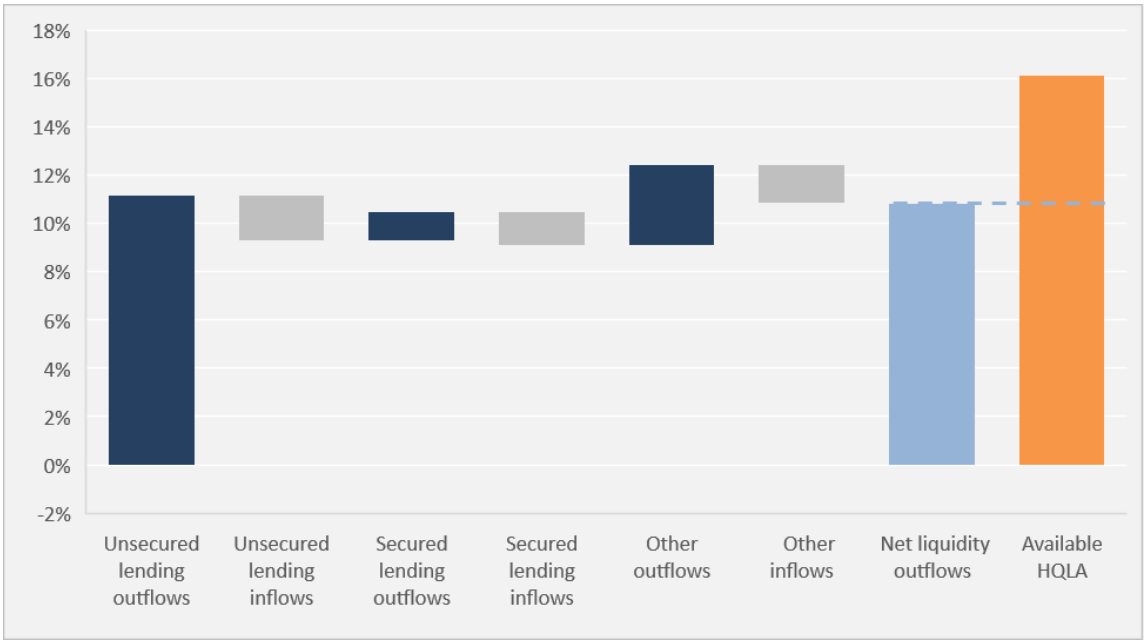
The largest element that reduces the LCR is outflows stemming from unsecured lending. This is in line with expectations for two reasons: unsecured funding, especially in the form of non-operational deposits, is a large part of banks' outflows; and the applicable outflow rates for these financial products are high.

In particular, outflows stemming from unsecured lending amount to over 11% of total assets. Within this category, non-operational deposits (which have high run-off rates)[28] are the most important category (6% of total assets). Operational and retail deposits (which have lower run-off rates) account for only 3.5% of total assets.

[28] Article 28 of the LCR DR.

Only about two percentage points of unsecured lending (outflows) as a share of total assets are offset by inflows in the same category. Proportionally, the offsetting in this category is much lower than in the secured lending category.

Figure 16: Dynamics of the liquidity buffer, outflows and inflows (as a share of total assets)



The low share of outflows from secured funding relative to total assets (1.2%) 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 17 for outflows from secured lending represents only secured transactions 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, with those transactions being 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).

Outflows from secured lending transactions are completely offset by inflows of the same category (1.4%).

The final column represents the liquidity buffer that banks hold to meet their net liquidity outflows and also shows that banks hold, on average, an excess liquidity buffer of 5% of their total assets.

Analysis of the LCR by business models

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[29] also takes into account their specific funding structures. Table 1 indicates the main sources of funding that are generally used by banks in 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 specific business model has not been included 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
Cross-border universal banks	✓	✓	✓(+)	×
Local universal banks	✓	✓	✓(-)	×
Building societies	✓	×	×	×
Locally active savings and loan associations/cooperative banks	✓	×	×	×
Private banks	✓	×	×	×
Mortgage banks including pass-through financing mortgage 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 expected to get funds through that specific source. Custody banks are not linked to a specific funding structure; nevertheless, due to the nature of their activities, they tend to hold an important portion of securities.

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

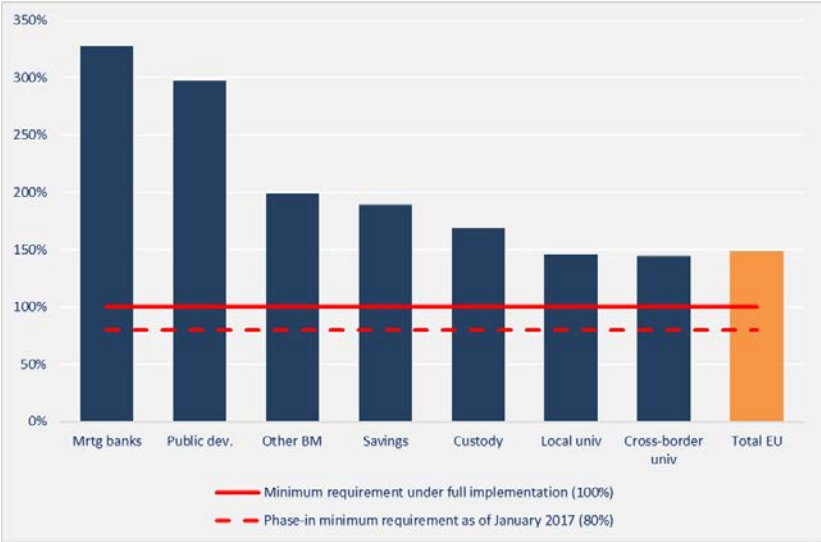
Data confirm that there is a wide dispersion in the LCR across different business models in the EU banking sector (Figure 17).

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

A sample of 160 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 two of the business models[30]. Results should therefore be interpreted with caution and should be checked against the sample size of the relevant business model category.

For all business models, the LCR exceeds, on average, the minimum requirement of 100%. Mortgage banks and public development banks present the highest LCRs (an average LCR of 328% and 298%, respectively), well above the EU average. Locally active savings banks (LCR of 189%) and custody banks (LCR of 169%) also show ratios that are higher than the EU average, whereas local universal banks (LCR of 146%) are close to the EU average. Cross-border universal banks (composed of large banks) show the lowest LCR (145%)[31].

Figure 17: LCR across business models



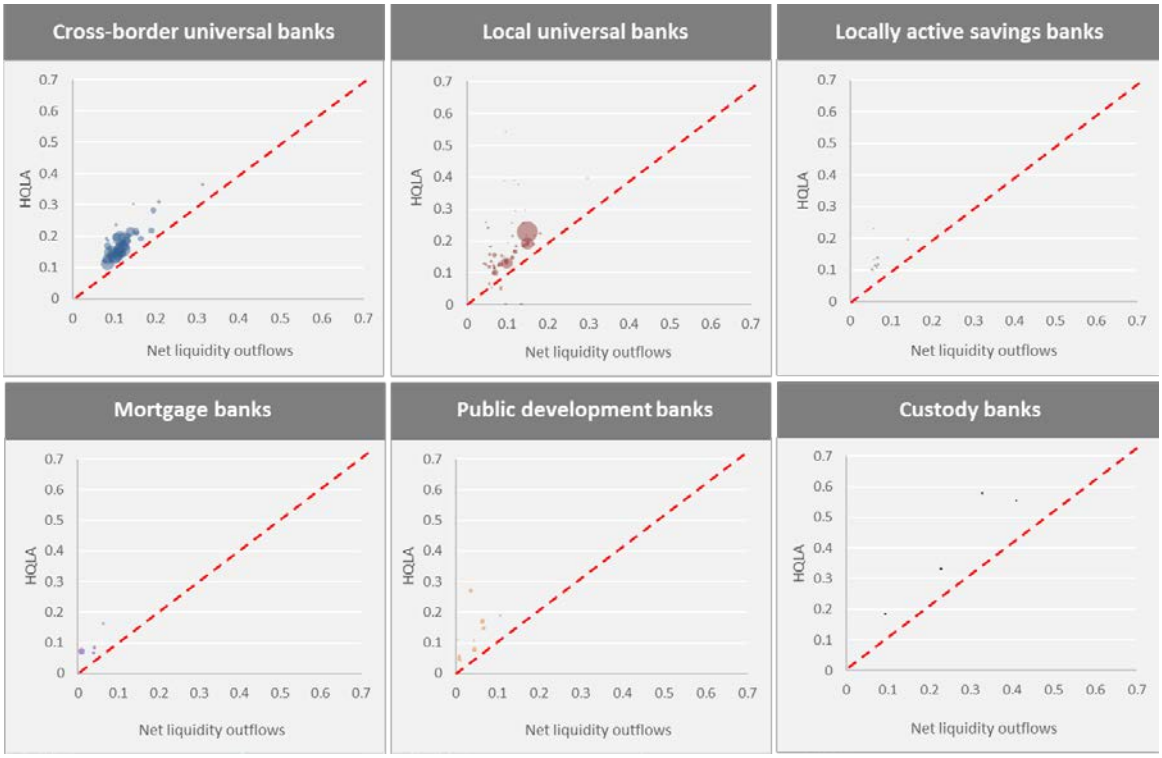
Nevertheless, looking only at LCR levels, it is difficult to understand the implications of the different business models. The ratio of HQLA to net liquidity outflows shows which business models tend to primarily achieve their target LCR levels by adjusting HQLA levels as opposed to those particularly pursuing their LCR levels by adjusting net liquidity outflows. Cross-border universal banks and local universal banks show HQLA ranges from 10% to 30% of total assets and ratios of net liquidity outflows over total assets ranging from 10% to 20%. Custodian banks show the highest ratios of

[30] These are (i) cross-border universal banks and (ii) local universal banks. In aggregate, these banks make up 77% of the total sample. The sample broken down by business model category is shown in Table 8 in the Annex. The definitions of the business models are presented in Table 9 in the Annex.

[31] The category 'other' banks contains 29 banks. This category includes automotive and consumer credit banks, merchant banks, building societies, security trading houses, central counter parties (CCPs), other specialised banks and banks whose business model has not been identified.

HQLA (20% to 60%) and net liquidity outflows over total assets (10% to 40%, excluding two banks that show low levels of net liquidity outflows). Other business models, such as mortgage banks and public development banks, show lower values for the two measures, as banks appear to be more concentrated near the axis intersection.

Figure 18: HQLA and net liquidity outflows (as shares of total assets), per business model[32]



The composition of liquidity outflows may help to explain whether the structure of the LCR is influenced by the business model. Figure 19, shows the comparison between the composition of eligible LCR outflows before and after the application of haircuts. For building societies, savings banks and local universal banks the data confirms that the highest share of outflows is related to retail deposits (84.3%, 59.7% and 56.1%, respectively). This means that these business models see the highest reductions in outflows after the application of haircuts.

For savings banks and local universal banks the data confirmed that the share of wholesale funding is also important. The share of non-operational deposits over total outflows is around 15% for both of these business models. For cross-border universal banks the data confirmed that the share of retail deposits is important (33% of total outflows), although lower than for local universal banks, building societies and saving banks. Banks under this business model also show an important proportion of wholesale funding (the share of non-operational deposits in total outflows is 15.4%) and derivatives (the share of secured funding in total outflows is 14.8%). As a result, the reduction

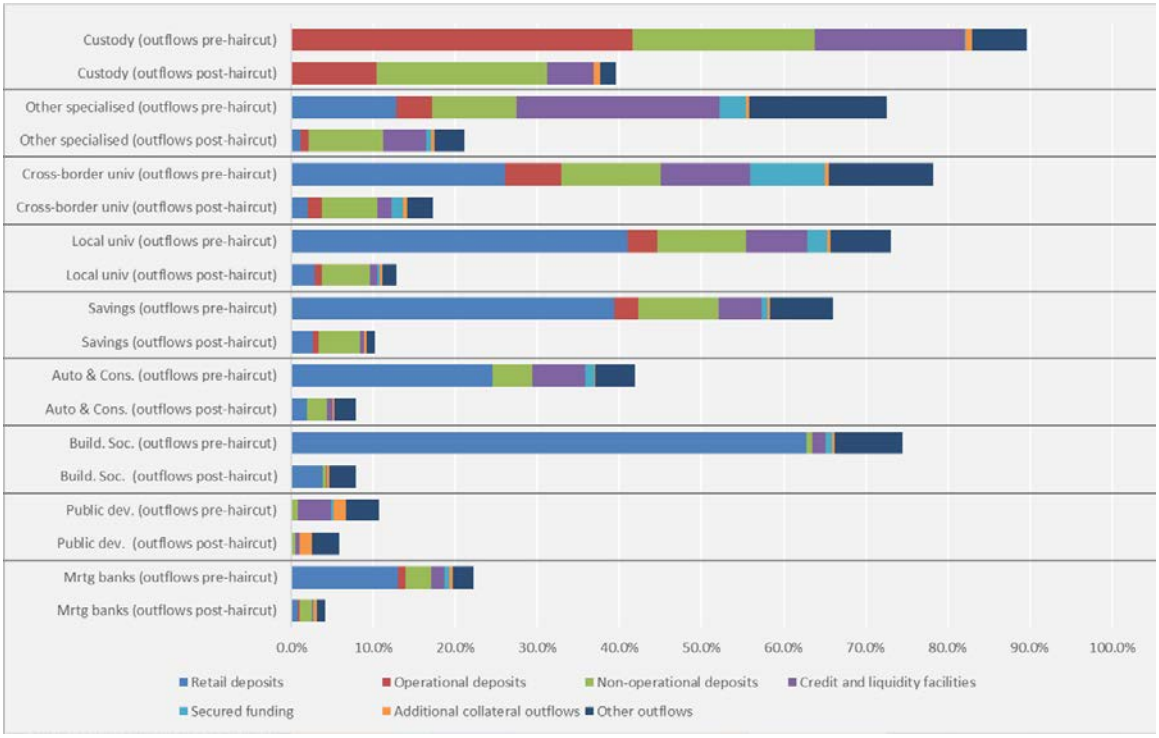
[32] The size of the bubble indicates banks' weights in terms of total assets. The bigger the bubble, the larger the bank and the greater the weight it takes in the weighted average values within the same business model.

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.

For mortgage banks the use of covered bonds as the main source of funding is not confirmed by the COREP data, as the share of outflows related to secured funding is only 3.1% of total outflows. Nevertheless, the LCR only captures covered bonds if they mature within 30 calendar days. A larger share of covered bonds can be expected to mature beyond 30 calendar days. The highest share of total outflows corresponds to retail deposits (58% of total outflows), and the reduction of total outflows after applying haircuts is therefore quite important.

Custodian banks and public development banks show the lowest reductions of outflows after the application of haircuts. These business models do not have outflows related to retail deposits that fall within the scope of the LCR, i.e. the 30-calendar-day time horizon. For these banks the share of outflows related to credit and liquidity facilities is 37% of total outflows and that of other outflows is 38%. For custodian banks, the highest share of outflows is related to operational deposits (46%), but non-operational deposits also play an important role in outflows (25%). Owing to this funding structure, the reduction of outflows for these business models after applying haircuts is lower than for other business models.

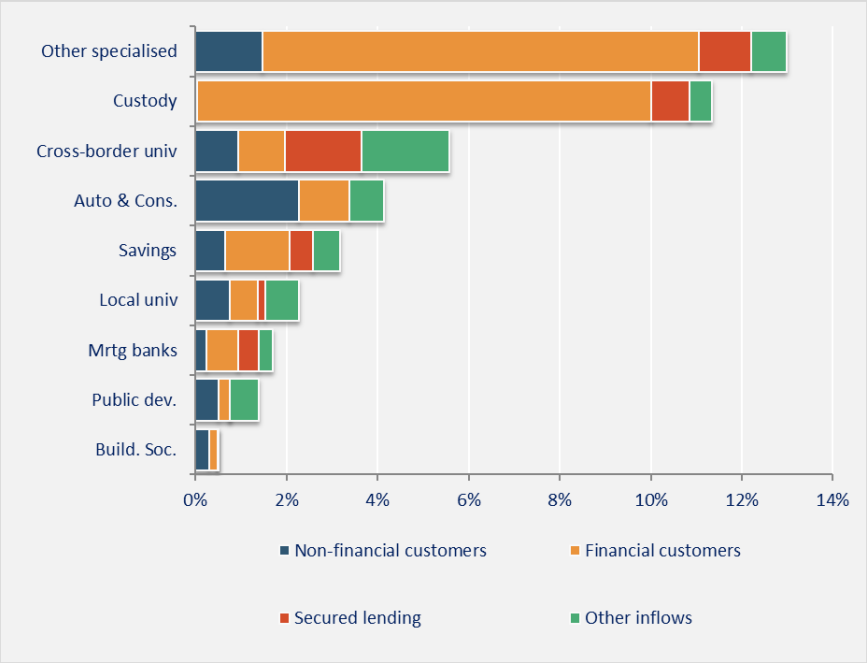
Figure 19: comparisons of pre- and post-weight cash outflows relative to total assets, per business model



The share of cash inflows (post-weight and before the cap) relative to total assets, on average, is less than 10% across business models, except for custodian banks (11%) and other specialised banks (13%). For both business model categories, the higher share is explained by inflows from financial customers (around 10% relative to total assets), which play a more important role than they do in

other business models. Some business models present a level of cash inflows relative to total assets that is even lower than 3%, namely building societies (0.5%), public development banks (1.4%), mortgage banks (1.7%) and local universal banks (2.3%) (Figure 20).

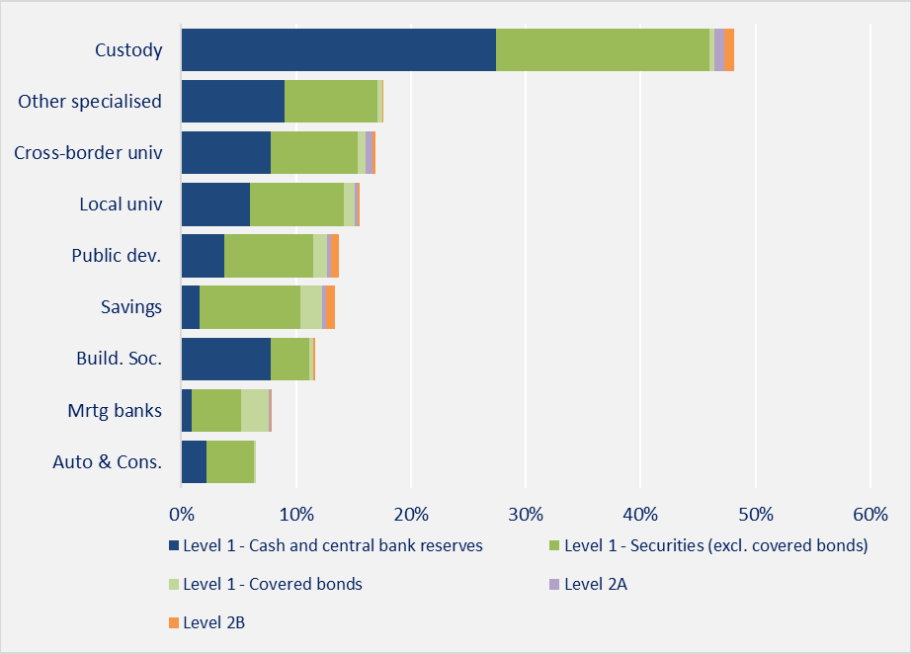
Figure 20: Composition of cash inflows (post-weight and before the cap) relative to total assets, per business model



Overall, the composition of liquid assets per business model (Figure 21) 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 17%) of total assets across most business models (excluding custodian banks, which have a share of 48% of total assets). Custodian banks need to hold a high amount of HQLAs to compensate for the high amount of net liquidity outflows that they are subject to as a result of their specific business model. More specifically, custodian banks use liquid assets in the form of central bank reserves and eligible securities to cover for a larger share of wholesale deposits relative to total assets.

The share of liquid assets relative to total assets for automotive and consumer credit banks is the lowest of all the business models (6%). This was one of the reasons for the introduction of the higher (90%) cap on inflows for banks involved in such business activities. Finally, mortgage banks and savings banks use a higher proportion of Level 1 covered bonds than the remaining business models.

Figure 21: Composition of liquid assets (post-weight and before the cap), relative to total assets, per business model



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 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 take into account. In 2011, the European Systemic Risk Board (ESRB) published two recommendations focusing on foreign lending (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 and 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 dislocation in foreign exchange (FX) swaps markets, not allowing anything else to use the liquidity buffer from one currency to another[33]. Therefore, it is useful to study whether currency-related liquidity risk exists in the EU banking sector.

The analysis of the overall maturity mismatch and liquidity coverage between assets and liabilities across all currencies is useful 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, and the LCR reports by significant currency allow monitoring of the inherent currency risk in the LCR. The CRR does not require separate reports for items denominated in the reporting currency; however, a relevant number of banks seem to do this.

The analysis uses a set of indicators to compare total figures across all currencies against figures per individual significant (foreign) currency[34] (limited to euros, US dollars and pounds sterling). The first indicator (the liquidity buffer over net cash outflows) is developed per significant currency and

[33] The EBA report on funding plans presents some data about the movements experienced by key variables in the FX swaps markets.

[34] 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 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.

studies any currency patterns in the liquidity profiles of banks. The second indicator assesses the relationship between three important components of the LCR (the liquidity buffer, inflows and outflows) and the total funding of the banks, across different significant currencies. This analysis sheds light on banks' liquidity coverage and stable funding by individual significant currencies[35].

Analysis of the parameters of the LCR by significant currencies

Indicator 1: liquidity buffer over net cash outflows

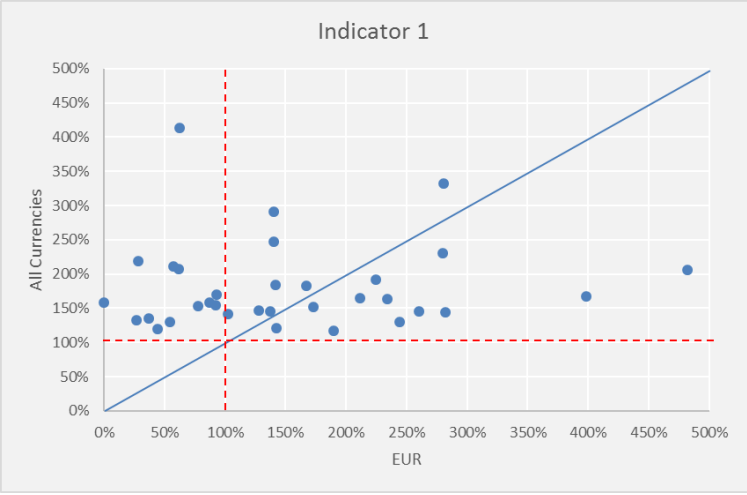
The objective is to test whether there are any currency-specific patterns in the liquidity profiles of banks. The indicator demonstrates whether the difference between the ratio of the liquidity buffer and net cash outflows for a specific foreign currency is more pronounced than the same ratio for all currencies.

$$Indicator\ 1 = \frac{Liquidity\ buffer_{currency}}{Outflows_{currency} - Min(Inflows_{currency}, 0.75 \times Outflows_{currency})}$$

Where currency = reporting currency (all currencies), euros, US dollars, pounds sterling.

A total of 41 banks reported euros as a significant (foreign) currency. There is some evidence of a different pattern when euros is the significant currency. 22 banks out of these 41 banks presented an LCR_{EUR} lower than the $LCR_{all\ currencies}$, but only 13 banks presented an LCR_{EUR} below 100%. These banks are located above and distant from the diagonal line in Figure 22.

Figure 22: Liquidity buffer over net cash outflows where the significant currency is euros (*x*-axis) compared with the same indicator for the reporting currency (all currencies; *y*-axis)

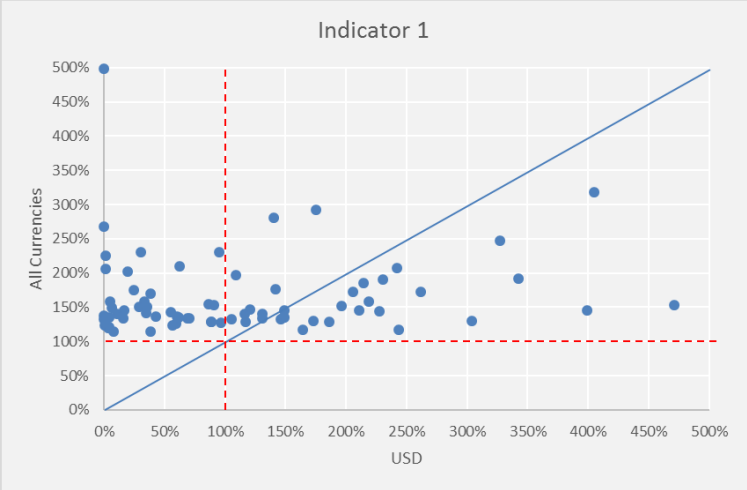


A total of 77 banks reported US dollars as a significant (foreign) currency. There is clear evidence of a different pattern when US dollars is the significant currency. 51 banks out of these 77 banks presented an LCR_{USD} lower than the $LCR_{all\ currencies}$, many of them with an LCR_{USD} close to 0%. 40 banks

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

presented an LCRUSD below 100%. These banks are located above and distant from the diagonal line in Figure 23.

Figure 23: Liquidity buffer over net cash outflows where the significant currency is US dollars (*x*-axis) compared with the same indicator for the reporting currency (all currencies; *y*-axis)



26 banks reported pounds sterling as a significant (foreign) currency. A majority of banks reported an LCR_{GBP} lower than the $LCR_{all\ currencies}$, and 14 banks reported an LCR_{GBP} lower than 100%, with a limited number of banks reporting an LCR_{GBP} close to zero. There is some evidence of a different pattern when pounds sterling is the significant currency, but this evidence is based on a reduced sample of banks that reported pounds sterling as a significant (foreign) currency.

Figure 24: Liquidity buffer over net cash outflows where the significant currency is pounds sterling (*x*-axis) compared with the same indicator for the reporting currency (all currencies; *y*-axis)

For the majority of the banks, the ratio for total figures (reporting currency, i.e. across all currencies) is higher than the same ratio when considering only each individual significant currency (euros, US dollars and pounds sterling). This implies 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 offsets (or dominates) the liquidity shortfall in other significant currencies.

Banks need to ensure consistency between liquidity buffers and net outflows by currency. Low levels of LCR in one significant currency may create problems during stress periods when liquidity sources may be constrained and the FX swaps markets may become difficult to access. Therefore, Article 8 of the LCR DR 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.

Indicator 2: assessment of liquidity buffer, inflows and outflows

This analysis provides insight into whether the banks present different liquidity risk profiles depending on the significant (foreign) currency. Different components of the LCR (liquidity buffer, outflows and inflows) are compared with the total funding [36] of the banks, across different currencies.

$$Indicator\ 2a = \frac{Liquidity\ buffer_{currency}}{Total\ funding_{currency}}$$

$$Indicator\ 2b = \frac{Outflows_{currency}}{Total\ funding_{currency}}$$

$$Indicator\ 2c = \frac{Inflows_{currency}}{Total\ funding_{currency}}$$

Where currency = reporting currency (all currencies), euros, US dollars, pounds sterling.

The analysis of Indicator 2a leads to similar conclusions to those in previous LCR reports. The values for Indicator 2a are generally higher for total figures across all currencies than for the significant currencies. The 45° line in Figure 25 shows equality between the value measured on the y-axis and the value measured on the x-axis. For values above the 45° line, the graph indicates that the value measured on the *y*-axis (in this case the ratio expressed in all currencies) is greater than the value measured on the *x*-axis (i.e. the ratio expressed in the significant currency). The opposite is true when the values fall below the 45° line.

[36] Total funding includes all funding independent of its maturity (therefore, it includes both long-term and short-term funding). The amounts have been obtained from COREP as the sum of funding from the top 10 counterparties, each being greater than 1% of total liabilities and all other funding (C67).

Figure 25: Indicator 2a liquidity buffer over total funding (all currencies versus euros as a significant currency)

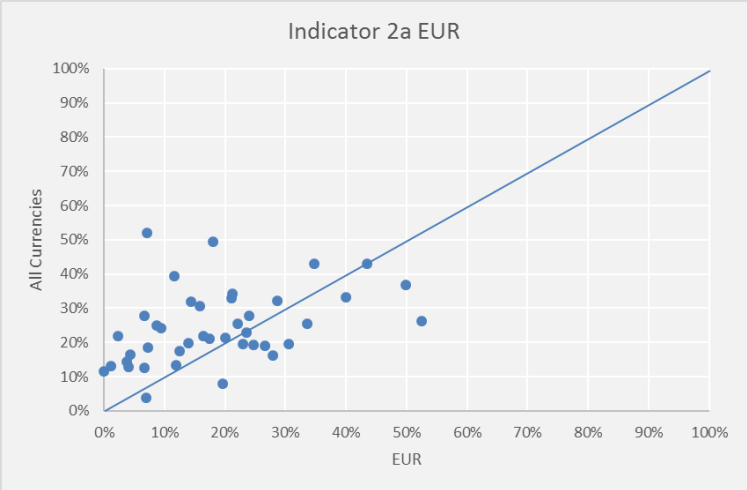


Figure 26: Indicator 2a liquidity buffer over total funding (all currencies versus US dollars as a significant currency)

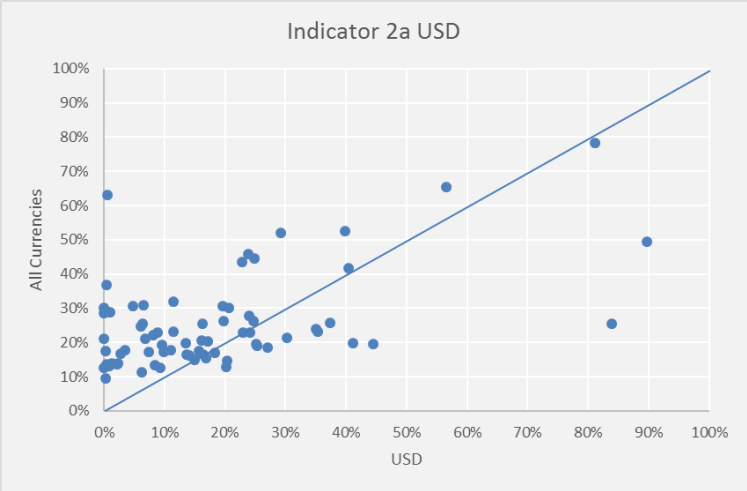
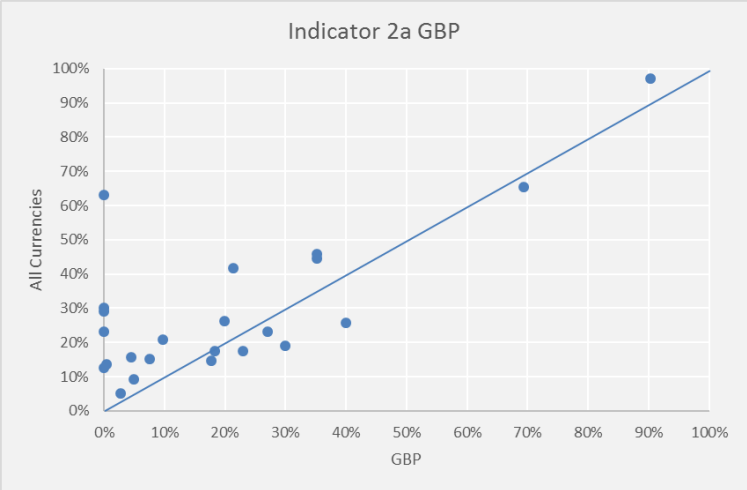


Figure 27: Indicator 2a liquidity buffer over total funding (all currencies versus pounds sterling as a significant currency)



The pattern of values being higher for total figures across all currencies than in significant currencies is more pronounced (i.e. the all-currencies ratio is well above the US dollars ratio) when US dollar-denominated liquidity buffer and funding are considered (Figure 26). This means that banks present a higher proportion of liquidity buffer in total assets when considering all currencies than they do when solely considering US dollars. The lower proportion of liquidity buffer in US dollars is one of the factors behind the findings when calculating Indicator 1: banks present a lower liquidity buffer, in relation to their net cash outflows, in US dollars than in the national currency. Indicator 2a shows that banks could increase their liquidity buffer, in relation to their net cash outflows, in US dollars by increasing the liquidity buffer denominated in US dollars.

Indicator 2b (outflows versus total funding) provides information on short funding, i.e. outflows, as described in the Implementing Technical Standards data on liquidity coverage. As for Indicator 2a, the analysis of Indicator 2b leads to similar conclusions as those in the previous LCR report.

For US dollars, this indicator shows a different pattern when compared with Indicator 2a (liquidity buffer versus total funding). That is, the values of Indicator 2b are higher in US dollars than in all currencies.

Figure 29 shows that the majority of values in the dataset for Indicator 2b for US dollars falls below the 45° line. Therefore, when comparing it with Indicator 1 for US dollars (liquidity buffer over net cash outflows), the drivers of the respective lower values are both the limited liquidity buffer in US dollars and the large volume of US dollar-denominated short-term funding. In comparison with other significant currencies, the analysis does not support such a clear conclusion for euro- and pound sterling-denominated parameters of Indicator 2b. Indeed, for euros, the majority of banks present higher levels of Indicator 2b in all currencies. For pounds sterling, there is not such a clear majority, but banks are close to the diagonal line, which means that the levels of Indicator 2b are similar in pounds sterling and all other currencies.

This indicates that short-term funding is a more common phenomenon in US dollar-denominated funding than in national currencies.

Figure 28: Indicator 2b outflows over total funding (all currencies versus euros as a significant currency)

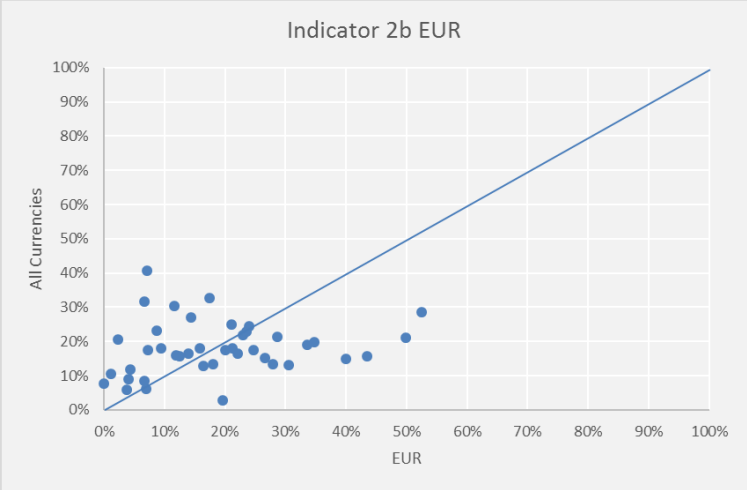


Figure 29: Indicator 2b outflows over total funding (all currencies versus US dollars as a significant currency)

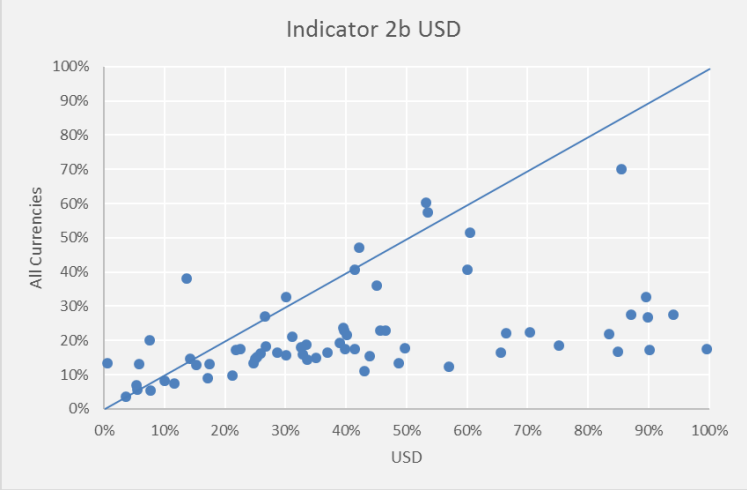
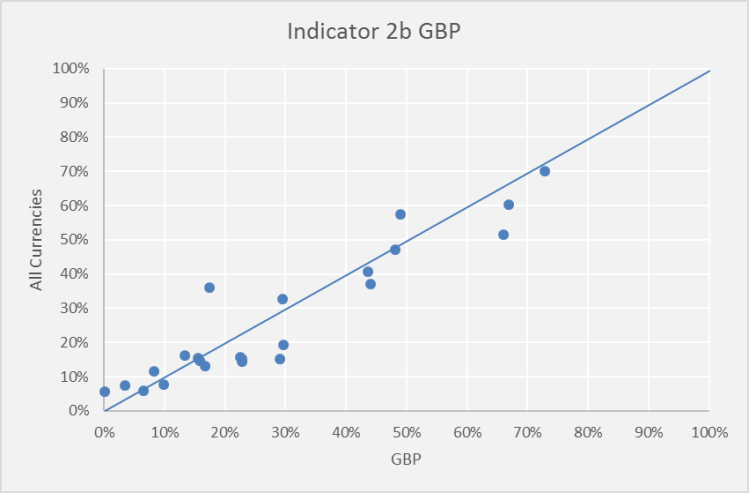


Figure 30: Indicator 2b outflows over total funding (all currencies versus pounds sterling as a significant currency)



As in the previous LCR report, banks in the sample show higher values in US dollar-denominated activities than in other significant currencies and so have higher levels of Indicator 2c (inflows versus total funding). In LCR terms, the short-term nature of exposures in US dollars is more prominent than the overall share of short-term exposures across all currencies.

The share is larger with respect both to total US dollar-denominated balance-sheet activities in general and to total inflows in the significant currency.

In this context, a possible measure could be to restrict the mismatches between liquid assets and net outflows denominated in a significant currency.

Figure 31: Indicator 2c inflows over total funding (all currencies versus euros as a significant currency)

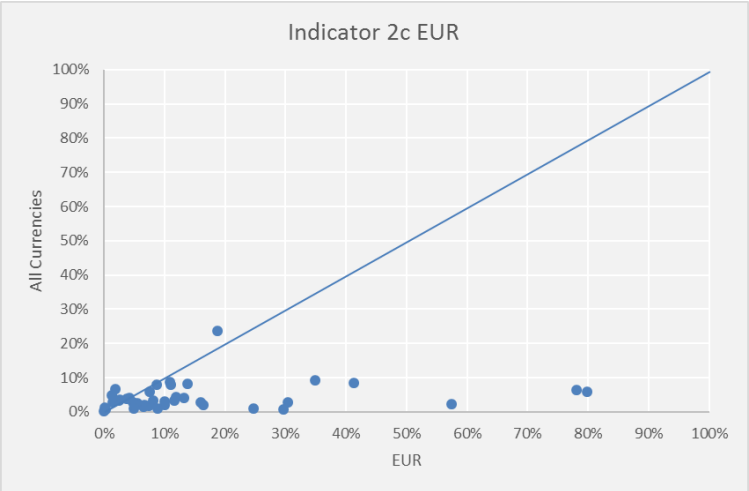


Figure 32: Indicator 2c inflows over total funding (all currencies versus US dollars as a significant currency)

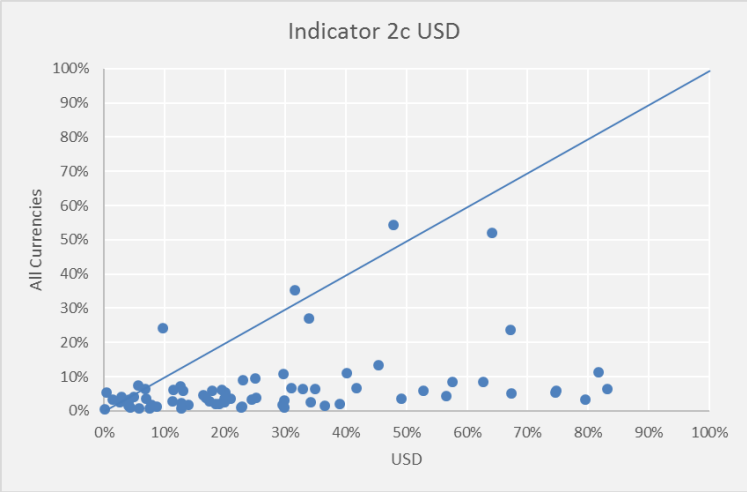
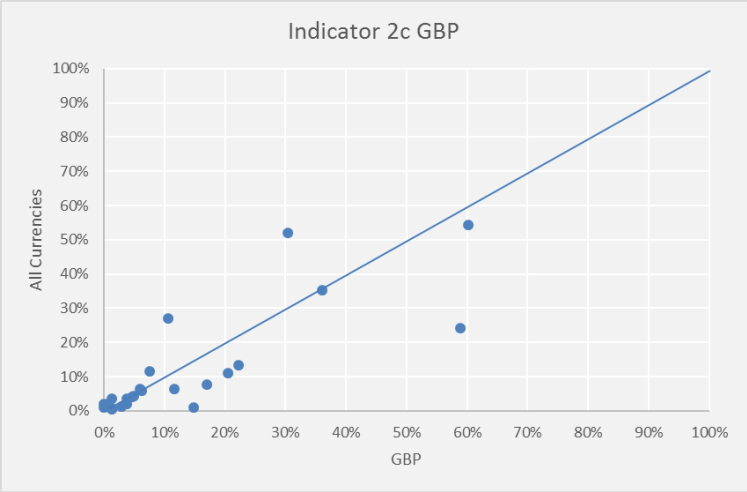


Figure 33: Indicator 2c inflows over total funding (all currencies versus pounds sterling as a significant currency)



It can be concluded that, among the significant (foreign) currencies, the US dollar and the pound sterling are the currencies in which a majority of banks show lower LCR levels. For these banks, practically this means that the surplus in liquidity coverage in all currencies offsets (or dominates) the liquidity shortfall in other currencies. This conclusion is more evident for US dollars, as it is based on a bigger sample of reporting banks.

As the ability of banks to swap currencies and to raise funds in foreign currency markets might be constrained during times of stress, significant currency mismatches should be followed closely by competent authorities. Against this background, competent authorities may consider making greater use of their discretion to restrict currency mismatches by setting limits on the proportion of net liquidity outflows in a currency that can be met during a time of stress by holding liquid assets not denominated in that currency (as envisaged under Article 8(6) of the LCR DR).

LCR — impact on lending

Rationale of the analysis

In its 2012 position paper, the EBA Stakeholder Group noticed that, at the end of 2011, the shortfall of high-quality liquid assets needed for EU banks to fulfil the LCR requirement amounted to a striking EUR 1.2 trillion[37]. The group subsequently raised a concern that banks could be forced to channel a meaningful part of their funding towards LCR-eligible assets (e.g. through the acquisition of government securities or holdings of additional deposits with the central bank) rather than lending to the non-financial sectors: the LCR could thus turn out to have the effect of crowding out productive investments by essentially encumbering more than EUR 1 trillion worth of assets. Indeed banks have two ways of improving their LCR: either by increasing the amount of HQLAs by acquiring additional eligible liquid instruments, or by replacing non-LCR-eligible assets, such as loans, with HQLAs.

This section focuses on the second possibility by trying to identify a relationship between the banks' lending behaviour and the minimum LCR requirements as introduced in Basel III. This is not a straightforward task, given 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. Moreover, the ongoing expansionary monetary policy measures introduced by several central banks within the EU reduce the constraints from the liquidity side.

The section 'Analysis of the LCR and its components' showed that 3 years after the entry into force of the LCR, the aggregate LCR shortfall has practically disappeared. In contrast, most of the EU banks show an LCR that is well above the regulatory minimum (Figure 7). However, it can also be observed that, on average, the LCR level has continued to increase every year, even after the banks have reached the regulatory minimum (Figure 1). This suggests that the banking industry could be pursuing a target level for LCR that is higher than the regulatory minimum. This could be due to a number of reasons as explained in the section 'Analysis of the LCR and its components' above (see box 'Why EU banks report LCRs that are well above the minimum requirement'). If the banks indeed choose to target an LCR higher than the regulatory minimum, it is still possible that liquidity constraints have an impact on the banks' lending decisions even if the minimum LCR is seemingly met.

This section is an attempt to establish an empirical relationship between the liquidity constraints implied by the LCR and the banks' lending behaviours. In particular, the focus is on lending to households (mortgage loans and consumer loans) and to non-financial companies (NFCs). As in the other sections in this report, the analysis is based on COREP/FINREP data. Further analysis would be possible if, for example, the work was extended to cover the composition of the loans in terms of maturity (short- versus long-term loans) and/or type of facility. In this regard, it is useful to point

[37] For comparison, in the same year the GDP of Germany and France was EUR 2.9 trillion and EUR 2.1 trillion, respectively.

out that one of the possible side effects conceived by the EBA Stakeholder Group was the risk that some lending activities, such as using self-liquidating facilities as is typically done by small and medium-sized enterprises (SMEs), could become economically non-viable.

We analysed the relationship, at a given point in time, of the stock of bank lending[38] with the level of the LCR that prevailed at the beginning of the period. Non-performing exposures have been excluded from the sample so that changes in the reference loan aggregates can be more easily considered as proxies of the banks' lending policy. The purpose of this bivariate analysis was to investigate whether the variation in the bank lending is statistically independent from the level of the LCR. In a second step, a multivariate analysis was performed to verify whether the relationships that were potentially identified in the first step are robust. In practice, we wanted to verify if the data allows us to accept or reject the following hypothesis:

$$E\left(\frac{L_{i,t_2}-L_{i,t_1}}{L_{i,t_1}}\middle|LCR_{i,t_1}\right) = E\left(\Delta_{t_1}^{t_2}L_i\middle|LCR_{i,t_1}\right) = E\left(\Delta_{t_1}^{t_2}L_i\right) \quad (1)$$

L_{i,t_i} = stock of loans bank i and period t_i

In (1) we have defined the operator $\Delta_{t_1}^{t_2}x = \left(x_{t_2} - x_{t_1}\right)/x_{t_1}$. The quantity $\Delta_{t_1}^{t_2}L_i$ represents, for bank i, the relative variation of the stock of loans to households and NFCs at a given point in time, i.e. $[t_2, t_1]$; LCR_{i,t_1} is the value of the LCR at the beginning of the period.

Data

The analysis was based on 105 banks[39] from 24 countries that reported FINREP and COREP data with enough quality[40] within 2016-2018, excluding subsidiaries. In COREP, LCR is reported on a monthly basis; however, for the purposes of this study only the December figures have been considered (so that $t_i = Dec2016, Dec2017, Dec2018$). Banks included in the sample reported the required data for the full 3-year period considered in the analysis.

Against the minimum LCR requirement of 100%, the weighted average LCR for this sample of banks was 134.5% at the end of 2016, 143.3% in 2017 and 146.0% in 2018. It is important to notice that already starting from end-2016, 90% of the banks reported an LCR above 110%. Between 2017 and 2018, 57 banks increased their LCR, although 53 of these had an LCR that was already above 130% in 2017. For each of the 3 years there is a huge variation in the individual bank-level LCRs (ranging from 0% to 2 000%).

The aggregate stock of outstanding loans to the real economy (households and NFCs) for the 105 banks was EUR 11.5 trillion at the end of 2016. It increased by 1.8% in 2017 and by 4.5% in 2018

[38] 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.
[39] See detailed sample in Table 9
[40] 4 banks that reported COREP and FINREP data within the aforementioned period, where excluded due to data quality reasons.

(an increase of 6.4% from 2016 to 2018). During the period 2016-2018, 31 of the banks reduced their lending to households and NFCs.

Bivariate analysis

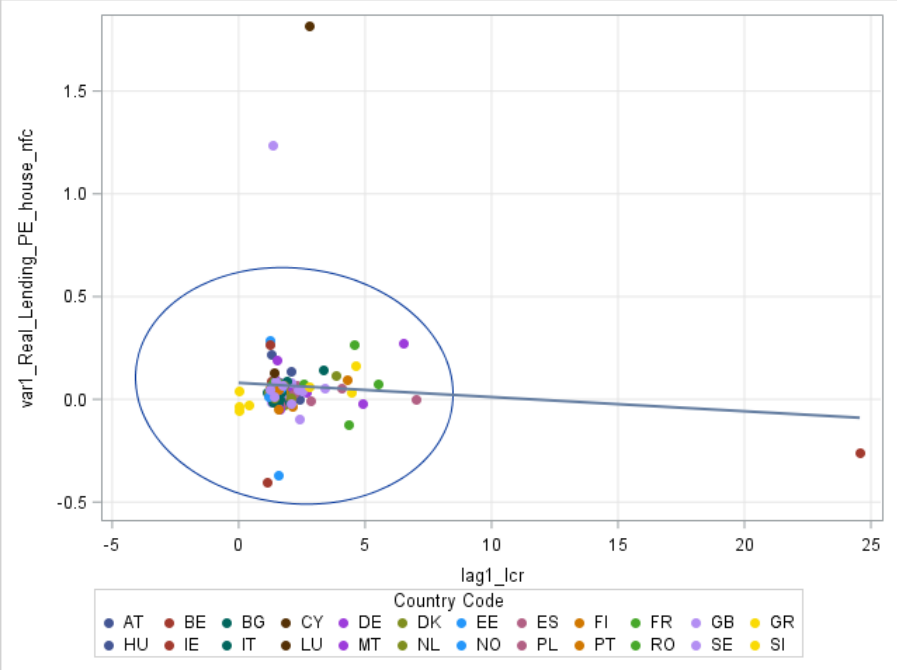
In the bivariate analysis, two kinds of relationships were investigated: the relative variation in the stock of loans between 2018 and 2017 against the level of LCR in 2017, and the variation of the stock of loans between 2018 and 2016 against the level of the LCR in 2016. In terms of expression (1), we are now studying the following linear relationships[41]:

$$\Delta_{2017}^{2018} L_i = \beta_0 + \beta_1 LCR_{i,2017} + \varepsilon_{i,2018} \qquad (2)$$

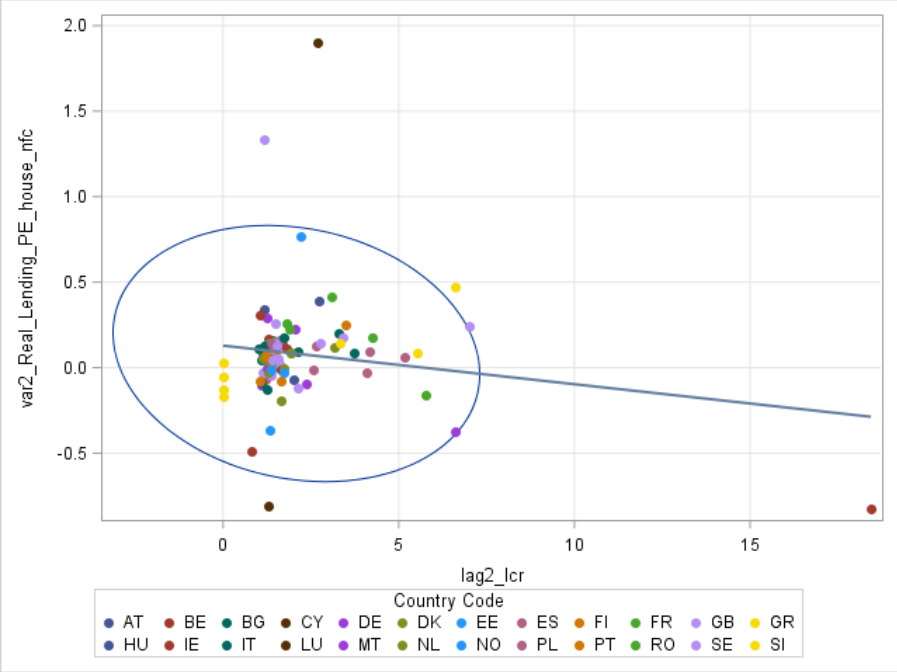
$$\Delta_{2016}^{2018} L_i = \beta_0 + \beta_1 LCR_{i,2016} + \varepsilon_{i,2018}$$

The second analysis is motived by the possibility that the impact on the lending activity of the adjustments in the LCR level take a long time to unfold. The following charts provide a visual representation of the expressions in (2).

Figure 34: Scatter plot: variation in the stock of loans versus LCR



[41] Note that in these expressions the explanatory variable is measured in a past period so that the hypothesis of exogeneity of the residuals (i.e. $E(\varepsilon_{i,t_2}|LCR_{i,t_1}) = 0$) is easily met.



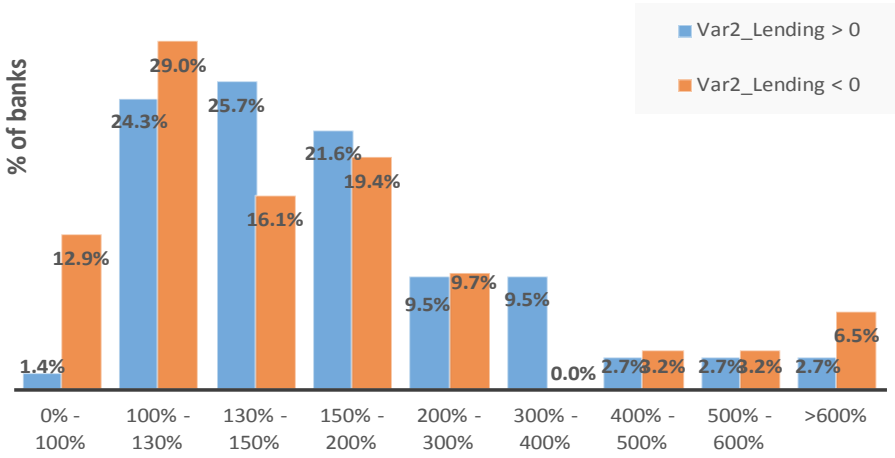
The linear correlation between $\Delta_{t_1}^{t_2} L_i$ and LCR_{i,t_1} is –0.08 for $t_1 = 2017$ and –0.16 $t_1 = 2016$. The ordinary least squares (OLS) regression analysis does not allow the rejection of the hypothesis that $\beta_1 = 0$ for $t_1 = 2017$ (P-value = 0.44), whereas for $t_1 = 2016$ the P-value is just above the 10% threshold so that the null hypothesis $\beta_1 = 0$ could be rejected. The interpretation of the results appears not to be straightforward: the higher the level of the LCR at the beginning of the period, the lower the increase in the stock of loans. This result is somewhat counterintuitive because we would expect banks with higher LCRs to be less constrained in their lending decisions. In 2016, the simple average LCR for the group of banks that reduced their stock of loans was 227%, against 200% for the banks that increased their loans. This evidence corroborates the results of the regression.

Table 2: OLS regression between the variation in the stock of loans between 2016 and 2018 and the LCR in 2016

Variable	Parameter estimate	Standard error	t value	Pr > |t|
Intercept	0.12899	0.04075	3.17	0.002
Lcr_2016	–0.02257	0.01388	–1.63	0.1071

However, comparing the distribution of the 2016 LCRs of the banks that reduced their stock of loans with that of the banks that increased their lending reveals two aspects: first, there are extreme LCR values in both subsamples that may affect the interpretation of the statistics based on simple averages (e.g. the linear regression); second, among the banks that reduced their lending activities, the relative share of banks with low LCRs (between zero and 130%) is higher than the subsample of banks that did not reduce their stock of loans. These considerations suggest that a linear model such as (2) might not be suitable to study the relationship between the LCR and lending activities.

Figure 35: Distribution of the LCR in 2016 for banks that reduced/did not reduce the stock of loans between 2016 and 2018



The linear relationship is only one special case of the generalised expression (1). We also analysed the following non-linear relationship between the stock of lending and the LCR.

$$Pr\left(\Delta_{2017}^{2018} L_i < 0 | LCR_{i,2017} < T\right) \qquad (3)$$

$$Pr\left(\Delta_{2016}^{2018} L_i < 0 | LCR_{i,2016} < T\right)$$

Expression (3) represents the probability that bank i reduces its lending activities over a given period of time, conditional on it having the LCR at the beginning of the period below a specific threshold. A natural choice for T would be to set it at 100% (the regulatory LCR minimum); however, we have seen that this value is no longer binding for most of the banks. We therefore set T to 134%, i.e. the value of the first quartile of the LCR distribution across the 3-year period being considered. The idea behind expression (3) is that banks could be bound by a target value for the LCR that is higher than the regulatory minimum.

The following tables show the result of the logistic regression in which the modelled event is the probability that a bank reduces the stock of loans over a period of 2 years. This probability is conditional on the classification of the banks into two categories: banks having an LCR in 2016 below or above 134%. The estimated parameter of the dummy variable $LCR < T$ is positive and statistically significant (P-value ≈ 2%). In particular, from the odds-ratio analysis it can be seen that banks with an LCR lower than 134% showed a probability of reducing the stock of loans that was three times higher than the banks that had an LCR higher than 140%. The accuracy (area under the curve (AUC)) of this simple model is 64%. The model also includes a size variable, namely the natural log of the bank's total assets at the beginning of the period. The negative coefficient associated with this variable suggests that larger banks have a lower probability of reducing their lending activities.

Table 3 Logistic regression probability (Pr) (reducing lending during the period 2016-2018) versus LCR and size

Variable	Parameter estimate	Standard error	Wald Chi-Square	Pr > |t|
Intercept	3.8957	3.7176	1.0981	0.2947
Lcr_2016 < 134%	1.0986	0.4661	5.5566	0.0184
ln_TA_2016	–0.2069	0.1500	1.9029	0.1678

Odds ratio estimates

Effect	Point estimate	95% Wald confidence limits	
Lcr_2016 < 134%	3.000	1.203	7.479
ln_TA_2016	0.813	0.606	1.091

Multivariate analysis

The 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. In other words, in the bivariate analysis above, the LCR could arise as a significant explanatory variable simply because it may capture the characteristics of some omitted relevant variables. To control for this, we also carried out a multivariate analysis to verify the robustness of the relationship. The control variables added to the logistic regression are related to the banks' capital positions (Common Equity Tier 1 (CET1) ratio), profitability (total operating income/CET1), size (total assets) and business model (total loans/total assets). We also included a variable defined at the country level that measures the distance of the gross domestic product (GDP) level from its long-run trend (the output gap). The modality in which these variables are entered into the model (lagged one or two times, as a dummy relative to a given threshold, or as year-on-year variation) has been selected so as to maximise the accuracy of the model.

Table 5 shows the result of the logistic regression. The parameter associated with the dummy variable, LCR < 134%, is still positive, denoting an increasing probability that the bank reduces its lending activity. However, its impact is now statistically insignificant. The odds ratio is 2.2, i.e. the banks with an LCR below 134% have a probability of reducing their stock of loans that is more than two times higher than the banks with an LCR above 134%. Considering the group of banks with an LCR above 134%, the estimated marginal increase of the probability of reducing the stock of loans if the LCR falls below that threshold is 14%. The accuracy (AUC) of this model is 74.2% and falls to 73.9% if the variable referred to the LCR threshold is removed.

Table 4: Logistic regression Pr (of reducing lending over 2016-2018) versus LCR and control variables

Variable	Parameter estimate	Standard error	Wald chi-square	Pr > |t|
Intercept	7.2995	4.2935	2.8904	0.0891
Lcr_2016 < 134%	**0.7834**	**0.5108**	**2.3524**	**0.1251**
Redditivity_2017	–0.0904	0.0371	5.9274	0.0149
log_TA_2016	–0.295	0.1666	3.1355	0.0766
Share_of_Loan_2017 > 75%	–1.7805	0.8827	4.0687	0.0437
CET1 ratio 2017-2016	0.0251	0.0187	1.8161	0.1778
NP ratio 2017-2016	0.2263	0.1586	2.0365	0.1536
Output gap 2016	–0.0438	0.0523	0.7011	0.4024

	Odds ratio estimates		
	Point estimate	95% Wald confidence limits	
lag2_lcr < 134%	2.189	0.804	5.957

To better understand the relationships described in Table 5, imagine that we first run a logistic regression that uses only the control variables. We then use the results of this model to compute the predicted probability (call it Pr) that a given bank will reduce the amount of loans. Finally, we would set an arbitrary threshold to this probability, for example 50%, and use it to classify the banks. In practice, by following this strategy we are using the control variables to set up a prediction model. Table 6 provides a comparison between the prediction and the realisation (back testing). The share of banks with above 50% probability of reducing the loans and which indeed experienced a reduction of the loans is 70%, clearly higher than the 25.3% share of banks with Pr below 50% (see last column of the table). Furthermore, by classifying the banks on the grounds of the LCR level (and setting the threshold at 134%) it is possible to see that the observed frequency of banks reducing their lending is always higher when LCR < 134% (even if we controlled for Pr*)*. This suggests that the LCR does contain some additional relevant information to predict the direction of the variation of lending activities.

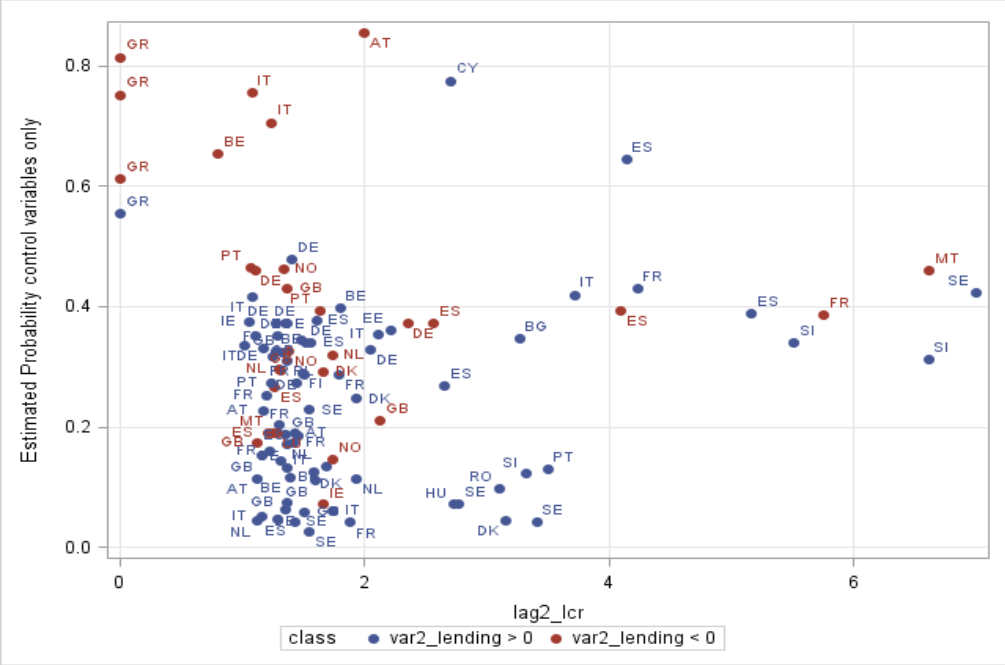
Table 5: Control variables versus LCR

% of banks reducing the loans	LCR > 134%	LCR < 134%	Unconditioned to LCR
Pr < 50%	21.9%	32.3%	25.3%
Pr > 50%	33.3%	85.7%	70.0%
Unconditioned to Pr	22.4%	42.1%	29.5%

Figure 36 shows most of the information exploited so far. The vertical axis shows the estimated probability that the banks will reduce their lending, obtained using a logistic regression that

included the control variables only. The horizontal axis shows the level of the LCR at the beginning of the period.

Figure 36: Estimated probability control variables only versus lag2_LCR



Conclusion

For the period 2016-2018, a sample of major EU banks showed LCRs well above the 100% minimum requirement. This notwithstanding, it was possible to identify a negative relationship between the probability of reducing the lending activities and the level of the LCR. Out of the total of 105 banks analysed for the period 2016-2018, 31 banks reduced the stock of loans to households and non-financial corporations. Even if for most of the banks considered the LCR was above the minimum requirement during all of the observed period, it was possible to verify that banks with an LCR lower than about 134% in 2016 had a relative probability of reducing the stock of loans that was three times higher (odds ratio) than the other banks. However, once some additional control variables were accounted for, the difference in terms of relative probability of contracting the loans reduces to two times higher, and the relationship appears not to be statistically significant.

Conclusions

Liquidity coverage requirements are an important aspect of the EU regulatory framework. COREP data show that banks have significantly increased their HQLA holdings since September 2016 and that this is the main driver behind the upwards trend in the average LCR levels. Results show that, in general, both the average and the bank-level LCRs are well above the fully phased-in requirement of 100% (which has been in place since 1 January 2018) under full implementation. At end-December 2018, all except three O-SII banks and one other bank, from the sample of 136 banks, had met the 100% fully phased-in LCR minimum requirement. The level of shortfall, corresponding to those four banks, is EUR 15.7 billion, although the shortfall has demonstrated a downwards trend since September 2016.

There is a general tendency of banks to have LCR values well above the 100% LCR minimum requirement across the EU. This situation is not driven by an unique factor, but it may possibly be a consequence of various factors, such as specific business models; the low interest framework in place in the EU; the liquidity support provided by central banks; and the volatility of LCR factors that could lead banks to set higher LCR internal targets to avoid any potential disruption that could lead to supervisory actions, market reactions or the breach of internal management metrics. Additionally, regulatory factors, such as the existence of Pillar II add-on and the application of waivers when calculating LCR consolidated values, may also be affecting LCR values.

The average levels of LCRs across different business model categories are also above the minimum requirements, and, as expected, there are significant differences across business models in the composition of LCRs and LCR parameters. The funding strategy applied by different business models could have an impact on the LCR structure. Business models with intensive wholesale funding show higher levels of net liquidity outflows and HQLAs. This is clearer for custody banks than for other business models. Nevertheless, results by business models should be interpreted with caution since there is a high concentration of banks in two business models categories.

Additionally, the analysis shows that banks are likely to hold a higher liquidity buffer, in relation to their net cash outflows, in their domestic currency than in other significant (foreign) currencies. Thus, at aggregate level, the surplus in liquidity coverage in all currencies offsets the liquidity shortfall in other significant currencies. Low levels of LCR in one significant currency may generate problems during stress periods during which liquidity sources may be constrained and the FX swaps markets may become difficult to access. Banks need to ensure consistency between liquidity buffers and net outflows by currency. Against this background, competent authorities may consider making greater use of their discretion 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.

Finally, despite the evidence that for most of the major EU banks the minimum LCR has been exceeded for some time, it was possible to identify a negative relationship between the probabilities of reducing the lending activities and the level of the LCR. However, the analysis is

affected by some limitations that undermine the relevance of results. Indeed, after having controlled for additional variables, the relationship appears to be not statistically significant. This analysis suggests the possibility that banks are fronting a target for the LCR that is higher than the regulatory minimum and that in some circumstances this can represent a driver of their lending policies.

Annex 1

Table 6: Number of banks included in the December 2018 analysis[42]

Country	ISO code	All banks	*Of which: subsidiaries*	GSIIs/O-SIIs	*Of which: subsidiaries*
Austria	AT	7	1	3	1
Belgium	BE	7	*1*	6	*1*
Bulgaria	BG	3	*2*	3	*2*
Cyprus	CY	2[43]		1	
Czechia	CZ	3	*3*	3	*3*
Germany	DE	17		11	
Denmark	DK	4		4	
Estonia	EE	4	*3*	2	*2*
Spain	ES	12		5	
Finland	FI	4		1	
France	FR	12	*1*	6	
United Kingdom	GB	11		7	
Greece	GR	4		4	
Croatia	HR	3	*3*	3	*3*
Hungary	HU	3	*2*	3	*2*
Ireland	IE	13	*4*	6	*2*
Iceland	IS	3		3	
Italy	IT	11		3	
Lithuania	LT	3	*3*	3	*3*
Luxembourg	LU	7	*2*	5	*2*
Latvia	LV	3	*3*	3	*3*
Malta	MT	3	*1*	3	*1*
Netherlands	NL	6		3	
Norway	NO	3		1	
Poland	PL	3	*1*	3	*1*
Portugal	PT	6	*1*	4	*1*
Romania	RO	3	*2*	3	*2*
Sweden	SE	6		3	
Slovenia	SI	4	*1*	3	*1*
Slovakia	SK	3	*3*	3	*3*

[42] 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.
[43] Graphs that are shown by country do not include Cyprus for confidentiality reasons, as there are less than two Cypriot banks in the sample.

Total		**173**	***37***	**111**	***33***

Table 7: Number of banks included in the evolution analysis[44] if the balanced sample criterion applies

Country	ISO code	All banks	GSIIs/O-SIIs
Austria	AT	4	1
Belgium	BE	6	5
Bulgaria	BG	1	1
Cyprus	CY	1	1
Germany	DE	15	10
Denmark	DK	4	4
Estonia	EE	1	
Spain	ES	11	4
Finland	FI	2	1
France	FR	9	6
United Kingdom	GB	11	7
Greece	GR	4	4
Hungary	HU	1	1
Ireland	IE	2	2
Italy	IT	9	2
Luxembourg	LU	2	1
Malta	MT	2	2
Netherlands	NL	5	3
Norway	NO	2	1
Poland	PL	2	2
Portugal	PT	4	3
Romania	RO	1	1
Sweden	SE	5	3
Slovenia	SI	3	2
Total		**107**	**67**

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

Table 8: Number of banks submitting liquidity coverage data (by business model)

Business model	All banks	*Of which: subsidiaries*
Automotive, consumer credit banks	4	*1*
Building societies	3	
CCPs	1	
Cross-border universal banks	45	
Custody banks	7	
Local universal banks	56	*16*
Locally active savings and loan associations/cooperative banks	9	
Merchant banks	1	
Mortgage banks, including pass-through financing mortgage banks	5	
N/A	13	*4*
Other specialised banks	6	*3*
Public development banks	9	
Security trading houses	1	
Total	**160**	***24***

Table 9: Number of banks included in analysis in section 'LCR — impact on lending'

Country	ISO code	Banks
Austria	AT	4
Belgium	BE	5
Bulgaria	BG	1
Cyprus	CY	1
Germany	DE	13
Denmark	DK	4
Estonia	EE	1
Spain	ES	11
Finland	FI	2
France	FR	9
United Kingdom	GB	11
Greece	GR	4
Hungary	HU	1
Ireland	IE	3
Italy	IT	9
Luxembourg	LU	1
Malta	MT	2

Netherlands	NL	5
Norway	NO	3
Poland	PL	1
Portugal	PT	4
Romania	RO	1
Sweden	SE	6
Slovenia	SI	3
Total		**105**

Table 10: Definition of business models

Name	Description
Automotive and consumer credit banks	Banks specialising in originating and/or servicing consumer and/or automotive loans to retail clients.
Building societies	Banks specialising in providing residential loans to retail clients.
CCPs	Banks specialising in setting trading accounts, clearing trades, collecting and maintaining margin monies, regulating delivery and reporting trading data.
Cross-border universal banks	Cross-border banking groups engaging in several activities, including retail, corporate and investment banking and insurance.
Custody banks	Banks specialising in offering custodian services (i.e. they hold customers' securities in electronic or physical form for safe keeping so as to minimise the risk of loss). These banks may also provide other services, including account administration, transaction settlements, collection of dividends and interest payments, tax support and foreign exchange.
Local savings banks	Banks focusing on retail banking (payments, savings products, and credit and insurance for individuals or SMEs) and which operate through a decentralised distribution network, providing local and regional outreach.
Local universal banks	Banks specialising in originating and/or servicing consumer loans to retail clients and SMEs.
Merchant banks	Banks engaging in financing domestic and international trade by offering products, such as letters of credit, bank guarantees and collection and discounting of bills.
Mortgage banks	Banks specialising in directly originating and/or servicing mortgage loans.
Other specialised banks	Other specialised banks, such as promotional banks and ethical banks.
Private banks	Banks providing wealth management services to high net worth individuals and families.
Public development banks	Banks specialising in financing public sector projects and/or the provision of promotional credit or municipal loans.
Security trading houses	Banks facilitating trading done in derivatives and equities markets by guaranteeing the obligations in the contract agreed between two counterparties and/or by holding securities and

Name	Description
	other assets for safe keeping and record keeping on behalf of corporate or individual investors.

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