

New Bank Liquidity Rules: Dangers Ahead

A Position Paper by EBA's Banking Stakeholder Group

"As the new liquidity rules enter the implementation stage, a number of black spots must be clearly brought to attention. The aim of the Liquidity Coverage Ratio is not to enable banks to withstand liquidity pressures on their own and to survive through stressed scenarios without supervisory support. Rather, it is to buy time and make sure that supervisors can rescue ailing institutions – and possibly wind them down – without the impending threat of a disordered meltdown and its potentially unmanageable systemic costs. Accordingly, prudential rules should not be brought too far, as the wish to provide all banks in Europe with a bulletproof jacket in times of distress may, in fact, lead to imposing a straightjacket on the everyday business of financial institutions and their customers."

Main acronyms and abbreviations:

BCBS: Basel Committee on Banking Supervision

BSG: Banking Stakeholder Group

CET1: Common Equity Tier 1

CRD4: 4th Capital Requirements Directive

CRR: Capital Requirements Regulation

DGS: Deposit Guarantee Scheme

EBA: European Banking Authority

ECAI: External Credit Assessment Institutions

HQLA: High-Quality Liquid Assets

IIF: Institute of International Finance

IRB: Internal Ratings-Based

LCR: Liquidity Coverage Ratio

NSFR: Net Stable Funding Ratio

SME: Small-Medium Enterprise

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1 Overview and Key Issues

1.1 Liquidity rules and the role of EBA

Credit institutions across Europe face an unprecedented amount of regulatory reforms, originating from the 2009 De-Larosière Report and the third release of the Basel Accord ("Basel 3") in 2010. The new Capital Requirements Directive (CRD4) and Regulation (CRR), that the European Union is currently debating, will create a common *sine qua non* for institutions throughout the European Union. The CRR will establish a consistent and integrated regulatory framework for many aspects of bank management – including liquidity – providing a homogeneous standard under a unified set of prudential rules.

In relation to liquidity, two new requirements have been proposed by Basel 3 to ensure that financial institutions are more stable and will require them to hold more liquid assets and issue more long-term debt.

Working Group on Liquidity

This document was drafted by a Working Group on Liquidity set up by EBA's Banking Stakeholder Group and is based on contributions by the following Group Members: Erik Berggren, Sylvie Bourguignon, Monica Cueva, Javier De Andrés, Arnold Kuijpers, Christian Lajoie, Louise Lindgren, Hiltrud Thelen-Pischke, Andrea Resti, Pamela Walkden, Giles Williams.

The Liquidity Coverage Ratio (LCR) is aimed at ensuring short-term resilience of financial institutions. They will be required to hold at all times liquid assets, the total value of which equals, or is greater than, the net liquidity outflows which might be experienced under stressed conditions over a short period of time (30 days). Net cash outflows are to be computed on the basis of a number of assumptions concerning run-off and draw-down rates. The LCR will be monitored in the EU after January 2013 and the European Banking Authority (EBA) will test various eligibility criteria for liquid assets. Calibration will also be undertaken regarding net cash outflows. This fine-tuning will provide input for the level-two regulations to be introduced by the European Commission before January 2015, when the LCR will become binding for all credit institutions in the EU.

The Net Stable Funding Requirement (NSFR) requires that available stable funding (equity and liability financing expected to remain stable over a one-year time horizon) at least equals the matching assets, i.e. illiquid assets which cannot be easily turned into cash over the following 12 months. In the European Union the components of the NSFR will be monitored from 2013 with a view to introducing a binding requirement in 2018.

The CRR – while setting a clear and comprehensive framework for the measurement and control of bank liquidity – leaves many details open for calibration, impact assessment and review. As mentioned above, the EBA has been assigned a key role in the implementation of the new regulatory framework; it is required to provide supervisors and European institutions with criteria, standards and technical advice on a wide-ranging set of issues.

1.2 The LCR: expected impact and scope for calibration

As it will be phased in first, the case for calibration and careful implementation of the LCR is stronger. Similar attention will be required for the NSFR once a full consensus on the its structure has been achieved. Accordingly, although this report covers all liquidity rules introduced by the CRR, the LCR has been the main the focus of the contributions.

Based on the latest impact studies¹, the LCR shortfall of EU banks (that is, the absolute amount of extra liquid assets needed for all banks to comply with the ratio) currently exceeds 1 trillion euros. Between 2009 and 2011, this shortfall has not improved. Actually, it has deteriorated from €1tn to €1.15tn, with a 15% increase in the (almost overwhelming) amount that EU banks would need to invest in liquid assets in order to be compliant.

This clear risk or threat is that European banks may channel new funding towards LCR-eligible assets rather than to loans and other “illiquid” assets. E.g., European banks could increase their liquidity buffer through additional deposits with central banks (which play no role in financing the real economy and which, in 2011, already amounted to about €850 million for large EU banks). Essentially the LCR would have the effect of crowding out productive investments and sterilize €1 trillion of liquidity out of the real European economy. In other words, unless the funding base available to European banks can quickly be increased (which appears quite unlikely in the current macroeconomic scenario), the LCR might lead to €1trillion loan deleveraging process by December 2014.

Such a risk would become especially acute if a narrow definition of LCR-eligible assets were enacted, which would deny adequate recognition to some financial instruments supporting the financing of companies and individuals, like corporate bonds, covered bonds or asset backed securities.

While, in principle, capital markets may provide a substitute for reduced bank funding, this looks improbable given the limited development of corporate debt markets in many European countries and the high degree of risk aversion currently shown by investors.

All the above provides a strong incentive for a rigorous calibration of the LCR. There are indeed, a number of steps in the computation of the ratio which could be reconsidered, in order to make it closer to market practices and to reduce the foreseeable burden for banks and the European economy.

Any ratio is made up of two components. One can look at the LCR numerator, and consider ways to enhance the set of assets eligible as liquidity buffer. By allowing banks to use, for example corporate bonds and asset-backed securities as liquid assets, regulators would greatly support the development of those asset classes throughout Europe, and thus help the European capital market absorb the loans that banks will no longer be able to provide. Alternatively (or, rather, jointly) one can look at the denominator and carefully revise the assumptions on runoff/drawdown/rollover factors underlying the computation of the net cash flows.

The definition of liquid assets in the LCR will affect the behaviour of market participants, hence the liquidity of different asset classes. Banks will prioritise “liquid assets” as defined in LCR and “down-prioritise” other assets, which will alter the demand for different securities. Additionally, during a crisis banks while trying to comply with the LCR will generate liquidity in the first place by selling assets which are not eligible for the ratio. The definition of liquid assets in the CRR will not just depend on the current market conditions, but rather will drive behaviours affecting the future liquidity of different security types. If such definitions were to prove inadequate, unintended consequences could build up through a snowball effect.

Assumptions on cash flows (including run-off, draw-down and roll-over factors) will also have a dramatic impact on the underlying bank products, and may shift funds across business lines and different categories of bank stakeholders. E.g., limited recognition for the benefits of self-liquidating facilities (including trade finance) may increase their cost and ultimately undermine the economic viability of some lending activities. Credit provided to SMEs might become unduly expensive. Interbank lines of credit – a key tool to improve bank resilience to liquidity shocks – may prove less and less attractive due to over-conservative rules.

1.3 This report

This position paper was produced by the Banking Stakeholder Group to provide the EBA and European policy makers with a technical discussion of several areas where the new rules risk to have unintended effects unless properly calibrated and carefully implemented. Its structure is the following.

Part 1 provides a general framework to introduce the calibrations in liquid assets and net cash flows that will be discussed in the following sections. We highlight the main implications of the new liquidity ratios for banks and for the European real economy; we then go back to the rationale of the liquidity requirements and discuss whether their anticipated costs are consistent with expected benefits. The next contribution surveys national regulations on liquidity – prior to and after the 2008-2009 financial crisis – and finds that the provisions in the CRR appear comparatively stricter than most pre-existing requirements. Finally, we discuss how the new liquidity-related ratios could modify the accounting choices of banks.

Part 2 focuses on caveats and possible adjustments concerning the numerator of the LCR, that is, liquid assets that banks are allowed to use to meet their liquidity buffer. We review the eligibility criteria set out by the CRR for high quality liquid assets, highlighting why they may prove inadequate in capturing systematic liquidity risk. We then discuss the appropriateness of such criteria for Europe, to find that, unless appropriately calibrated, they may prove a major source of disadvantage compared to the US. Subsequently, we address the link between liquidity ratios and possible changes in credit risk weights for government debt, to conclude that a more risk-sensitive approach to sovereign risk weights could introduce a pronounced “cliff edge” effect into the LCR and reduce the demand by banks for government debt. Finally, we look at a specific asset class, notably covered bonds, whose full eligibility as a liquid asset may help incentivise portfolio diversification and keep credit flowing to European consumers.

Part 3 discusses a number of potential calibrations which may be introduced in the computation of the LCR’s denominator, i.e., the net cash outflows experienced by a bank under a 30-day distressed scenario. This includes customer deposits (where the new liquidity rules may unduly penalise retail and commercial banks), credit and liquidity facilities (where banks would be discouraged from holding liquidity lines with other institutions, a key tool that can be used to ease liquidity pressures) and trade finance (where the parameters of the LCR could prove detrimental for a low-risk industry that underpins global economic growth).

1.4 Time to sound the alarm

As the CRR, and therefore the liquidity rules, are about to enter implementation stage, a number of hot spots must be clearly identified to stimulate further debate and highlight the risk of unintended consequences.

The first issue is the definition of liquid assets in the LCR and whether this risks being too prescriptive and rigid. The Eurozone sovereign crisis has shown that liquid assets can become illiquid quickly, so flexibility is needed to accommodate different market conditions and the changing economic environment. The changing risk profile of government bonds has shown how important it is to create incentives for portfolio diversification.

Another area for further consideration is the link between LCR-eligibility and central bank eligibility. The CRR requires that liquid assets be central-bank eligible, but states that not all central bank collateral will be acceptable for the LCR. During a crisis, central bank eligibility is crucial in facilitating the provision of liquidity to cash-strapped institutions and markets. The

definition of liquid assets and the rules on central bank collateral need to be looked at the same time – they cannot be regarded as two separate issues.

Furthermore, liquidity is an elusive concept, which fluctuates over time and cannot be predicted in infinitum. Hence, supervisors should resist the temptation to draw up lists and to create parameters that will stay unchanged over time. Any “black and white” approach to liquid assets’ definition will prove increasingly unhelpful.

Developing criteria that are granular enough to accommodate many different scenarios would be better to provide for a smooth transition of asset classes between different liquidity grades. Conversely, a liquidity scale which has only one or two levels is most likely to prompt cliff effects when changes occur in the perceived characteristics of specific eligible assets. Overlooking the different degrees of liquidity provided by a wide range of investable assets, could result in regulators setting the threshold too high and consequently focusing on many fewer asset classes. The wish to “err on the safe side” would ultimately lead to investment concentration and higher risk.

As concerns cash flows, no set of rules, no matter how conservative, will ever isolate a bank from systemic risk. E.g., assuming that all liquidity and credit lines that an institution has secured on the wholesale market will suddenly become unavailable in a crisis could give a false sense of security, while increasing banks’ costs and creating wrong incentives. The potential for dirigisme in the new rules should not be underestimated, as minor changes in the factors imposed to banks (including drawdown, rollover and runoff coefficients) may cause huge shifts of funds across business lines in a way which interferes with the free interplay of demand and supply.

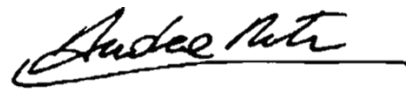
It is important to remember that the aim of the LCR is not to enable banks to withstand liquidity pressures on their own and to survive through stressed scenarios without supervisory support. Rather, it is to buy time and make sure that supervisors can rescue ailing institutions – and possibly wind them down – without the impending threat of a disordered meltdown and its potentially unmanageable systemic costs.

There is a fundamental difference between liquidity as a micro and macro phenomenon. Many assets might well be liquid if one single bank needs to sell them, but can quickly become illiquid if all banks want to get cash out of them. The quest for assets which stay liquid “at all times” might prove frustrating, since under severe systemic scenarios liquidity can only be ensured by monetary authorities.

Accordingly, prudential rules should not be carried too far, as providing banks with a bulletproof jacket in times of distress may, in fact, lead to imposing a straightjacket on the everyday business of financial institutions and their customers. Increasing compliance costs may not only make credit more expensive and undermine growth; it may also move intermediation towards shadow banking, channelling money through weakly-regulated schemes which rely significantly on wholesale funding and may prove strongly pro-cyclical.

The calibrations mentioned above should be carried out by the regulators and policy makers with representatives of the financial industry, users of financial services and banking

scholars. The availability of reliable data sources is a major bottleneck for any effort to investigate funding and market liquidity risk; databases should be shared loyally and transparently. Any rule developed without a thorough involvement of banks and other stakeholders is bound to prove both short-lived and short-sighted.



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London, October 3, 2012.

¹ For further details, see Box 1 on page 7 of this report.

PART 1

Think again: why do the liquidity rules need further calibration

Part 1 of this report provides a general framework to introduce the possible calibrations in liquid assets and net cash flows that will be covered in Parts 2 and 3. To this aim:

§2 (“Does the cat catch the mice? Rationale and implications of liquidity ratios”, page 10) highlights **the main implications of the new liquidity ratios for banks and the real economy in Europe**. It then revisits the rationale of the new liquidity requirements and discusses whether their anticipated costs are consistent with expected benefits. While a Liquidity Coverage Ratio appears intrinsically correct and sound, the present version has **ample room for recalibration, as too much emphasis on the benefits in terms of financial stability may lead to overlook the costs for the economy, including SMEs**. As for the NSFR, by requiring banks to reduce their role in maturity transformation, it is likely to lead to higher interest rates and to weaker supply of long-term finance for non-financial companies and households;

§3 (“The State-of-the-Art of Bank Liquidity Rules in Europe”, page 18) provides a quick overview of national regulatory requirements on liquidity – prior to and after the 2008-2009 financial crisis – including countries from different areas of the European Union. This allows for a general preview of the reforms’ implications. with an emphasis on credit granting to private-sector corporations. **The provisions in the CRR, generally speaking, appear comparatively stricter than pre-existing requirements**. While bolstering liquidity buffers across the financial sector and therefore mitigating risk in distressed markets, **they may have unintended implications**, especially on the financing of small to medium-sized corporations;

§4 (“Accounting and the liquidity ratios”, page 26) dwells on the accounting implications of the new liquidity-related ratios. The latter **are likely to modify the accounting choices of banks**: such rebalancing of the incentives can modify the relations of the firm with owners and other users of accounting information.

The new liquidity requirements, together with higher capital ratios, aim at increasing the stability of the banking sector. This, however, should not be a goal as such, but rather an instrument to ensure strong and orderly economic growth. In the end, banks should work for the economy, not the other way round.

2 Does the cat catch the mice? Rationale and implications of liquidity ratios¹

The liquidity requirements proposed by the Basel Committee and the European regulators must be considered jointly with the new, more conservative capital ratios being imposed by the same authorities. Taken together, they will have significant consequences for the banking industry and the role it plays in the European economy, affecting economic growth and employment.

Higher capital and liquidity levels reduce the likelihood of governmental bail-outs in the future; however, they are to some extent bound to adversely affect the real economy. The trade-off between those two results should be carefully balanced, setting off the benefits of a more stable banking industry against the macro-economic costs of tighter regulation.

This section highlights the main implications of the new liquidity ratios for banks and for the European real economy. We then go back to the rationale of the new liquidity requirements and discuss whether their anticipated costs are consistent with expected benefits.

2.1 Implications for banks

The European Banking Authority published, in April 2012, a quantitative impact study of Basel 3² based on a voluntary survey covering 158 banks (including 48 large ones³). The study assumes full implementation of the final Basel 3 package, based on data as of 30 June 2011.

For 45 large banks⁴ the total shortage was € 361 billion in common equity tier 1 capital (CET 1) and € 485 billion in total capital (including the capital conservation buffer and the surcharge for systemically important banks). For the remaining 109 those shortages were €35 and € 59 billion respectively.

As concerns liquidity ratios, the LCR would generate a shortfall in liquid assets of € 1.15 trillion (aggregate shortfall for all banks having an LCR below 100%). As

shown in detail in Box 1, this marked a 15% increase compared to end 2009 data. The average LCR was close to 70% both for large and smaller banks.

Box 1 - How the LCR is impacting banks: comparing 2009 and 2011 data

A comparison between the impact studies carried out by CEBS (2009 data) and EBA (2011 data)⁵ provides interesting insights on how European banks are adjusting to the new liquidity ratios, and what developments can be expected in the near future (see Table 1 and Table 2).

Table 1 – A comparison of the 2009 and 2011 impact studies: net cash flows

€tn, our estimates	Dec. 09	Jun.11	Jun 11 - Dec 09
Unsecured retail and small business customers	0.3	0.5	0.2
Unsecured non-financial corporates	0.5	1.1	0.6
Unsecured financial institutions	1.2	1.5	0.3
Unsecured sovereign, central bank, public sector entities (PSEs) and other counterparties	0.2	0.3	0.1
Secured funding	0.3	0.7	0.4
Collateral, securitisations and own debt	0.7	0.7	0.0
Credit and liquidity facilities	0.6	0.7	0.1
Other cash outflows including derivative payables	0.4	0.3	-0.1
Total outflows (*)	4.3	5.8	1.5
Retail and small business customers, Non Financial Corporates and Other Entities	0.4	0.6	0.2
Financial institutions	0.4	0.7	0.3
Secured lending	0.3	0.5	0.2
Other cash inflows including derivative receivables	0.4	0.0	-0.4
Total inflows without 75% cap	1.4	1.8	0.4
Total inflows with 75% cap	1.2	1.8	0.6
75 % cap impact	0.2		-0.2
HQLA	2.0	2.8	0.8
LCR	67%	71%	4%
LCR Shortfall (€tn)	1.00	1.15	0.15

By comparing end-2009 and mid-2011 figures, one sees that:

- the average value of the LCR has slightly improved, from 67% to 71%⁶. However, the LCR shortfall (as an absolute amount) has deteriorated from €1tn to €1.15tn, meaning a 15% increase in the (already overwhelming) amount that EU banks would need to invest in liquid assets in order to comply with the Liquidity Coverage Ratio⁷;
- remarkably, this shortfall has risen even though European banks have increased their liquidity buffer by €0.8tn (from €2tn to €2.8tn), mainly due to more sustained investment in Level 1 assets (0%-risk weighted securities were up by €0.4tn, from €1.1tn to €1.5tn, while central bank deposits rose from €0.58tn to €0.85tn);
- in fact, the €0.8tn increase in the liquidity buffer has been more than offset by the increase in net outflows by €0.9tn, essentially due to higher net outflows for “retail, SME, non-financial corporate, sovereign, central bank and PSEs” (+€0.7tn), lower inflows for “other cash outflows including derivative payables” (-€0.4tn), and to the effect of not considering the cap on inflows in the June 2011 exercise.

Table 2 - A comparison of the 2009 and 2011 impact studies: Liquid Assets

	Dec 09	Jun 11	Jun 11 - Dec 09
Cash, Central Bank Reserve	0.6	0.8	0.2
0%-risk weighted	1.1	1.5	0.4
non 0%-risk weighted	0.1	0.1	0
Level 1	1.8	2.4	0.6
Corporate Bonds	0	0	0
Covered Bonds	0.1	0.3	0.2
20%-risk weighted	0	0.1	0.1
Level 2	0.2	0.4	0.2
Total	2	2.8	0.8

Overall, European banks seem to have expanded their liquidity buffer with new investments funded through an increase in short-term funding. While this does not substantially alter the actual liquidity position of a bank, nor its LCR shortfall, it translates into a better LCR when the ratio is below unity, as both the numerator and the denominator of the ratio get increased by the same amount⁸. However, any improvement in the ratio obtained through this approach is deceptive, as proved by the fact that the gap between the required liquid assets and the current buffer has increased between 2009 and 2011.

Turning to the NSFR (a longer-term structural ratio reflecting liquidity mismatches in the balance sheet) there is a total shortfall in long term funding (for all banks having a ratio below the 100% requirement) of € 1.93 trillion. The average NSFR was close to of 90% for both groups of banks.

These shortfalls are for surveyed banks only; shortfalls for all European banks can be expected to be significantly larger. As shown in Box 1, banks do not seem to have improved their position compared to an earlier survey by CEBS, based on end-2009 data.

To cope with those requirements, banks probably cannot address this issue by tweaking their operating models (e.g., by revising credit spreads to account for a higher weighted average cost of funds) AMorgan Stanley⁹ report, based on the plans of 35 large listed European groups, shows banks are in the process of changing their business models. To meet capital and liquidity requirements, they are closing/curtailing business in specific products and geographies, as they need to deleverage their assets for an estimated amount between € 1.5 and € 2.5 trillion¹⁰.

In adjusting their balance sheets to meet capital and liquidity requirements, banks will probably diminish assets with high risk weights and/or long maturities.

Higher risk weights imply a higher cost of funding, as they call for more “expensive” equity capital (leading to stronger earnings dilution for current shareholders), which may prove challenging to raise. Accordingly, loans to highly-rated, low-PD customers will be preferred to exposures to unrated/high-PD counterparts, including small and medium enterprises (SME).

Long term assets must be funded by stable sources, which are more expensive than short term funding. Also, as long term bonds need to be rolled over, the market may not be willing

to absorb new issues. Banks might choose to manage this risk by reducing long term assets. Products like mortgages, project finance or leasing will become more difficult to originate.

By shredding assets and by focusing on businesses that are most capital- and liquidity-efficient, banks may – in aggregate – reduce supply of many lending products while making them substantially more expensive than in the past.

2.2 Implications for the economy

Due to the reasons discussed above, the new liquidity (and capital) rules are bound to shrink the role of the banking industry in channelling funds to the European economy (including businesses and individuals). Companies and households will need to find alternative sources of finance. For corporates, there are some alternatives (although they may prove quantitatively inadequate to offset a weaker flow of bank credit). Long term borrowing from banks could, in some cases be replaced by bonds. Large companies may also seek funding from mutual funds, (including money market funds) and unregulated financial institutions, possibly through bilateral contracts. For individuals, standardised consumer loans and mortgages may be provided by non-banks, filling (part of the) the gap left by banks.

In the case of SMEs, however, it is hard to see adequate funding alternatives. Servicing SMEs requires tailor-made solutions and strong credit assessment skills; this can only be provided by a financial institution with a widespread branch network, like a retail bank. Therefore, SMEs are likely to suffer most from the new regulatory requirements. There are some issues relating to SME lending that are briefly discussed in Box 2. While some countries may be more dependent on SMEs than others, this is bad news for the whole European economy, as it is heavily dependent on small businesses (as shown in Box 2), not only to produce goods and services to consumers, but also to supply intermediate goods to large companies.

Box 2 - SME lending and its vulnerability to new liquidity rules

An SME can be defined as a company with a no more than 250 employees and a turnover of €50 million or less. According to a recent study funded by the European Commission¹¹, there are about 23 million SMEs in the EU, 90% of which are micro-enterprises with less than 10 employees. In the European Union, SMEs account for 99% of all businesses, 58% of GDP, 67% of employment. SMEs provided 85% of all new jobs in Europe between 2002 and 2010.

Access to finance is essential to ensure the competitiveness and growth potential of SMEs. According to the 2011 SMEs' Access to Finance Survey (AFS)¹² financing is the second most important problem for SMEs, after finding customers. 75% of European SMEs uses at least one source of debt financing, with the most widely used channels being bank overdrafts (40%), leasing/hire purchase/factoring (36%), trade credit (32%) and bank loans (30%). Banks are by far the most common provider of loans to SMEs. In fact, they provide 87% of SME loans (as opposed to 4% from individuals, like family members or friends, and 8% from another sources, such as micro-finance institutions or government-related bodies). 46% of the loans are used to finance working capital, while purchases of land, buildings, equipment or vehicles accounts for 44%.

Compared to the US, European SMEs are highly dependent on bank loans for their financing. The European share of credit intermediation by banks is three times higher than in the US. In Europe, SMEs lend about two times more from banks than large corporations.

SME lending is very pro-cyclical. On average, a 1% drop in GDP can be associated with a 5% reduction in SME lending (as well as with a 7% reduction in factoring and 4.6% drop in leasing). According to the 2011 AFS mentioned above, in the second half of 2011 about one-third of European SMEs did not get the finance they had planned for.

SME loans have certain specificities, which also affect their liquidity. On one side, management costs can be significant as loans are small in size. On the other side, several characteristics may make it more difficult to assess credit risk: SMEs often operate on niche and local markets, do not receive external ratings and are not subject to extensive disclosure requirements; qualitative aspects like management quality are likely to play a key role in their creditworthiness; collateral posted against loans can be limited. As a consequence, default risk analysis is more complex, so credit exposures are opaque and difficult to trade.

It is difficult to produce a quantitative estimate of how the new liquidity requirements are going to impact on SMEs, also because many details of those rules are still unclear. Nevertheless, the above-mentioned specificities of SME loans, negatively affecting their liquidity, will put this asset class at a clear disadvantage compared to other investments, like government bonds. Also, there is a risk that other financial products be penalized, that play a positive role for SME financing: this might include, e.g., securitized loans or certain specialized financing schemes related to equipment or commercial real estate leasing.

Furthermore, higher funding costs faced by financial institutions to increase their issuance of long-term debt may lead them to cut back on lending and/or to increase rates. Finally, to the extent that the new rules encourage banks to concentrate exposure towards public sector bonds, this could make financial institutions more vulnerable to sovereign crises and possibly lead to a new credit crunch where SME financing would likely suffer the most.

In some cases, banks could find ways to continue to initiate new business while minimising the burden of new regulations. For instance, project finance could be moved largely off-balance sheet, handing over the exposure to a separate vehicle mostly funded by institutional investors. The bank originating the deal could still charge a fee, while transferring credit risk to other institutions that are not subject to Basel 3 rules. For SMEs, loan securitisation might be an option. Such alternative structures, however, will have their own limitations. The originator may need to retain enough “skin in the game” to convince investors that risks have been carefully assessed; investing in special-purpose entities, might prove significantly more expensive than in the past, due to regulatory innovations introduced after the financial crisis. However, the macro-economic consequences might be mitigated, but not offset.

Additionally, state-owned agencies (either national or multilateral, like the European Investment Bank) may step in to fill part of the financing gap. If that were to be the outcome of Basel 3, then the regulation would backfire on governments, as they would have to deal with credit risk directly (rather than indirectly, i.e., through a possible bailout of ailing banks) which is one of the things that they are trying to avoid. Capital and liquidity requirements would not shelter governments, and tax payers, from banking risks.

2.3 The rationale behind liquidity requirements

Bank runs happen when the public does not trust in the bank's ability to repay its debts in an orderly fashion. Although illiquidity and insolvency are two different issues, a higher capital ratio could reassure depositors and make a bank run less likely. In this sense, capital can, to some extent, be regarded as a substitute for liquidity requirements. Accordingly, the economic cost of capital and liquidity buffers should be assessed jointly.

Capital buffers have both advantages and drawbacks. An advantage is that, when a financial crisis kicks in, such buffers can in principle be used to absorb extraordinary losses without any direct adverse effect on the economy. If, instead, bank bailouts have to be funded through higher government debt (as was the case with the last financial crisis), governments will spread the burden onto the real economy, by increasing taxes and/or cutting expenditures¹³. This in turn will hamper economic growth, making recovery harder to achieve.

A second advantage is that capital buffers ensure that losses are borne by the same players – bank shareholders – who benefit from the profits (i.e., the risk premiums) originated by the banks' risk-taking activities. This reduces moral hazard and ensures that risk and reward are appropriately balanced, that is, that risk is appropriately priced into the banks' rates and fees.

Looking at the disadvantages, it is clear that capital (i.e., funds on which investors are willing to take considerable risk) is a scarce resource. When allocated to shield future extraordinary bank losses, it cannot be used for other productive investments. This creates an opportunity cost for the economic system as a whole. Also, extraordinary losses cannot, by definition, be estimated in advance. An over-conservative approach to loss estimation can therefore translate into unnecessarily large capital buffers, leading to unreasonably high costs for the economy. This would not happen under the "pay as you go" approach, where extraordinary losses are covered by the taxpayer once they are incurred.

Turning back to liquidity requirements, an adequate buffer of liquid assets to face deposit withdrawals and other outflows can be regarded as a normal business requirement for banks. As a consequence, the costs associated with such a buffer should be translated into the interest rates applied to customers. Namely, depositors who want to access their money at any time should get low yields, so that the bank, in turn, may hold an adequate cushion of low-return, highly-liquid assets. When a bank offers rates close to market benchmarks in order to attract deposits (or is willing to pay an unreasonable premium on its bonds to raise stable funds) then the risk-reward equation is no longer in balance.

Even if liquidity buffers are correctly set up and priced, they may not be enough to manage extraordinary situations. Liquidity shortages may, in fact, be due to system-wide strains affecting the whole banking industry, rather than to institution-specific causes (e.g., inadequate management or fraud). In such cases, individual banks cannot, by themselves, stop liquidity runs; indeed, the amount of liquid assets needed to manage such system-wide pressures is so high that no bank shareholders could afford to face the related costs. When the whole banking sector needs liquidity, only central banks can provide back-stop support;

liquid assets held by individual institutions can buy time but are not a solution, and should not be kept for this reason.

Maturity transformation is a core function of banks: companies investing in fixed assets – or families buying a home – have a much longer time horizon than depositors. The NSFR requires that additional long term funding is raised to cover long-term lending. It creates a substantial cost to the bank, which will translate into higher lending rates. In addition, if banks become more dependent on the capital market, hence more vulnerable to its bottlenecks, especially when a large amount of bonds have to be rolled over, this may prove detrimental for credit ratings and lead to higher interest rates on bank debt. In short, there is a risk that the NSFR is too rigid to manage and seriously damages one of the banks' key economic functions. Households and non-financial companies rely on banks for maturity transformation, and a drop in the supply of long term lending may result in lower growth and higher unemployment rates.

That is why, in our opinion, the rationale for introducing a “structural” ratio like the NSFR may prove less compelling than for the LCR. The LCR provides breathing space to bankers and supervisors to ascertain whether an institution facing funding pressures is solvent (in which case extraordinary funding may be provided by the government or the central bank to overcome a temporary shortage) or insolvent (so that supervisors must start the resolution process, activating deposit guarantee schemes for small investors and freezing other creditors' rights until the institution can be orderly wound down¹⁴). If such a mechanism can be made to operate effectively, then there is less need to constrain a bank's strategic choices regarding maturity transformation by imposing a rigid funding structure and a set of automatic rules, as the NSFR does.

2.4 Final remarks

The LCR ultimately asks banks to hold enough liquid assets to meet their short-term outgoing cash flows. This is intrinsically correct and sound. However, as shown in the Parts 2 and 3 of this report, there is ample room to recalibrate the ratio, to balance the emphasis on financial stability with the borrowing needs to the wider economy. Ultimately, there is a risk that liquidity requirements reduce the role the banks as an intermediation channel between households and producers. In particular SMEs may find it hard to get an adequate flow of funds because alternative sources of finance may be scarce. Liquidity (and capital) rules on SME exposures should be revisited taking into account both the possible adverse macro-economic consequences and the positive role played, in terms of risk diversification, by this class of bank borrowers.

As for the NSFR, it requires banks to reduce their maturity transformation role and imposes a rigid funding scheme on long-term lending. This is likely to lead to higher interest rates and to weaker supply of long-term finance for non-financial companies and households. At the very least, such effects should be mitigated through a thorough revision of the parameters used to compute this ratio.

Overall the new liquidity requirements, together with higher capital ratios, aim at increasing the stability of the banking sector. This, however, should not be a goal as such, but rather an

instrument to ensure strong and orderly economic growth. In the end, banks should work for the economy, not the other way round.

¹ This section is based on a contribution by Arnold Kuijpers. Box 1 is based on a contribution by Christian Lajoie. Box 2 is based on a contribution by Erik Berggren.

² Results of the Basel III monitoring exercise as of 30 June 2011, EBA.

³ “Large” banks are defined as well-diversified, internationally-active institutions with a tier one capital in excess of € 3 billion.

⁴ Not all banks participating in the survey were able to provide quality data on all relevant aspects.

⁵ Reference is made here to the impact studies carried out by the Committee of European Bank Supervisors (CEBS) in December 2010 (on end-2009 financial data) and by the European Banking Authority in Spring 2012 (on mid-2011 data). Euro amounts are our estimates, based on percentages released by EBA and CEBS.

⁶ Data refer to Group 1 banks (large and diversified institutions), while Group 2 banks (medium-sized and specialised institutions) show a decrease from 87% to 70%.

⁷ While banks participating in the two exercises were not identical, and the number of participating institutions is higher in 2011, all major groups in Europe took part in both studies. Accordingly, it is unlikely that changes in the sample may have caused, by themselves, a significant increase in the LCR shortfall.

⁸ While the LCR is the ratio between high-quality liquid assets (HQLA) and net cash flows (NCF), the LCR shortfall is the difference between those two variables. Assuming HQLA is less than NCF (so that the LCR is below 1), increasing both by some amount δ leads to an improvement in the ratios (that is, $(HQLA+\delta)/(NCF+\delta)$ proves higher than $HQLA/NCF$), while the shortfall remains unchanged ($HQLA+\delta-(NCF+\delta) = HQLA-NCF$).

⁹ Morgan Stanley, “What Are the Risks of € 1.5 – 2.5 trillion deleveraging?”, November 13, 2011.

¹⁰ While those plans also reflect strains on wholesale funding markets in Europe (in particular for bank bonds), such tight market conditions can be regarded as a “substitute” for the proposed liquidity requirements, namely for the NSFR that will be putting pressure on banks’ long term wholesale funding in the future.

¹¹ See EIM, “Do SMEs create more and better jobs?”, report prepared by EIM Business & Policy Research with financial support from the European Communities (full text available on http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/performance-review/files/supporting-documents/2012/do-smes-create-more-and-better-jobs_en.pdf).

¹² See European Commission Enterprise and Industry, “SMEs’ Access to Finance 2011”, report prepared by Ipsos MORI (full text available on http://ec.europa.eu/enterprise/policies/finance/files/2011_safe_analytical_report_en.pdf).

¹³ Funds available because of the deposit guarantee schemes will only be sufficient to save small banks.

¹⁴ See European Commission, “Proposal for a Directive of the European Parliament and of the Council establishing a framework for the recovery and resolution of credit institutions and investment firms”, June 6, 2012.

A number of national reforms of liquidity rules have been enacted in Europe since the beginning of the financial crisis. Due to the upcoming Basel 3 reform, country-specific approaches to liquidity requirements are now being aligned in the European Union. The provisions in the CRR, generally speaking, appear comparatively stricter than pre-existing requirements. While bolstering liquidity buffers across the financial sector and therefore mitigating risk in distressed markets, such provisions may have unintended implications on the financing of small to medium-sized corporations.

3 The State-of-the-Art of Bank Liquidity Rules in Europe¹

This Section provides a quick overview of the regulatory requirements on liquidity-management prior to and after the 2008-2009 financial crisis, including countries from different areas of the European Union. This allows for a general preview of the reforms' implications with an emphasis on credit granted to private-sector corporations. The analysis below does not cover all member states in the European Union, as the countries examined depend e.g. on the availability of regulatory documents in English. It does, however, cover a range of countries which includes different political and economic backgrounds.

3.1 Liquidity management in the pre-crisis era

Prior to the 2007-2009 financial crisis, regulation on liquidity-management in financial institutions was scarce. While some countries like Germany and Austria traditionally possessed comparatively detailed regulations concerning liquidity issues (the liquidity rules - "LiquiV"s - in both countries were issued prior to the crisis²), other western European countries like Luxembourg and the Netherlands had comparatively unspecified rules.³ Liquidity regulation was almost non-existent in the United Kingdom. Italy's supervisory limits to maturity mismatches had been repealed in the mid-2000s.

The Scandinavian countries relied heavily on liquidity reporting rules (reaching from a monthly reporting obligation in Denmark to quarterly reporting duties in Finland and only an excess reporting in Sweden), while following very different approaches on liquidity coverage ratios (LCRs). Denmark introduced a very strict LCR in 2006, when Section 152 of its Financial Business Act (FBA) required banks to hold between 10% and 15% of their credit exposures in liquid assets. Sweden and Finland relied instead on a more general approach, focusing on liquidity management techniques rather than on binding ratios⁴.

In Germany, §2 of LiqV required overall liquidity buffers to be greater than net liquidity outflows under stressed conditions⁵. Paragraph 3 of the regulation defines liquid assets including a large variety of items (like cash, reliable deposits and unencumbered bonds). Such assets are assigned to four different maturity bands, ranging from overnight to 12 months. Inflows include maturing cash-flows from corporate loans (interest rates and repayment) that can be expected within 30 days. The rules apply only to individual legal entities, not at the group level.

Such an uneven, sometimes weak regulatory framework reflects an era of "easy money", with excess liquidity flowing throughout financial markets, also due to expansionary monetary policies. This gave institutions the opportunity to refinance themselves, with negligible interest rate differences, via other institutions (on the interbank market), with little focus on the fundamentals of liquidity.

This *modus vivendi* proved ineffective after the default of Lehman Brothers. In contrast to public perception, Lehman had extensively relied on short-term funding and was not able to cover the losses suffered from its exposure to subprime-related structured securities. Liquidity dried up as lenders became suspicious of Lehman's accounts (including some concerns about accounting procedures and two rights issues within months). As talks between potential buyers and the US government failed, Lehman had to file for bankruptcy under Chapter 11.

This had consequences for the financial sector. The interbank market - formerly the main source of daily liquidity for financial institutions - came to a complete halt on concerns over the counterparty risk of some players. Due to such distrust, large institutions were cut off from refinancing and forced to rely on their (rarely sufficient) liquidity buffers. In an urgent need for liquidity, they cancelled credit lines for consumers and corporations, cutting loans and shifting the focus of the crisis from the financial markets to the real economy.

3.2 Some recent reforms of liquidity rules

Following the financial crisis and the Lehman default, a panel of high-level experts led by Jacques de Larosière was set up to examine the vulnerabilities of the financial sector. Within months, they issued a report (the "de Larosière Report"), criticising – among other things – the inadequate techniques used by financial institutions for liquidity management. Section 18 stated that "[...] many financial institutions did not manage the maturity transformation process with sufficient care. What looked like an attractive business model in the context of liquid money markets and positively sloped yield curves (borrowing short and lending long), turned out to be a dangerous trap once liquidity in credit markets dried up and the yield curve flattened." Accordingly, Section 55 pressed regulators to adjust "[...]capital regulations [...] to incorporate more fully the impact [of maturities] on capital or liquidity [...]". A number of national regulations were quickly enacted or updated to address such requests, with a focus on institutions' survivability in short-term market-distress.

Austria's Banking Act (BWG) was amended several times to ensure that credit institutions could fulfill their liabilities at any time, as detailed in paragraph 25. To achieve this, institutions are required to hold liquid assets which are sorted into several maturity bands.

As specified by LiquiV (§§1 and 2) highly liquid assets in the first maturity band include precious metals and convertible foreign currencies; this marks a difference with most other countries' rules. If an institution is connected to a central entity, additional requirements are imposed. Compliance is achieved by intense monitoring and detailed reporting obligations (at least monthly, and accompanied by a one-week forecast).

In Germany institutions must also meet qualitative requirements governing their liquidity risk management. Amendments in the "Minimum Requirements for Risk Management" (Mindestanforderungen an das Risikomanagement – MaRisk, Circular 11/2010, BA) set out the qualitative requirements of section 25a KWG in greater detail. MaRisk describes general requirements that must be met by all institutions. These include the preparation of a liquidity overview, the performance of appropriate stress tests, the preparation of contingency plans and the incorporation of liquidity-related cost/benefit considerations in the management of the institutions' business activities.

Denmark's LCR, while dating back to 2006 as indicated above, proved a harsh burden for banks, even in comparison to the soon-to-be-implemented CRR. Requirements on eligible liquid assets are in fact very strict, as they include only cash in hand, fully secured and liquid demand deposits with credit institutions and insurance companies, as well as equity investments of secure, easily tradable securities and unencumbered credit funds.

Other Scandinavian countries took a less detailed approach. Sweden required financial institutions to have liquidity risk management systems approved at board-level, implementing measures to guarantee short-term liquidity through an ad-hoc reserve of unencumbered high-quality liquid assets, although the latter were not defined in detail⁶. Finland took a similar approach, adopting a sweeping rule which required financial institutions to "have a buffer of unencumbered liquid assets in case of a quick and unexpected weakening of the liquidity situation." This buffer in form of cash and highly liquid assets has to cover short-term obligations and is accompanied by a less strict buffer for a longer survival-period of one to two months⁷.

Luxemburg's large banking sector experienced huge difficulties following the meltdown of the interbank market in 2008. Regulatory response was quick and in 2009 led to Circular 09/403 of the Banque Central du Luxembourg. This requires institutions to keep "adequate liquidity buffers made up of cash and available and liquid assets in order to face a liquidity crisis", in order "to permanently and effectively cover an institution's risks." Similarly, the Netherlands ordered banks and other financial institutions (including those registered abroad but having branches in the country) to be "sufficiently liquid"⁸.

In the second half of 2009, the United Kingdom issued its first liquidity rules for financial institutions⁹. While no in-depth, detailed definition or formula was provided, the rules requested an "adequate" liquidity buffer though a pool of assets which had to be "marketable" and realisable, of appropriate maturities and able to generate funding in a timely manner. The rules also distinguish between BIPRU¹⁰- and non-BIPRU-institutions (depending on their classification according to the "prudential sourcebook for Banks,

Building Societies and Investment Firms"), with the latter generally being submitted to less restrictive constraints.

3.3 Moving from national rules to CRR: what is at stake

At the international level, new Basel rules on liquidity were finalised in late 2010 and are being debated for implementation into European law via the CRR. The CRR's liquidity requirements (see Table 3, based on the regulation's draft text) apply to a wide variety of institutions (including banks, other credit institutions and investment firms), including purely domestic entities. Additionally, they are applicable both to individual legal entities and on a group-level.

TABLE 3 –KEY PROVISIONS IN THE CAPITAL REQUIREMENTS REGULATION

	Scope	Group Level Regulation	Requirements	Liquid Assets	Liquidity Net Outflow
Capital Requirements Regulation	Companies according to Annex I of CRD-IV Credit institutions Investment firms SSPEs CIUs Non-open ended investment schemes Insurance undertakings Financial or mixed-activity holding companies (Art. 400 CRR)	Yes (Art. 7 CRR)	≥ Liquidity outflows less liquidity inflows over 30 days under stressed conditions	Certain cash and deposits held with central banks transferable assets of extremely high liquidity and credit quality transferable assets backed up by certain central governments transferable assets of high liquidity and credit quality (Art. 404 CRR)	Estimate based on a set of run-off factors (applied to liabilities), drawdown factors (applied to off balance sheet items) and roll-over factors (applied to short term assets, like loans, due to expire in the 30-day period) ¹¹ .

As indicated in §1, the CRR includes a liquidity coverage ratio (LCR) which will be binding since 2015. Computation rules for the ratio impose several limits on eligible liquid assets and on cash inflows that can be offset against expected outflows. Overall, they appear considerably more conservative than most national rules surveyed above (see Table 4 for a synopsis) and may have negative impacts on lending, especially to SMEs (which, by the way, are less prepared to turn to capital markets for their funding needs), as argued in other sections of this report¹².

TABLE 4 –KEY PROVISIONS IN NATIONAL REGULATIONS

	Scope	Group Level Regulation	Requirements	Liquid Assets	Liquidity Outflow
Austria	Credit institutions under the definition of § 1 BWG	No	Required to be able to fulfill their liabilities at any time (§ 25(1) BWG)	Assets classified by maturity bands according to § 25(3) ff BWG, § 1 and 2 LiquiV	Depending on maturity bands of liabilities.
Denmark	Banks and subsections, Financial Holding Companies, Branches in Denmark of credit institutions, investment companies, management companies and insurance companies, Credit Rating Agencies, Suppliers and sub-suppliers to outsourcing undertakings	Yes (section 170 f. FBA)	Appropriate liquidity, no less than 10 to 15 % of exposures depending on their classification via section 152, FBA	Cash in hand, fully secured and liquid demand deposits with credit institutions and insurance companies, equity investments of secure, easily realizable, securities and credit funds not used as collateral for a loan (section 152 f. FBA)	N / A
Germany	Credit Institutions Certain kinds of Financial services institutions (§ 1 LiqV)	No	≥ Available liquidity according to maturity bands less liquidity outflows in this period under stressed conditions (§ 2 LiqV)	Cash; deposits held with central banks; collection papers; unconditional loan commitments by credit institutions (see § 3 LiqV)	Depending on maturity bands of liabilities (see § 4 LiqV)
Finland	Credit institutions: Certain investment firms; certain fund management companies; holding companies of credit institutions and investment firms; the central body of the amalgamation of deposit banks; Finnish branches of foreign credit institutions and investment firms	Yes (section 6.3, FSA-Standard 4.4d)	Buffer of unencumbered liquid assets	Cash and highly liquid assets for covering shorter-term (1 week) funding deficits Additional other liquid assets for covering funding deficits over 1–2 months (Section 8.3, FSA-Standard 4.4d)	N / A

	Scope	Group Level Regulation	Requirements	Liquid Assets	Liquidity Outflow
Luxembourg	Credit institutions and investment firms under Luxembourg law; branches of non-EU credit institutions and investment firms; branches of credit institutions authorized in another EU-State (Chapter I CSSF 09/403)	Yes (Chapter II, CSSF 09/403)	Internal capital must be sufficiently high and available so as to effectively absorb losses	Cash and liquid assets according to CEBS Recommendations 16 and 9 (Sub-chapter II.3. CSSF 09/403)	No detailed national definition of liquidity outflows. Regulation points to CEBS-recommendations.
Netherlands	Clearing institutions and credit institutions; insurers; collective investment schemes; financial services; other services.	No	"Shall be sufficiently liquid." (Part 3.3.7. / Section 3:63 AFS)	N / A	N / A
Sweden	Banking companies; savings banks; members banks; credit market companies; credit market associations; investment firms; financial groups; (section 2, FFFS 2010:7)	Yes (section 2, FFFS 2010:7)	Enable the firm to withstand a serious liquidity shortfall without needing to alter its business model." (chapter 4, section 5, FFFS 2010:7)	High-quality unencumbered liquid assets (chapter 4, section 5, FFFS 2010:7)	No detailed definition of liquidity outflow, emphasis is put on "meeting payment obligations" (chapter 4, section 5 FFFS 2010:7)

	Scope	Group Level Regulation	Requirements	Liquid Assets	Liquidity Outflow
United Kingdom	BIPRU firms; incoming EEA firms which are full BCD credit institutions and have a branch in the UK; third country BIPRU firms which are banks and have a branch in the United Kingdom (BIPRU 12.1.1 R, FSA-Handbook)	Yes (BIPRU 12.8.7) Possible through a modification.	Adequate liquidity (BIPRU 12.2, FSA-Handbook)	Liquid assets need to be: marketable, or otherwise realizable in "a timely manner"; of appropriate maturities, taking account of the expected timing of that firm's liabilities; able to generate unsecured funding of appropriate tenor in a timely manner (BIPRU 12.2.5, FSA-Handbook). 12.7 mentions in detail: Gilts plus qualifying supras and qualifying central bank balances and bonds issued by US, Canada, Australia, Japan, Switzerland or an EEA state rated at least AA-/Aa3 by 2 rating agencies.	No detailed definition of liquidity outflow, management of liquidity outflow is regulated in BIPRU 12.3. 12.5 provides significant detail on the types of outflows that the firm needs to consider (name-specific, market-wide and combined liquidity stresses over an acute 2 week period followed by a chronic stress out to a remainder of 3 months) and includes detail such as no inflow from maturing intra-group lending, 100% outflow of Type A wholesale liabilities in the acute stress horizon.

Sources : 5. Liquiditätsverordnung (5. LiquiV) of February 3rd, 2012; Act on Financial Supervision (AFS) of September 28th, 2006; Circular CSSF 09/403 of May 28th, 2009; Consolidating Act no. 885 (Financial Business Act - FBA) of August 8th, 2011; Federal Banking Act (BWG) of February 13th, 2012; Finansinspektionen's Regulation regarding management of liquidity risks in credit institutions and investment firms (FFFS 2010:7) of October 4th, 2010; FSA (Financial Services Authority)-Standard 4.4d - Management of liquidity risk of December 9th, 2010; Liquiditätsverordnung (LiqV) of Dezember 14th, 2006 as of March 1st, 2011; Ordnungsnormenausweis-Verordnung (ONA-V) of March 15th, 2012; Solvabilitätsverordnung (SolvV) of December 14th, 2006.

Concerning liquid assets, the draft CRR excludes securities that are not eligible collateral in normal times for intraday liquidity needs and overnight liquidity facilities of a central bank in a Member State, cannot be priced easily based on publicly available inputs or are not listed on a recognized exchange. Such a strict rule will most likely affect small to medium-sized local credit institutions in countries with hitherto different regulation.

While the CRR rules target the immediate availability of funding within a very short period of time, some countries have had an overall positive experience on accepting certain types of cash flows from corporate credits into a maturity-band-adjusted definition of liquid assets during the crisis. In Germany for example, §3.2 section 2 of LiqV allows for corporate lending to be considered without restrictions under maturity lines 1 to 4.

One may argue that loans to SMEs, while not being recognised by the CRR in the pool of liquid assets that banks have to hold to generate cash in a distressed scenario (the LCR's numerator), are still recognized by CRR as a source of inflows (in the LCR's denominator).

However, following the new CRR requirements banks can only recognise 50% of the future inflows from SME's in their LCR calculations. This could create unintended incentives for banks to switch from lending to SME's to investments in high liquid assets, which get full recognition in the LCR numerator. Credits to medium-sized and financially stable companies, however, proved to be an element of resilience for many European banks in a world riddled by suspicions upon counterparty risk after the Lehman collapse.

¹ This section is based on a contribution by Hiltrud Thelen-Pischke. Helpful comments by Mike Gregory are acknowledged.

² In Germany liquidity rules were the successor to "Grundsatz II" which, in its last revision, governed liquidity management since 2002 and reached back to the 1960's.

³ Luxembourg's Circular IML 93/104 of 1993 was roughly similar to its former German equivalent "Grundsatz II". Currently Luxembourg has issued detailed rules on sound liquidity risk management as well as specific liquidity coverage ratios.

⁴ see e.g. Finland's Financial Services Agency, also known as Fin-FSA with its Standard 4.4d on the "Management of Liquidity Risk"

⁵ The requirements of §2 have been in place since 2000 as a circular; in 2007 they were moved to the LiqV and upgraded to regulation (Verordnung) level.

⁶ See Chapter 4, Section 5 of FFFS 2010:7.

⁷ See FSA-Standard 4.4d. Details on risk-assessment for certain financial instruments can be found in FSA-Standards 4.2 and 4.3.

⁸ See the Act on Financial Supervision.

⁹ See BIPRU 12.1.1 R of the new FSA-Handbook.

¹⁰ BIPRU is the prudential sourcebook issued by the British FSA for Banks, Building Societies and Investment Firms.

¹¹ In greater detail: a share of current amount outstanding for retail deposits; a share of current amounts outstanding of other liabilities that might come due during the next 30 days; additional outflows ref. article 411; % maximum amount that can be drawn during the next 30 days from undrawn credit and liquidity facilities that qualify as medium or medium to low risk; additional outflows identified in the assessment according to article 408 (2); contractual inflows from exposures that are not past due and for which the institution has no reason to expect non-performance within the 30-day time horizon. The inflow shall be taken into account in full with the exception of the following: (a) monies due from customers that are not central banks or financial customers for the purposes of principal payment shall be reduced by 50% of their value or by the contractual commitments to those customers to extend funding, whichever is higher. This does not apply to monies due from secured lending and capital market driven transactions as defined in Article 188 that are collateralised by liquid assets according to Article 404 and to monies due from trade financing transactions referred to in point (b) in the second subparagraph of Article 158(3) with a residual maturity of up to 30 days, which shall be taken into account in full as inflows.

¹² See also §2 of this report and Box 2 on page 9.

The introduction of liquidity ratios is likely to modify the accounting choices of banks. Such rebalancing of the incentives can modify the relations of the firm with owners and other users of accounting information.

4 Accounting and the liquidity ratios¹

4.1 Accounting choices and related incentives

Accounting choices of companies are guided by several motivations. Accounting literature² classifies them into three broad categories:

1. choices that are determined to influence one or more of the firm's contractual arrangements. Such contractual arrangements include, among others, executive compensation agreements and debt covenants;

2. choices attempting to influence asset prices. Accounting choice may provide a mechanism by which better informed insiders can impart information to less well-informed parties about the timing, magnitude, and risk of future cash flows. However, accounting choices are also allegedly made by self-interested managers in the belief that higher earnings will result in higher stock prices, contributing to their compensation or reputation;

3. choices to influence external parties other than actual and potential owners of the firm. Examples of third parties include government regulators, tax authorities, suppliers, competitors, and union negotiators. As long as these parties make decisions on the basis of the accounting figures of the firm, managers hope to influence the decisions of these third parties by means of accounting choices. For the case of the banking industry, and due to its supervised nature, this last category is especially important.

Given this framework, the introduction of liquidity ratios is likely to modify the accounting choices of banks. Such rebalancing of the incentives can modify the relations of the firm with owners and other users of accounting information.

The computation of the liquidity ratios requires additional reporting on items which are already valued in the financial statements. Listed banks in the EU must

follow the IAS rules when drafting their consolidated financial statements. As most banks' assets and liabilities is made up by financial instruments, the most relevant standards for EU listed banks are those regulating that kind of items. In the future the relevant standard will be IFRS 9 – Financial Instruments³; details on it are provided in Box 3.

Box 3 - Main features of IFRS 9

IFRS 9 is to replace IAS no. 39 (“Financial Instruments: Recognition and Measurement⁴) and implies a simplification of the accounting treatment of financial instruments provided by its predecessor. IAS 39 involves a much more complex system of rules for the valuation of financial instruments. In fact, one of the reasons of the reform, apart from the intention to converge with the American standards issued by the Financial Accounting Standards Board (FASB), is the simplification of the financial instruments valuation rules.

Under IFRS 9, only two valuation criteria are allowed, namely amortised cost and fair value. Amortised cost means adjusting the cost of a financial instrument for the effect of its yield, computed by spreading fees, transaction costs and discount premiums over the its whole life. Fair value is the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction. Broadly speaking, amortised cost is a corrected version of the traditional historical cost.

Fair value implies that the primary source of information for the valuation of financial instruments is a quoted market price. However, listed and published prices are not available for all financial instruments. In those cases, estimates are often required to determine fair value. Firms use valuation models that take into account a variety of relevant data, such as current economic forecasts, general market conditions, the price of similar financial instruments, etc. to determine the fair value. For example, corporate bonds typically trade in a well-defined range over Treasury securities of a similar maturity. Transaction prices of such instruments will generally be very helpful in fair value estimations. In most cases, some verifiable market data exists to bolster the objective determination of fair value through modeling. Firms rely primarily on judgment only for the very complex instruments where market parameters and prices do not exist.

IFRS 9 provides rules that determine when a financial instrument must be valued through amortised cost and when fair value must be used. For example, for the specific case of financial assets the rules imply the assessment of the entity's business model for managing the financial assets and the consideration of the contractual cash flow characteristics. However, the rules also imply that, to some extent, judgment must be exercised in deciding which valuation option is going to be used. In fact, the simplification implied by IFRS 9 is reached by allowing managers to exercise a higher degree of judgment in the preparation of financial information. In other words, the new standard allows notable room for accounting choice. Consider the following examples:

1. an entity may, at initial recognition, designate a financial asset as measured at fair value if doing so eliminates or significantly reduces a measurement or recognition inconsistency (sometimes referred to as an “accounting mismatch”) that would otherwise arise from measuring assets or liabilities or recognizing the gains and losses on them on different bases. This option implies a considerable degree of judgment;
2. amortised cost valuation requires that the company operates within a business model whose objective is to hold assets in order to collect the contractual cash flows. An entity must assess whether its financial assets meet this condition on the basis of the objective of the business model as determined by the entity's key management personnel. Although this condition is not an instrument-by instrument approach to classification and should be determined on a higher level of aggregation, a single entity

may have more than one business model for managing its financial instruments, that is, more than one financial assets portfolio. Therefore, classification needs not be determined at the reporting entity level and there is also room for accounting choice.

4.2 The LCR: towards a dual reporting?

In the case of the LCR, Article 404.3 of the proposed CRR mandates several requisites in order to consider an asset as liquid, including the following:

“(c) their price can be determined by a formula that is easy to calculate based on publicly available inputs and does not depend on strong assumptions as is typically the case for structured or exotic products;

(d) they are listed on a recognised exchange;

(e) they are tradable on active outright sale or repurchase agreement markets with a large and diverse number of market participants, a high trading volume, and market breadth and depth.”

In addition, article 406 establishes that the value of a liquid asset to be reported shall be its market value.

Overall, there seems to be little room for the valuation of liquid assets with regard to liquidity reporting. This means that a “dual reporting” environment does arise. That is, for liquidity reporting only one method is possible while for drafting the annual accounts and other reporting obligations banks have a certain degree of accounting choice, which is influenced by the incentives exposed above.

For example, it is possible that a bank holds certain high and extremely high liquidity assets that meet the requisites listed in Article 404.3, but at the same time classifies these assets as held to maturity and therefore they are valued using historical cost rather than fair value. In this case there would be a difference between the accounting value and the one used for the calculation of the LCR ratio. At this point the bank has two options: i) reclassify assets to avoid discrepancy in the valuation, ii) maintain the classification with a dual valuation criterion.

The introduction of the LCR modifies the scheme of incentives for accounting choice, and this may have effects in the markets. If a bank decides that the valuation criteria of certain assets in the annual accounts is different from that of liquidity reporting, it may face a political cost. In fact, when the same items are assigned different values for different reporting purposes, some stakeholders may conclude that the accounting information provided by the bank is not fully reliable. Those stakeholders may then impose higher political costs to the bank, in the form stronger supervision, changes in audit regulation and the like. Also, banks perceived as less reliable could eventually face an increased cost of capital.

However, using accounting choice to adapt all the valuations to the market value established for the computation of LCR may also have effects. These effects could be an increase in the volatility of bank balance sheets which in turn could also have effects in the markets. That is, the value of the balance sheets of financial institutions would be driven by short-term fluctuations of the market that do not reflect the value of the fundamentals.

As shown by Allen and Carletti⁵, this is especially true in times of financial crisis, when the interaction of institutions and markets can lead to situations where prices in less liquid markets do not reflect future payoffs but rather reflect the amount of cash available to buyers in the market. In other words, mark-to-market accounting leads to accurate measurements of liquidity, but involves the risk of not providing adequate information to other users of the financial statements which may be more interested in long-term dimensions of firm performance rather than in liquidity.

4.3 The NSFR and the choice of the accounting method

Concerning the NSFR ratio, things are somewhat different. Articles 414 and 415 of the proposed Regulation, which deal with the reporting on stable funding, make no reference to the valuation criteria of the items considered for the computation of such ratio. This is also a source of uncertainty. If we assume that no further regulation will specify such criteria and the valuation of the items will be the same as that used for financial reporting, then the banks will have a certain room for accounting choice. *Ceteris paribus*, banks will tend to use the valuation methods that minimise the value of fixed assets and maximise that of stable (long-term) funds. This is possible because, as indicated above, banks can define different portfolios for fixed assets and stable funds, and use different valuation criteria (amortised cost and fair value).

In this regard, a specific case which is of special relevance is the treatment for loan losses in the banking book, which enables banks to recognize high valuations in good times and exacerbates the collapse in balance sheet values in downturns.

¹ This section is based on a contribution by by Javier de Andrés with Pedro Lorca.

² See e.g. Holthausen, R.W.; Leftwich, R.W. (1983): "The economic consequence of accounting choice: Implications of costly contracting and monitoring", *Journal of Accounting and Economics*, 5, 77-117; Watts, R.; J. Zimmerman, J. (1986): *Positive Accounting Theory*, Edgewood Cliffs, NJ: Prentice Hall; Fields, T.D.; Thomas Z.; Lys, T.Z.; Vincent, L. (2001): "Empirical research on accounting choice", *Journal of Accounting and Economics*, 31(1-3), 255-307.

³ Other IAS/IFRS contain valuation rules for certain assets that may impact the calculation of liquidity ratio (especially the NSFR). For example, IAS 16 ("Property, Plant and Equipment") allows a bank to choose either the cost model or the revaluation model (fair value) as its accounting policy, which shall apply that policy to an entire class of property, plant and equipment.

⁴ Although the current effective date of IFRS 9 is 1 January 2013, on 4 August 2011 the IASB issued an exposure draft proposing an effective date of 1 January 2015.

⁵ Allen, F.; Carletti, E. (2008): "Mark-to-market accounting and liquidity pricing", *Journal of Accounting and Economics*, 45(2-3), 358-378.

PART 2

Don't put all your eggs in the wrong basket

Part 2 of this report focuses on caveats and possible adjustments to liquid assets that banks may use to meet the liquidity buffer prescribed by the LCR . In detail:

§5 (“How liquid are liquid assets?”, page 31) discusses **the eligibility criteria for high quality liquid assets** in the CRR. Such criteria, while possibly relevant to capturing an asset’s liquidity on a stand-alone basis, **may prove inadequate to provide a measure of systematic liquidity risk**, i.e., the risk that a security proves to be illiquid when the market as a whole is experiencing a liquidity freeze. The link between liquidity, credit and market risk is also explored, as is the interaction among different risk types and whether this could lead to double-counting prudential requirements.

§6 (“Are there enough liquid assets in Europe to meet the LCR requirement?”, page 39) highlights the risk that **the Basel 3 rules for liquid assets eligibility**, while being adequate to the US economic system, **put Europe at a strong disadvantage unless appropriately calibrated**. On one hand, European financing relies heavily on bank intermediation; on the other hand, Europe has fewer high-quality liquid assets than other regions in the world. The ongoing European sovereign debt crisis adds further complexity to the issue. .

§7 (“The risk weights attached to HQLA: effects of possible future changes”, page 43) deals with the link between liquidity ratios and possible future changes in the credit risk weights for government debt. We show that **a more risk-sensitive approach to sovereign risk weights could introduce a pronounced “cliff edge” effect into the LCR** and reduce the demand by banks for government debt risk-weighted by more than 0%. This **could be mitigated by allowing a wider range of government debt to count as Level 1** high quality liquid assets, albeit with tougher restrictions/haircuts.

§8 (“Beyond Sovereign Bonds: the Liquidity of Covered Bond Markets during the Financial Crisis”, page 49) provides a case study on an asset class, **covered bonds**, whose full eligibility as a liquid asset **may help incentivise portfolio diversification and keep credit flowing to European consumers**. Covered bonds markets in some Nordic countries seem to have operated well despite the crisis in recent years: the Danish case provides a good example, thoroughly analysed by two recent studies. While such results cannot be generalised, they appear of great interest in the current debate on liquid assets.

5 How liquid are liquid assets?¹

5.1 Introduction

The LCR, as defined by the Basel Committee, requires banks to hold a portfolio of liquid assets (High Quality Liquid Assets, HQLA) which is enough to meet the net cash outflows associated with a 30-day distressed period. The current Basel 3 definition of HQLA risks creating a dangerous concentration of liquid assets on (domestic) sovereign bonds. Many banks have argued that, during the 2008-9 interbank market freeze, other asset classes proved quite effective in providing liquidity² and should therefore be eligible for inclusion in the LCR's numerator.

The Capital Requirements Regulation (CRR) states the general requisites which should be met by liquid assets (Articles 405-6). Furthermore, Article 481(2) provides for the EBA to investigate the appropriateness of a number of criteria on which to base a "uniform" definition of HQLAs (see Table 5). By end 2013, the EBA is expected to report to the European Commission concerning the selection of the best criteria, as well as threshold levels that liquid assets would be expected to meet.

Some indicators are qualitative in nature, including the reference to "transparent pricing and post-trade information", "credit quality" and "proven record of price stability". Other measures are quantitative, including the traded volume (both average and minimum), the (minimum) outstanding volume, the average trade size, the (maximum) bid/ask spread, the time to maturity and the (minimum) turnover ratio. However, traded and outstanding volumes may provide a very partial assessment of liquidity; the use of more robust liquidity measures, like those put forward and tested through several decades of academic research, could significantly increase the reliability of the final results³.

Also, while the list makes reference to "minimum" levels of several liquidity measures, in an attempt to provide criteria which are robust under stressed market

The eligibility criteria for high quality liquid assets dictated by the CRR, while possibly appropriate to capture an asset's liquidity on a stand-alone basis, may prove inadequate to provide a measure of systematic liquidity risk, i.e., the risk that a security proves illiquid when the market as a whole is experiencing a liquidity freeze. Also, the link between liquidity, credit and market risk must be carefully evaluated, as the interaction among different risk types should not lead to double-counting prudential requirements.

conditions, it does not explicitly distinguish between idiosyncratic and systematic liquidity risk. This could prove a major shortcoming, given that liquid assets that are eligible for LCR computation should stay liquid even when the market is undergoing a tough price/liquidity shock. It seems therefore advisable that the liquidity measures to be tested by EBA also allow for an explicit link between the liquidity performance of each individual asset class and the overall (price/liquidity) performance of the market.

TABLE 5 - CRITERIA LISTED IN ARTICLE 481

#	Criterion	Quantitative?	Stressed?	Other risks?
1	Minimum trade volume of the assets	✓	✓	
2	Minimum outstanding volume of the assets	✓	✓	
3	Transparent pricing and post-trade information			
4	Credit quality steps referred to in Sub-section 2 of Annex VI			✓
5	Proven record of price stability			✓
6	Average volume traded and average trade size	✓		
7	Maximum bid/ask spread	✓	✓	
8	Remaining time to maturity	✓		
9	Minimum turnover ratio.	✓	✓	

Finally, some measures in Table 5 do not refer to liquidity risk, but rather to market or credit risk. While it has to be acknowledged that all financial risks faced by an institution are deeply interconnected and cannot be evaluated in isolation, the possibility that the same risk is double-counted under different sections of the new Basel 3 rules should be carefully evaluated.

This contribution is structured as follows. §5.2 summarises the most well-known liquidity measures proposed in the literature; §5.3 discusses the difference between systematic and idiosyncratic liquidity risk; §5.4 focuses on the interaction between liquidity, credit and market risk; §5.5 concludes.

5.2 Liquidity measures and their proxies

The common way to measure liquidity is to measure the lack of it, that is, by looking at all transaction costs incurred by investors to trade. Transaction costs have two components: explicit (money paid for commissions and other operating costs) and implicit (the sub-optimal price conditions at which a transaction has to be carried out). Implicit costs, in turn, have three components: quoted bid-ask spread, price impact and opportunity costs⁴.

While the quoted bid-ask spread might be the price paid for market-making services, the price impact stems from the fact that large transactions tend to adversely affect the price for

the party initiating the trade (sales prompt a price decrease and vice versa). This cost can be defined as the difference between the actual transaction price and the price that would have prevailed if the transaction had not taken place. Opportunity costs can result from the fact that a trade is not executed, or only partially executed, or takes time to be completed (due to the choice to trade gradually or to the inability to do otherwise). Such costs arise if, in the meantime, market prices move adversely.

Opportunity costs are hard to measure because for each trade one should know when it was decided, and how much time elapsed before an order was sent to the market. On the other hand, several spread and price impact measures have been proposed in academic literature (see Box 4).

Box 4 - Spread and price impact measures

For each trade occurring on a market, one can compute the effective spread as the absolute difference between the actual traded price P and the market midprice M (i.e., the mean of the highest bid and the lowest ask price in the book) when the trade was executed. The natural logs of the prices are often used in the computation, as in the following formula⁵:

$$s = 2 \cdot |\ln P - \ln M|$$

As an alternative to M , to focus on the temporary dimension of the spread, one can use a traded price P_n observed n minutes after (e.g., 5 minutes after, P_5). Another replacement for M is the market midprice when the trade was received by the exchange.

All these spread measures require access to intraday, trade-by-trade data. Since this is not always possible, a number of proxies have been proposed. This includes, e.g., the one by Roll⁶, which is based on the covariance between adjacent pairs of (daily) price changes:

$$\hat{s} = 2 \cdot \sqrt{-\text{cov}(\Delta P_t, \Delta P_{t-1})}$$

The number of days with zero returns is also used as a proxy for the bid/ask spread⁷; the underlying assumption is that, if a security has high transaction costs, then there are lower incentives for investors to gather private information and trade. Hence, prices are more likely to remain unchanged for two or more consecutive days.

Regarding price impact, an intuitive trade-by-trade measure compares the midprice M to the one taking place n minutes later (M_n , e.g. M_5):

$$P = \begin{cases} 2 \cdot (\ln M_n - \ln M) & \text{for a buy} \\ 2 \cdot (\ln M - \ln M_n) & \text{for a sell} \end{cases}$$

Alternative price impact measures aim at capturing the slope of the price/traded amount relationship, based either on actual trades or on posted quotes⁸.

As with the bid/ask spread, several proxies based on daily data have been proposed also for the price impact. This includes the Amihud measure⁹, based on the ratio between the absolute daily price return r and volume V :

$$\hat{p} = \frac{|r|}{V}$$

Since Amihud's measure is rather an *illiquidity* index (as larger absolute daily price changes per dollar traded suggest that the market is less liquid), its reciprocal is sometimes computed, under the name of Amivest index.

Another way to estimate the price impact (known as the Pástor and Stambaugh's gamma) is by looking at the γ coefficient in the following regression:

$$r_{t+1} = \alpha + \beta r_t + \gamma \frac{r_t^e}{|r_t^e|} V_t$$

Where r is the daily return on a security and r^e is its excess return relative to market. For illiquid securities γ should be significantly negative, since an over-/underperformance associated with large volumes can be ascribed to a price impact which is (partly) reversed on the following day.

5.3 Systemic liquidity risk

Based on different liquidity measures and proxies (e.g., quoted bid-ask spread, Amihud illiquidity ratio, Pástor and Stambaugh's gamma, etc.), one can compute various (il)liquidity indicators both for individual securities and for the market as a whole. The link between security-specific and market-wide illiquidity can then be investigated through a model like the following:

$$\Delta ILLIQ_{i,t} = \alpha + \beta_i \Delta ILLIQ_{mkt,t} + \varepsilon_{i,t}$$

where $\Delta ILLIQ_{i,t}$ denotes the change in illiquidity for security i at time t , $\Delta ILLIQ_{mkt,t}$ is the change in market-wide illiquidity and β_i is a "liquidity beta" capturing the systematic component of liquidity risk¹⁰ (that is, the sensitivity of changes in security i 's liquidity to changes in aggregate liquidity)¹¹. The R-square of the regression measures the proportion of individual liquidity explained by market liquidity (i.e., the so called "commonality", or "synchronicity", in liquidity risk).¹²

As mentioned in §5.1, Article 481 in the Capital Requirements Directive does not include any measure based on covariances or betas, thereby ignoring the systematic component of liquidity risk. This sounds peculiar for a set of rules which are expected to improve the banks' resilience to systemic shocks. Also, this contrasts with the fact that investors care about systematic liquidity risk when pricing securities (see Box 5).

One may argue that the reference to *minimum* volumes/turnovers and *maximum* spreads indirectly accounts for this systemic dimension of liquidity risk, as it aims to capture the behaviour of a security / asset class *under stressed conditions*, rather than in normal times. However, this may miss a highly meaningful aspect of the problem, by overlooking securities / asset classes which do *not* become overly illiquid when the market as a whole enters a liquidity freeze.

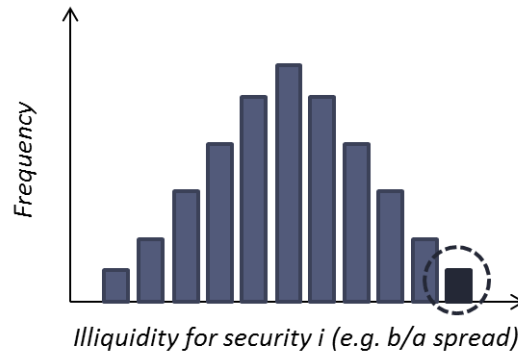


FIGURE 1 – THE LOGIC BEHIND STAND-ALONE "SHOCKED" LIQUIDITY MEASURES

Consider Figure 1. Like Article 481, it focuses on maximum values for illiquidity measures (say, the bid/ask spread), that is, it looks at the far-right tail in their frequency distribution to derive a “shocked” estimate *on a stand-alone basis*. Figure 2, instead, analyses a security’s specific illiquidity (upper part) by looking at its covariance with market-wide illiquidity (lower part). In this example, security *i* has a low liquidity beta, meaning that it remains relatively easy to trade even when most asset classes become illiquid. Hence, *it provides a cushion against liquidity risk* that would not be captured by stand-alone measures like those in Article 481.

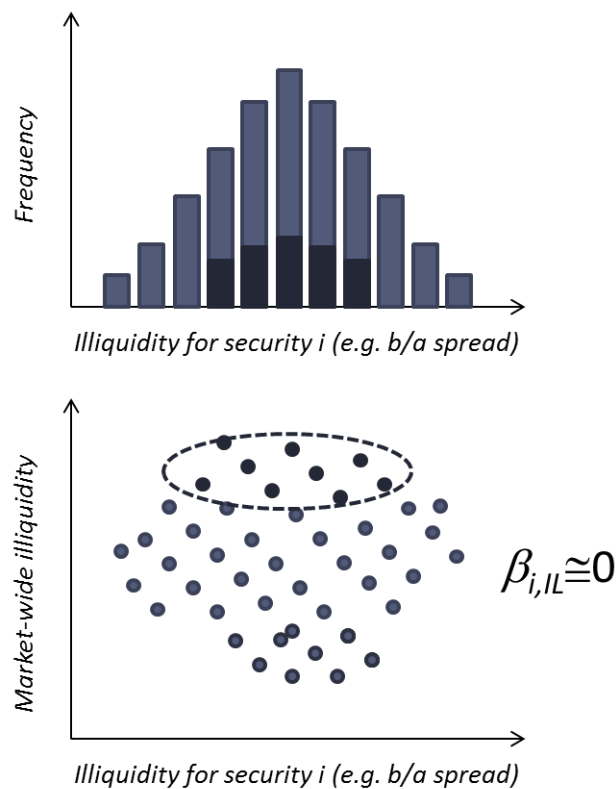


FIGURE 2 – THE LOGIC BEHIND LIQUIDITY MEASURES BASED ON SYSTEMATIC RISK (COMMONALITY)

Box 5 – Pricing systematic liquidity

Market participants care about systematic liquidity risk and include it among the determinants of the “fair” return requested to invest in a security. This was shown, e.g. by Acharya and Pedersen¹³, whose asset pricing model includes three types of liquidity risk:

- the link between individual asset illiquidity and aggregate market illiquidity, that is $cov(ILLIQ_i, ILLIQ_{mkt})$;
- the link between individual asset returns and aggregate market illiquidity ($cov(R_i, ILLIQ_{mkt})$);¹⁴
- the link between individual asset illiquidity and aggregate market returns ($cov(ILLIQ_i, R_{mkt})$).

To account for item 3, one might enhance the regression shown in the text by including market returns. This gets:

$$\Delta ILLIQ_{i,t} = \alpha + \beta_{i,IL} \Delta ILLIQ_{mkt,t} + \beta_{i,R} \Delta R_{mkt,t} + \varepsilon_{i,t}$$

where two different betas now capture systematic risk originating from two separate sources, that is, market illiquidity and market prices.

5.4 The link between liquidity risk and other risk profiles

Among the criteria listed in Article 481, there are a few - credit quality and price stability - which do not refer to liquidity (at least, not in a narrow sense), but rather to credit risk and market risk. Such risks are undoubtedly crucial for a bank’s stability; however, for this very reason they are already addressed by many provisions in the Capital Requirement Directives and appropriately covered by considerable capital cushions.

Why should they enter the eligibility criteria for liquid assets? After all, if a liquid asset involves a significant credit/market risk, a bank will already be subject to prudential rules which, if properly calibrated, offset that risk, or make it manageable. Arguably, if those rules are not conservative enough, then they should be appropriately revised, instead of tampering with credit and market risk when defining liquidity.

While this line of reasoning may in principle have its own merits, it must be acknowledged that credit and market risk may *compound* with liquidity risk in a way that goes beyond the sum of individual risk profiles.

This is especially true for market risk. A bank holding a portfolio of liquid assets which have just suffered a major price drop may be reluctant to sell them, even if the bid/ask spread is thin and the price impact looks manageable (so that the sale would take place reasonably close to the market mid-price). This is because a sale would make market risk losses permanent and exclude the bank from any gains associated with a subsequent price recovery. Hence an institution, although it has enough capital to cover the losses, may still be unwilling to sell the assets and therefore have no real access to liquidity.

In principle, this could be addressed in three different ways:

1. exclude from high quality liquid assets all securities having a significant market risk;

2. ask the Central Bank to provide access to a repo window¹⁵, where securities may be sold by banks and repurchased at a later date (without having to book a permanent loss);
3. make sure that the bank has hedged price risk through a derivative contract (which must be exchange-traded in order to minimize counterparty risk in times of market distress) or, if such a hedge is not present, can still bet on the price recovery through a derivative when unloading the security from its book.

Option 1 would lead to the straightforward exclusion of assets which are otherwise liquid, shortening the list of acceptable HQLAs and increasing the risk that banks concentrate an unduly large share of their liquid investments on very few asset classes.

An adequate haircut should be applied to liquid assets under option 2 (to cover the possible price drop over a 30-day window as well as the haircut applied in the repo) and 3 (also to allow for the cash needed to top up margins in case the price decline goes on). The use of such haircuts would be made easier by the fact that they are already contemplated in the treatment of liquid assets in the CRR.

Regarding credit risk, the main reason why it may enter the selection criteria for liquid assets is that securities embedding a high credit risk may have a thinner market and hence face a sharper liquidity freeze in times of financial distress. However, if this assumption is correct, then such a vulnerability should translate into the liquidity measures shown in §5.2 and the systematic betas discussed in §5.3. In other words, there is probably no need to ban an asset from HQLAs just because of its credit quality. Rather, liquidity should be tested on a separate basis for low-rating securities: if one were to find that some low-rating (or unrated) securities remain reasonably liquid even in times of market distress, credit rating should not, by itself, be a cause for exclusion.

5.5 The way ahead

Liquidity is a complex concept, entailing a number of dimensions and proxied by many different indicators. Any attempt to deal with liquidity through a “binary” approach would prove plainly wrong, as well as deceptive.

Rather than setting up a “list” of liquid assets, regulators should develop criteria for measuring the different shades of grey leading from illiquid assets to cash. The introduction of “Level 1” and “Level 2” assets in the Basel 3 framework is a much too shy step in the right direction. Article 481, by asking supervisors to focus on multiple criteria, might represent an opportunity for a more granular approach. If, instead, liquidity continues to be seen as a “black or white” issue, a number of unintended consequences are likely to follow.

First, by overlooking the different degrees of liquidity provided by investable assets, regulators might end up setting the threshold too high and consequently focusing on very few asset classes. The wish to “err on the safe side” would ultimately lead to investment concentration and higher risk.

Second, a liquidity scale which only includes one or two levels is most likely to prompt cliff effects when changes occur in the characteristics of eligible assets. Only a system of liquidity ratings¹⁶ that is granular enough to accommodate for many different levels can provide for a smooth transition of asset classes across grades.

¹ This section is based on a contribution by Andrea Resti.

² See BNP Paribas, “Liquidity of Equity stocks”, 2012.

³ Liquidity measures may be divided into two broad categories: trade-based measures and order-based measures. The metrics proposed by the Article 481 are mostly trade-based measures. However, order-based measures like those presented in § 5.2 (e.g., the bid-ask spread or the price impact) are more accurate in capturing the ability to (and the cost associated with) immediate trades.

⁴ See Keim, D.B., and A. Madhavan, “The cost of institutional equity trades.” *Financial Analysts Journal*, 50–69, 1998.

⁵ See Goyenko, R.Y., C.W. Holden, and C.A. Trzcinka, “Do liquidity measures measure liquidity?” *Journal of Financial Economics* 92 (2), 153–181, 2009.

⁶ Roll, R., “A simple implicit measure of the effective bid-ask spread in an efficient market.” *Journal of Finance*, 1127–1139, 1984.

⁷ See Lesmond, D.A., J.P. Ogden, and C.A. Trzcinka, “A new estimate of transaction costs.” *Review of Financial Studies* 12 (5), 1113–1141, 1999.

⁸ See Giot, P., and J. Grammig, “How large is liquidity risk in an automated auction market?” *Empirical Economics* 30 (4), 867–887, 2006.

⁹ See Amihud, Y., “Illiquidity and stock returns: cross-section and time-series effects.” *Journal of Financial Markets* 5 (1), 31–56, 2002.

¹⁰ See Kamara, A., X. Lou, and R. Sadka, “The divergence of liquidity commonality in the cross-section of stocks.” *Journal of Financial Economics* 89 (3), 444–466, 2008.

¹¹ This “liquidity beta”, although it measures a different phenomenon, is conceptually similar to the “return beta” used in the Capital Asset Pricing Model.

¹² Each liquidity measure has systematic and asset-specific components. Consequently, systematic liquidity risk and commonality in liquidity can be estimated for different liquidity measures.

¹³ See Acharya V. and L. H. Pedersen Asset Pricing with Liquidity Risk, *Journal of Financial Economics*, 77, 375-410, 2005.

¹⁴ This is similar to the results by Pástor and Stambaugh, who find that return sensitivity to aggregate market liquidity is priced in stock returns. See Pástor, Ľuboš, and Robert F. Stambaugh, “Liquidity Risk and Expected Stock Returns.” *Journal of Political Economy* 111 (3), 642–685, 2003.

¹⁵ Article 401 in the Regulation already requires that liquid assets be “eligible collateral in normal times for intraday liquidity needs and overnight liquidity facilities of a central bank”; in our view, this does not mean that liquid assets should be limited to eligible collaterals *as they are today*, but rather that, parallel to the selection of high quality liquid assets as dictated by Article 481, Central Banks might engage in a careful revision of their inclusion criteria for collateral, to improve the consistency and effectiveness of the new regulatory framework.

¹⁶ See BBVA, “LCR Liquid assets - Eligible liquidity indicators and preliminary covered - bond case study”, BBVA Finance Department, December 2011.

6 Are there enough liquid assets in Europe to meet the LCR requirement?¹

6.1 European banks and the Basel 3 HQLA definition

The LCR requires banks to hold 'High Quality Liquid Assets' (HQLA) as a liquidity buffer to offset the net outflows resulting from LCR-driven outflows on liabilities and off balance sheet items partially offset by inflows on assets.

The criteria for HQLA-eligibility specified by the Basel Committee on Banking Supervision in December 2010 lead to actual liquidity buffers that are highly biased towards sovereign debt and deposits in central banks, as illustrated by both BCBS and EBA impact studies (see Table 2 on page 12).

More than 85% of the liquidity buffer is in the form of cash, Central Bank reserves and other 0% risk weighted securities. In Europe, as of June 2011, European banks kept close to €800bn in the form of cash and Central Bank reserves that served no productive investments; in other words, €800bn were "sterilized", i.e., taken out of the economy.

Level-2 covered bonds are far smaller, accounting for just 9% of the total (≈€0.3tn in Europe). Actual investments in other possible HQLA-securities represent only 6%.

Against this backdrop, both European impact studies (2009 and 2011) point to a €1tn shortfall. This means that, with the LCR as is, European banks will need to substitute non-HQLA assets (e.g., loans) with HQLA-assets for roughly €1tn. This unprecedented substitution process should take place by December 2014.

The situation is made even more challenging by two features of the European financial systems, that are addressed in detail in the next two paragraphs. First, Europe financing is mainly done through bank

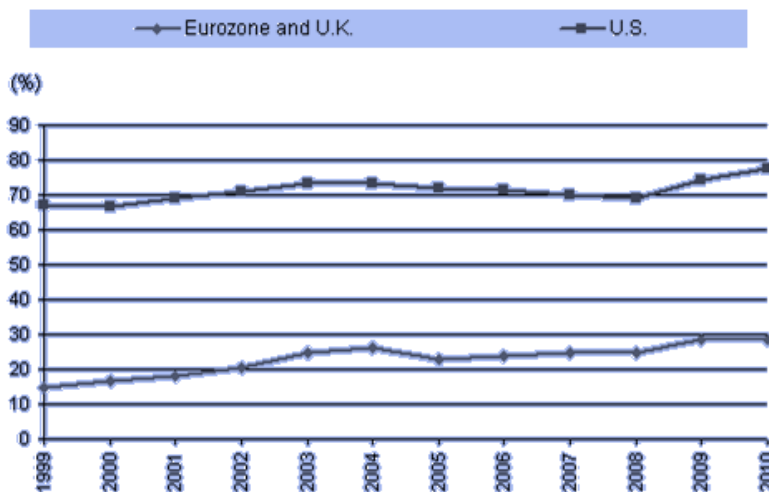
The Basel 3 rules for eligibility in the LCR numerator, while being adequate to the US economic system, put Europe at a strong disadvantage unless appropriately calibrated. On one hand, Europe financing is mainly done through bank intermediation; on the other hand, Europe has fewer high-quality liquid assets than other regions in the world and, given the ongoing European sovereign debt crisis, European banks are quite unlikely to increase their investment in European sovereign debt

intermediation; second, Europe has fewer HQLAs than other regions in the world.

6.2 The role of banks in the European financial system

European corporates are far more dependent on banks for their borrowings than their US counterparts. This is a well-known fact, but must be kept in mind if one is to assess the effects of the LCR for financial intermediation and economic growth in Europe.

Figure 3 (taken from a recent report by Standard & Poor's²) shows that European non-financial companies only source 30% of their borrowing through the capital markets, as opposed to about 80% in the US.



Source: Standard & Poor's calculations, BIS, ECB, FED.

FIGURE 3 – CORPORATE SECURITIES AS % OF TOTAL CORPORATE BORROWINGS – 1999-2010

Accordingly, the consequences of a downsize in bank lending – like the one that might be triggered by the new liquidity ratios - can be expected to be much heavier for European producers than for American ones.

Also, a higher share of funding achieved through capital markets means that US-based nonfinancial companies are providing the local banking system with more investable securities which, given adequate levels of liquidity and credit quality, may qualify as HQLA. Although non-US banks can, in principle, invest in such securities, there is no doubt that US banks are better positioned to hold them in their liquidity buffers, due to a better knowledge of the issuers and to the lack of currency mismatch.

6.3 The lack of HQLA in Europe

To enlarge and diversify the liquidity buffer of local banks, the Australian central bank has recently used the derogatory treatment proposed by the Basel Committee by providing them with a liquidity line. The main reason for this decision was that the Australian sovereign debt market is too limited in size to provide an adequate contribution to the

liquidity buffer. In fact, level 1 assets account for less than 15% of the Australian banks' balance sheet.

The same calculation can be replicated for Europe and the US. Concerning Europe, two different sets of assumptions can be used: either banks stop buying sovereign debt bonds rated under AA- (consistent with the current situation of financial market turmoil) or they keep on investing in such bonds.

TABLE 6 – ESTIMATE OF LEVEL 1 ASSETS IN % OF TOTAL BANK ASSETS

		Australia (AUDm)	Eurozone (€m)	Denmark (€m)	Sweden (€m)	USA (\$m)
(a)	Domestic bank assets*	2700	29944	1104	935	12922
(b)	Level 1 sovereign debt issuance + existing stock of sovereign debt	394	4501	96	106	10522
(c)	Total sovereign debt issuance	394	7043			
(b)/(a)	Level 1 sov / bank assets	14.6%	15.0%	8.7%	11.3%	81.4%
(c)/(a)	Total sov / bank assets	14.6%	23.5%			
	Level 1 sov / GDP	29%	49%	41%	31%	72%

Notes: (*) source: ECB; (**) level 1 : stock sovereign debt rated between AAA and AA-; (***) stock of sovereign debt rated under AA-; (****) we have not corrected the gap between the size of a balance sheet in US GAAP and in IFRS this gap has also an impact on the LCR and the calculation of US banks is made in US GAAP.

Under the first assumption, the ratio of sovereign debt to bank total assets in the Eurozone (15%) would be quite similar to the Australian one (14.6%). Assuming, instead, that banks keep on buying Greek, Italian, and Portuguese bonds, the Eurozone's ratio would still only reach 23.5% and would remain quite similar to Australia's.

As a matter of comparison, US have a 81.4% ratio even though our calculation does not include Government-Sponsored Enterprises (GSEs, like Fannie Mae or Freddie Mac) or municipal bonds.

The gap between Europe and the US has several causes :

- because of GSEs, some assets get removed from the American banks' balance sheets;
- financial intermediaries play a less central role in the US economy, compared to Europe, with bank total assets accounting for less than 90% of the GDP.

As a result, the ratio between Level 1 liquid assets and GDP highlights a clear disadvantage for the Eurozone, as it reaches 49% in Europe vs. 72% in the US.

6.4 The way ahead

The above analysis clearly highlights the risk that the Basel 3 rules for eligibility in the LCR numerator, while being adequate to the US economic system, put Europe at a strong disadvantage unless appropriately calibrated.

This is even more true given that, with the on-going European sovereign debt crisis, European banks are quite unlikely to increase their investment in European sovereign debt.

While covered and corporate bonds could in principle provide alternative ways of coping with the liquidity buffer, it is still unclear to what extent they will meet the HQLA criteria. In particular, the minimum rating requirements might become more and more challenging as the whole rating spectrum shifts downward, with negative implications for corporate/covered bond ratings.

Consequently, the main investment left as eligible HQLA might be deposits with central banks. As mentioned above, however, this basically removes money out of the European economy, reducing funds available for credit.

Two avenues should be explored to address the challenge posed to Europe:

- first, Europe should speed up the development of its own capital markets, to substitute banks as finance providers to corporates (mitigating the macroeconomic effects of the expected deleverage process) and to provide more securities to banks that could qualify for the LCR liquidity buffer;
- second, Europe must develop its own set of rules for HQLA eligibility, accounting for the specificities of its own financial system (e.g., by softening the rating thresholds for LCR-eligible assets).

Also, as the former avenue (the transition towards a European financial system which is more focused on capital markets) will require time and flexibility, it is important to design HQLA-eligibility criteria that can be modified over time to foster and accelerate this transition.

¹ This section is based on a contribution by Christian Lajoie.

² See Standard and Poor's, *Why Basel III And Solvency II Will Hurt Corporate Borrowing In Europe More Than In The U.S.*, September 2011.

7 The risk weights attached to HQLA: effects of possible future changes¹

7.1 Liquid assets and risk weightings

In the current version of the Basel 3 LCR, as it is being negotiated in the European Union via the CRR, all of the high quality liquid assets (HQLAs) that qualify for inclusion as “Level 1” HQLAs would be risk weighted at 0% under the standardised approach to credit risk weighting. Indeed, for government bonds a 0% risk weighting under the standardised approach is currently a precondition for inclusion in level 1 HQLAs.

For “Level 2” HQLAs (which can only be included subject to a haircut on value and up to a maximum of 40% of total HQLAs) the link to risk weightings is less precise, but would include the following:

- only government bonds risk weighted at 20% under the standardised approach can be included as Level 2 HQLAs;
- the highly rated non-financial corporate bonds (using a AA- rating cut-off) that can be included as Level 2 HQLAs would typically equate to a “1” rating when translating an ECAI’s ratings to risk weights, and would therefore translate to a 20% risk weight;
- holdings of covered bonds issued by other banks would be weighted at 10% if they meet the CRD4 criteria for this lowest possible risk weighting under the standardised approach.

However, at this stage it is not clear whether lower quality covered bonds – which would be weighted at 20%, 50% or 100% under the standardised approach – could be included within Level 2 HQLAs.

7.2 Liquid assets and collateral

In addition to the interplay between liquidity and capital requirements, other changes in regulatory requirements (including the central clearing of derivatives and new capital requirements on counterparty exposures) and the sharply increased provision of collateralised lending by

A more risk-sensitive approach to the risk weighting of government debt under the standardised approach could introduce a pronounced “cliff edge” effect into the LCR.

This would in turn accentuate sovereign debt problems by reducing the demand by banks for government debt risk-weighted more than 0%, pushing up yields on such bonds.

These unintended consequences could be mitigated by allowing a wider range of government debt to count as Level 1 high quality liquid assets, albeit with tougher restrictions/haircuts.

Even so, banks holding government debt with a higher risk weight will inevitably suffer from higher costs of meeting the minimum capital and liquidity requirements.

the European Central Bank have heightened the importance of collateral management for banks. The HQLAs held by banks cannot be pledged as collateral or security, so banks have an incentive to use other assets as collateral. This in turn may have implications for overall financial stability, if the highest quality assets are held back to meet LCR requirements and not used to underpin secured borrowing and off-balance sheet trading activities.

7.3 Risk weightings on government bonds

The *standardised risk weight* on government bonds was intended, under Basel 2, to depend on the credit rating of the issuer, as shown in Table 7.

TABLE 7 - BASEL 2 STANDARDISED RISK WEIGHTINGS ON GOVERNMENT DEBT

Rating:	AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ to B-	Below B-	Unrated
Standardised risk weight:	0%	20%	50%	100%	150%	100%

However, Basel 2 also included a national discretion to apply a lower risk weight to banks' exposures to their sovereign (or central bank) of incorporation denominated in domestic currency and funded in that currency. This discretion has been exercised at the level of the European Union (and carried through to CRD4) such that exposures to Member States' central governments and central banks denominated and funded in the domestic currency of that central government and central bank shall be assigned a risk weight of 0 %. Many non-EU national authorities have adopted the same approach.

Under the *Internal Ratings Based* (IRB) approach, where banks have supervisory permission to use their own internal models to calculate credit risk weights, the risk weights should depend on (i) a credit institution's own estimates of probability of default, loss given default and exposure at default, and (ii) any regulatory or supervisory overrides on any of these parameters (for example, minimum levels of the key parameters, or an insistence that a firm takes a "through the cycle" approach).

Ahead of the financial crisis, any banks using the IRB approach would probably have generated very low credit risk weightings against EU sovereign debt. But as losses have emerged – or expected future losses based on market value write-downs and volatility – then the IRB risk weights should increase accordingly². However – as with other types of risk weighted assets – the end result may prove inconsistent across banks, with a range of risk weights across individual banks reflecting differences in their internal models or in the data they are using.

7.4 Current discussions and prospective changes

There have been calls for standard setters to consider the appropriateness of the current risk weights on government bonds, given the recent experiences with some Eurozone sovereign debt³. However, no formal review has yet been launched.

If such a review were to take place, it would be difficult to predict its results. One possible outcome, however, would be to tighten the criteria for standardised risk weightings, taking more account of either ECAI ratings (even if this would be contrary to the general G20 summit recommendation to reduce regulatory over-reliance on ratings) or movements in market values. E.g., all risk weights on government debt under the standardised approach could be subjected to the scale shown in Table 7 (or a similar one), by removing (or restricting) the national discretion currently applied at an EU level (that is, the 0% risk weight on domestic government debt).

This would clearly trigger a strong interplay with the calculation of the LCR. As currently calibrated, any non-domestic government debt that no longer qualified for a 0% standardised risk weight would have to be excluded from Level 1 HQLAs. This would create a “cliff edge” effect on the calculation of a bank’s LCR, first by reducing sharply the “Level 1” HQLAs held by a bank (most of which are likely to be held in the form of government bonds rather than reserves held at a central bank) and second by cutting the LCR-eligible amount of “Level 2” HQLAs (since this amount is constrained by the availability of Level 1 HQLAs).

TABLE 8 - IMPACT OF EXCLUDING GOVERNMENT DEBT FROM LEVEL 1 HQLAS

Asset	Amount initially	Amount after change in risk weighing of country A government debt
Country A government debt weighted at 0%	10,000	0
Country B government debt weighted at 0%	10,000	10,000
Cash and reserves at central bank	5,000	5,000
Total of Level 1 HQLAs	25,000	15,000
Holding of covered bonds and corporate bonds, with haircut	5,000	5,000
Country A government debt weighted at 20%		10,000
Total of Level 2 HQLAs	5,000	15,000
Total HQLAs, imposing limit that Level 2 cannot be more than 40% of the total	30,000	25,000 (Level 2 limited to 10,000)

Let us consider the less disrupting case, where government debt is demoted from the 0% risk weight to the next-best one, i.e. 20% (getting migrated from Level 1 to Level 2 HQLAs). Even so, the consequences for LCR might prove dramatic, since the reduction in Level 1 HQLAs would in turn limit (through the 40% rule mentioned in §7.1) the maximum amount of eligible Level 2 HQLAs.

To illustrate this, assume that a bank begins with 30,000 of HQLAs as in Table 8 (column 2). If the government debt of Country A then moved from a 0% to a 20% risk weight, then the

new value of HQLAs would be 25,000 as shown in the third column. As the table shows, the loss of Level 1 HQLAs more than offsets the ability of the bank to include some Country A government debt as Level 2 HQLAs.

7.5 Possible responses

Several responses could emerge to the issues shown above. The main ones are the following.

Assuming the current LCR rules stay unchanged, a Eurozone bank could restore its liquidity buffer, following a sovereign downgrade, by shifting its holdings from Eurozone countries with a risk weight greater than zero to countries that continue to qualify for a 0% risk weight. At the aggregate level, however, this might result in sharp movements in debt yields, and thereby create pressures on sovereign financial stability (as well as on banks that continue to hold higher-weighted government debt). Note that this would not be an option for banks in non-Eurozone countries, since LCR must be met on a currency-by-currency basis⁴.

TABLE 9 - POSSIBLE RECALIBRATION OF THE LCR

Type of liquid asset	Haircut	Eligibility	Other comments
Cash and reserves held at central bank	Nil	Unlimited	As in current LCR
Government debt at 0% risk weight	Nil	Unlimited	As in current LCR
Government debt at 20% risk weight	15%	Unlimited OR Limit to no more than 75% of total HQLAs	Same haircut as in current LCR but subject to a more generous inclusion limit than under LCR Level 2. The 75% figure suggested here is not based on any specific rationale. Could consider a trade-off here – higher haircut to offset wider eligibility?
Government debt at 50% risk weight	20%	Limit to no more than 50% of total HQLAs	A tougher version of the previous row.
Government debt at 100% risk weight	25%	Limit to no more than 40% of total HQLAs	As above
Covered bonds and high quality corporate debt	15%	No more than 40% of total HQLAs, in combination with 20% risk weighted government debt	As in current LCR

An alternative approach would be to change the definition of HQLAs within the LCR, so that it becomes less sensitive to shifts in the risk weights attached to government debt. The objective here would be to remove the “cliff-edge” impact on HQLAs, and achieve a more

orderly interaction between capital and liquidity rules. Such an approach could be implemented in at least two ways.

1. One could allow domestic government debt (i.e., debt issued by the government of the country where a bank is incorporated) to count as Level 1 HQLAs, even if the standardised risk weighting on this debt has increased to more than 0%. However, this would run counter to the “single market” EU philosophy, since a bank incorporated in Country A could continue to count A’s debt as Level 1 HQLAs, while a bank incorporated in Country B could not.
2. An alternative would be to remove the current sharp distinction between Level 1 and Level 2 HQLAs, and to allow government debt to remain eligible as an HQLA, but with some combination of haircuts and eligibility limits that applies higher discounts (on a sliding scale rather than through a “cliff effect”) on government debt that gets moved to higher standardised risk weights. An example is shown in Table 9, which remains as close as possible to the current LCR specification. Any such changes would, however, make higher risk-weighted government debt more expensive for a bank to hold, because of the higher capital charge on such debt, and because of the discounts on the LCR-eligible amount. A Eurozone bank might therefore prefer to meet its HQLA requirement by holding high-quality, lower-yield debt issued by a top-rated Eurozone government. A simple example to illustrate this point is shown in Box 6 (which can be easily adjusted to align with the parameters of a “typical” bank in any EU jurisdiction).

Box 6 – The costs of holding lower-quality sovereign debt: an example

Consider a bank with a balance sheet of 100,000 and risk weighted assets of 60,000. This bank holds common equity Tier 1 capital of 6,000, so has a CET1 capital ratio of 10%. The bank makes annual profits of 600, so has a return on equity of 10%. The bank holds national government debt of 6,000, currently zero weighted.

This national government debt is then downgraded, increasing the standardised risk weight from 0% to 50%.

The possible bank responses are⁵:

(i) the bank switches to higher quality government debt (0% risk weighted) issued by other Eurozone countries. So there is no capital cost. But if the yield on this higher quality government debt is 1 percentage point lower than on the national government debt that the bank has switched out of then the bank will lose interest income of 60 (6,000 x 1%), so the profits and RoE of the bank fall by 10%;

(ii) the bank continues to hold its own national government debt, but now at a 50% risk weight. So total risk weighted assets increase to 63,000 and the bank’s CET1 capital ratio falls to 9.5% (see Table 4). To maintain a 10% CET1 capital ratio the bank would have to either: (a) raise additional capital (of 300); (b) sell assets, reduce lending (deleverage) or switch out of higher weighted assets to reduce total risk weighted assets back down to 60,000.

The bank would then have to face the costs of raising new capital (e.g., if capital costs 5% more than debt, an additional cost of 15, that is $300 \times 5\%$) or forgo the income generated by the assets that have been sold or switched out of. In addition, the bank might have to hold additional government debt (or other HQLAs) to offset the HQLA haircut (and/or more restricted eligibility) on higher risk weighted government debt – which takes us back to the types of cost that arise under response (i) above.

Table 10: Options to maintain capital ratio

	Initial position	Risk weighted assets	Response (ii) (a) Risk weighted assets	Response (ii) (b) Risk weighted assets
Government debt	6,000	Nil	3,000 (50% weight on 6,000)	3,000
Other assets	94,000	60,000	60,000	57,000
Total assets	100,000	60,000	63,000	60,000
Capital	6,000		6,300	6,000
Funding	94,000		93,700	
Capital ratio (capital to RWAs)	10%		10%	10%

¹ This section is based on a contribution by Giles Williams.

² Similarly, the risk weights on holdings of covered bonds will increase (under both the standardised and the IRB approaches) if the banks issuing covered bonds are downgraded.

³ Although not covered in more detail below, there are also continuing discussions (in Europe and beyond) about the “value” of holdings of covered bonds (in terms of both the risk weights that should apply to them and the extent to which they should be allowed to count towards HQLAs in the calculation of the LCR), the use of credit ratings and collateral requirements.

⁴ Except for the euro-denominated portion of their balance sheets.

⁵ For the sake of simplicity, mark-to-market losses originated by the downgrade are not considered, as they would occur in both scenarios presented in the text.

8 Beyond Sovereign Bonds: the Liquidity of Covered Bond Markets during the Financial Crisis¹

8.1 Introduction

Under the Basel 3 rules, the prevailing definition of liquid assets considers sovereign bonds (together with cash) as the most liquid asset category. Covered bonds are considered liquid, but are not considered as equivalent to sovereign bonds. Accordingly, covered bonds can only account for a limited portion of the liquidity buffer (40%) and are subjected to a higher haircut.

However, the current Eurozone sovereign crisis and some empirical studies on the liquidity of covered bonds call for a revision of the definition of liquid assets. Furthermore, such definition should account for the fact that liquidity can change across asset classes and therefore allow – and incentivise – portfolio diversification.

The definition of liquid assets in the LCR will affect the behaviour of market participants, hence the liquidity of different asset classes. Banks will prioritise “liquid assets” as defined in LCR and down-prioritise other assets, which will alter the demand for different securities. Additionally, during a crisis banks will try to comply with LCR as close as possible, and will therefore generate liquidity in the first place by selling assets other than those defined as liquid by the LCR. Furthermore, if there are assets that are eligible as central bank collateral, but outside the LCR definition, banks will be aware that these can provide liquidity in a crisis and use them in their contingency plans.

Covered bonds markets in some Nordic countries have operated well despite the crisis in recent years, with a liquidity similar to that of local government bonds. The Danish covered bond market provides a good example, being transparent and having publicly available data for all transactions. The results of two studies on Danish covered and government markets, performed by

Covered bonds markets in some Nordic countries seem to have operated well despite the crisis in recent years: the Danish case provides a good example, thoroughly analysed by two recent studies. While such results cannot be generalised, they appear of great interest in the current debate on liquid assets.

Danmarks Nationalbank and Nykredit Realkredit², are summarised below. While they cannot be read across the whole market, they appear of great interest in the current debate on liquid assets.

8.2 Covered bonds and the Danish mortgage market

The Danish mortgage market is over 200 years old and apparently no losses have ever been incurred by investors. It is characterized by so-called “balance principle”, that ensures a match between the funding, i.e. the bonds, and the loans.

Loan terms are standardized, with the typical loan having a 30-year maturity and a predefined payment structure. The bond exactly matches the characteristics of the underlying loan and all interest rate and principal payments are passed on to investors. When the loan is granted, the borrower receives the bond, on which the loan is based, which then can be sold in the market. This ensures an asset-liability match, which removes all market risk for the mortgage company. The borrowers are exposed to market risk, but they have the option to prepay the loan at par, even if interest rates have dropped substantially. This ensures that the investors, and not the mortgage company, price and bear the risk of prepayment. These bonds also go under the name of callable bonds.

In addition to 30-year bonds with embedded prepayment options, another product was developed in the 1990s, which is based on 1-year bullet bonds (comparable to adjustable-rate mortgages). This introduces interest rate risk for the borrowers, but the mortgage company does not bear any of it. There are fundamental differences in the demand and structuring of the two types of bonds. For instance the shorter-term bullet bonds are very popular for liquidity management purposes in banks, while longer-dated bonds are more frequently held by pension funds.

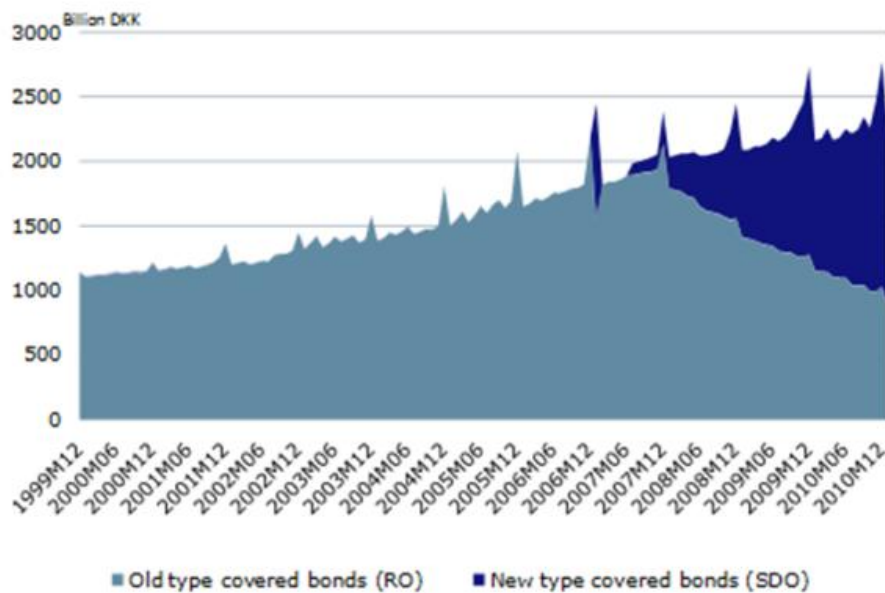


FIGURE 4 – OUTSTANDING VOLUME OF DANISH COVERED BONDS IN DKK Bn. – SOURCE: DANMARKS NATIONALBANK

The Danish covered bond market is the largest global market, relative to the national GDP. The volume of covered bonds outstanding has increased gradually (see Figure 4). Based on absolute outstanding volumes, it is the third-largest one in the world, as shown in Figure 5. This remarkable market size can be seen as an indirect indicator of market liquidity.

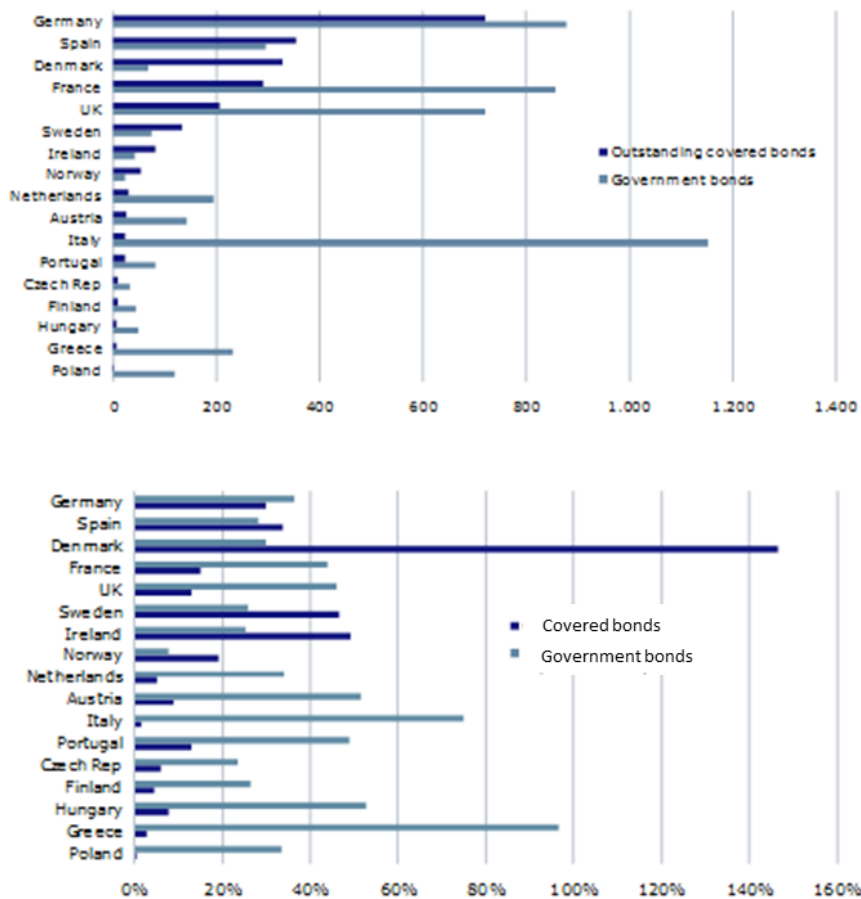


FIGURE 5 – OUTSTANDING VOLUME OF COVERED BONDS AT END 2009 IN EUR BN. (UPPER PANEL) OR AS A SHARE OF GDP (LOWER PANEL). SOURCE: ECBC AND NYKREDIT REALKREDIT

The covered bond market is significantly larger than the government bond market (see again Figure 5), also due to the limited size of the latter in Nordic countries. This fact must be kept in mind when defining liquid assets in the LCR, since treasury bonds in Northern Europe provide a relatively small pool of investable liquid securities to financial institutions.

8.3 The Danish covered bond market during the crisis³

In contrast to other mortgage-related markets (e.g. those based on securitisation), trading continued in the Danish covered bond market during the crisis. Although liquidity did decline substantially, both the covered and government bonds on average continued to be fairly liquid. There is little indication that the covered bond market saw a more significant decline in liquidity than the government bond market.

Based on standard liquidity indicators, the analysis by the Danmarks Nationalbank finds that, while before the crisis government bonds were slightly more liquid than covered bonds in both the short- and long-term market segments, after the crisis the two markets have shown similar levels of liquidity.

The Nykredit Realkredit study applies nine liquidity indicators⁴ proposed by the European Commission to define assets of “extremely high liquidity and credit quality”. The Danish data suggests that, although those indicators are too simplistic to capture liquidity conditions perfectly, they convey a reasonable picture of liquidity conditions. Danish covered bonds are shown to fulfil all nine criteria but two (remaining time to maturity and proven record of price stability). Accordingly, those criteria appear to support the conclusion that Danish covered bonds are liquid.

It should also be noted that one of the indicators where Danish covered bonds perform less well, namely price stability, may not be a good measure for capturing liquidity. Liquid assets are characterized by some volatility, as prices respond to incoming information, whereas less liquid assets tend to stop trading. This may lead to a bias in the reported time series, with the extremely liquid assets exhibiting a more volatile behaviour.

In assessing the liquidity of an asset class, besides looking at indicators like those devised by the European Commission, one also has to consider market structure⁵. Liquidity essentially builds on the presence of both buyers and sellers in the market. In fact, when sellers considerably exceed buyers or vice versa, this lead to price instability and, possibly, to market disruption. From this point of view, highly creditworthy government bonds are likely to stay liquid during a crisis. On one hand, sellers will use them to get liquidity (although outright sales are often replaced by repo transactions with market counterparties or the central bank); on the other hand, investors will also flock to them as they are seen as safe assets, providing shelter at times of market turmoil. This generates both buyers and sellers in the market.

The Danish mortgage bond market is another example of a reasonable balance between sellers and buyers. Sellers are typically liquidity-restrained investors (e.g., in the last financial crisis, foreign investors which were unable to liquidate positions in other markets). Buyers are the borrowers (and cash-rich investors), as dramatic price declines make it attractive to renegotiate loans, either for an outright cash profit today (due to the price differential between old and new bonds) or for a future profit (due to lower coupons). This means that both buyers and sellers can be expected to be available under stressed market conditions.

8.4 Policy implications

The Danish covered bond provides an interesting case study in liquidity measurement. Detailed empirical data and studies suggest that it has remained as liquid as the Danish government bond market even during the financial crises. Anecdotal evidence suggests that this could also be the case of other Nordic covered bond markets, e.g. Sweden.

The definition of liquid assets in the LCR risks is in danger of being too prescriptive and rigid. The Eurozone sovereign crisis has shown that liquid assets can become illiquid, so flexibility is needed to accommodate different market conditions and economic environments. Also,

distressed government bond markets have shown how important it is to create incentives for portfolio diversification.

The definition of liquid assets will have consequences for the liquidity of different asset classes. Securities labelled as liquid by regulators are likely to attract demand and to prove less affected by a crisis; in fact, banks will refrain from selling them, if possible, to keep their LCR close to unity, while they will use other assets to generate cash and improve the ratio.

Also, during a crisis, central bank eligibility becomes crucial in providing liquidity to cash-stripped institutions and markets. Hence the definition of liquid assets and the rules on central bank collateral cannot be regarded as two separate issues.

Although quantitative indicators are a useful tool for measuring liquidity, they cannot be the only criterion. Other more qualitative indications should also be considered, such as the demand and supply conditions, the support from market makers and issuers and the market structure and operation rules.

Consequently, when defining liquid assets, a flexible and dynamic approach is needed. This is not, in our view, fully achieved by the current definition criteria.

¹ This section is based on a contribution by Louise Lindgren.

² Danmarks Nationalbank Working Papers 2010:70, *Liquidity of Danish Government and Covered bonds*; Nykredit Realkredit A/S 2011, *Defining Liquid Assets - A Study Of The Impact Of The Crisis On Danish Covered Bonds And Its Methodological Implications For Liquidity Coverage Ratio Reporting*

³ The reader is referred to the detailed analysis by Danmarks Nationalbank and Nykredit Realkredit A/S to find the technical details of the analysis supporting the findings highlighted in this section

⁴ The indicator-based approach is a good starting point, but other indicators should be considered as well. The perhaps biggest weakness of the proposed indicators is that they are not based on transaction data, which is generally considered to be the best source for assessing liquidity conditions. The indicators should therefore optimally be supplemented with measures based on transaction data. Furthermore, the indicator-based approach requires benchmarking. A relative approach should be considered, when defining liquid assets, as most markets after the crisis exhibited a much lower trading intensity compared to the situation before the crisis. The definition of liquidity has therefore to be based on a relative ranking of markets, as general liquidity conditions will fluctuate over time.

⁵ Another important aspect to be considered, in addition to the indicator-based approach, is the interplay between central bank collateral rules and liquidity. According to the Basel 3 standards it is not enough for an asset to be central bank eligible in order to become a HQLA, as regulators want to avoid an excessive reliance on central bank facilities. Nonetheless, central bank eligibility is an important liquidity driver, as this ensures that assets can be converted into cash without an actual sale. Actually, it is probably the main liquidity criterion for many market participants, so its role should not be underestimated.

PART 3

Fine-tuning cash flows in the LCR

Part 3 of this report discusses a number of calibrations which may be introduced in the computation of the LCR's denominator, i.e., the net cash outflows experienced by a bank under a 30-day distressed scenario. This includes the following:

§9 ("Customer deposits in the new liquidity framework", page 56) focuses on the treatment of **customer deposits**, showing why the new liquidity rules may penalise retail and commercial banks. On one hand, **most retail deposits covered by a deposit guarantee** scheme appear to be linked to an established relationship that makes withdrawal highly unlikely and accordingly **should be entitled to a 5% run-off rate**; on the other hand, **wholesale deposits risk being subjected to run-off rates that are both too high and too little differentiated**.

§10 ("Liquidity facilities and lines of credit in the LCR", page 68) deals with the treatment of credit and liquidity facilities in the LCR. The factors applied to inflows and outflows and look very conservative, particularly for credit lines and liquidity facilities with financial institutions. Also, draw-down factors applied to credit and liquidity lines vary significantly depending on the type of counterparty. Furthermore, credit and liquidity lines that the bank has secured from other institutions are assumed to be ineffective and receive 0% factor. Consequently, **banks would be dis-incentivised from holding liquidity lines with other institutions, depriving them of a key tool to ease liquidity pressures** during a stressed period. To mitigate such unwanted consequences, two possible calibrations are discussed.

§11 ("Trade Finance in the LCR", page 73) sets out why the parameters of **the LCR should be reconsidered in the context of trade finance** and argues that the detailed parameters of the LCR should be revisited so as to not detrimentally impact **a low-risk industry that underpins global economic growth**.

The treatment of customer deposits, under the new liquidity rules may unduly penalise retail and commercial banks. First, most retail deposits covered by a deposit guarantee scheme appear to be linked to an established relationship that makes withdrawal highly unlikely and accordingly should be entitled to a 5% run-off rate. Second, wholesale deposits risk being subjected to run-off rates that are both too high and too little differentiated.

9 Customer deposits in the new liquidity framework¹

9.1 Introduction

Deposits are essential for the operation of the banking system and for its role in supporting economic growth. Basel 3 and the CRD4 distinguish between retail and wholesale deposits (although the distinction is not always clear) and provide criteria for the treatment of customer deposits.

In this paragraph we focus on the treatment of customer deposits in two particular aspects:

- retail deposits and the importance given to recognition of strong client – bank relationships;
- wholesale deposits, including operational deposits (where the treatment assigned to clearing, custody and cash management could be extended to other products that also imply an “established relationship”) and other deposits (where the 75% run-off rate could be reduced, e.g., for deposits with corporates that do not have a trading desk to execute their funding and investment tasks).

The analysis refers to the LCR as it will be calibrated and implemented before the NSFR. However, most issues regarding deposits are common to both ratios.

9.2 Categorisation and treatment of retail deposits

This section quickly summarises the treatment of deposits in the new liquidity ratios. We deal first with Basel 3, then we move to the main calibrations introduced by the CRR. A discussion of the appropriateness of the different run-off factors goes beyond the scope of this note; a brief analysis, based on Spanish aggregated data, can be found in Box 7.

Basel 3 establishes the following categories of deposits:

1. Retail deposits are defined as deposits (both demand deposits and term deposits) placed with a bank by a natural person. This category includes:
 - a. stable deposits (carrying a run-off rate of 5% or higher), which are fully covered by an effective Deposit Guarantee Scheme (DGS) or by a public guarantee that provides equivalent protection and where the depositors have other established relationships with the bank that make deposit withdrawal highly unlikely or the deposits are held in transactional accounts (e.g. accounts where salaries are automatically credited);
 - b. less stable deposits (run-off rate of 10% or higher) which do not fulfil the above-mentioned conditions;
 - c. term deposits (where “the depositor has no legal right to withdraw deposits within the 30 days horizon, or if early withdrawal would result in a significant penalty that is materially greater than the loss of interest”). In this case, no run-off factor is applied (i.e., term deposits get weighted at 0%);²
2. wholesale funding, including all funding that is callable (or has its earliest possible maturity date) within the LCR’s 30-day horizon, as well as funding with an undetermined maturity. This comprises the following components:
 - a. funding provided by small businesses, which like retail deposits include both stable and less stable funds (with minimum run-off rates of 5% and 10%). Total funding raised from one small business customer cannot exceed €1 million;
 - b. funding associated with an operational relationship (run-off rate of 25%). This includes funds from financial and non-financial customers that are needed for operational purposes, where a substantive dependency can be identified. This refers to clearing, custody or cash management relationships in which the customer is reliant on the bank to perform these services as an independent third party intermediary in order to fulfil its normal banking activities over the next 30 days. Such deposits must be priced below the market in comparison to deposits of a similar duration and held in specifically-designated accounts. Only the specific amount of deposits utilised for these operational functions qualify for the 25% factor, while excess balances do not;
 - c. funding provided by non-financial corporates and by sovereigns, central banks and public sector entities (run-off rate of 75%). This category comprises funds that are not specifically held for operational purposes;
 - d. other funds (run-off rate of 100%) not included in the previous categories.

The CRR refines Basel 3 in the following areas:

- retail deposits are not only deposits placed with a bank by a natural person, but also those that mean a liability to a natural person or to a small and medium sized enterprise where the aggregate liability to such clients (or group of connected clients) is less than €1 million;
- regarding funds that are deposited in order to obtain clearing, custody or cash management, a 5% run-off rate can be assigned to the whole amount (instead of 25%) if those funds that are covered by a Deposit Guarantee Scheme;
- while Basel 3 only applies on a consolidated basis, the CRR may also be applied to individual legal entities.

Box 7 – Are run-off rates correct? An analysis of Spanish aggregate data

The run-off rates proposed by Basel 3 can be compared to the historical data of the Spanish financial system. The Bank of Spain provides data on deposits on a monthly basis going back to January 1962.

Based on this very long time series (about 600 observations summarised in Figure 6) the maximum monthly fall for deposits is -2.7%, considerably less than the minimum run-off rate of 5% for retail stable deposits.

Of course, this relates to the whole Spanish financial system, so drops experienced by individual institutions could have been more severe, as funds withdrawn from certain banks have been deposited with others, thereby reducing the aggregate run-off rate.

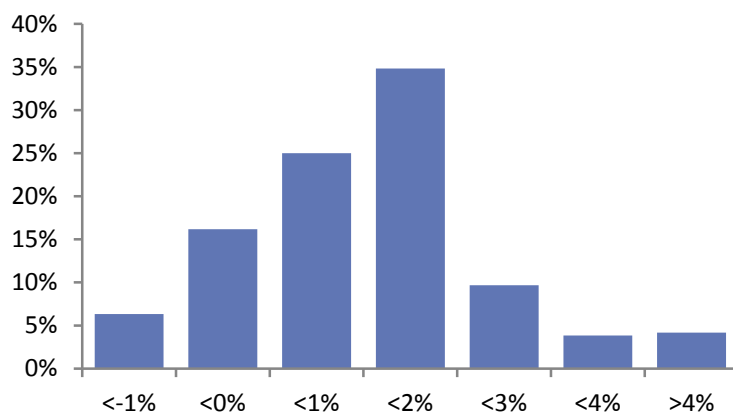


Figure 6 - Frequency distribution of monthly changes in Spanish deposits (source: Bank of Spain)

However, it is worth noticing that this 2.7% drop took place in the period immediately after Lehman Brothers collapse. At that time, the Spanish DGS was revised increasing coverage to €100,000 per depositor. This notwithstanding, the whole banking system was affected by a drop in deposits, as retail and corporate funds were moved to other investments, including foreign institutions and even safety boxes. Accordingly, that -2.7% can be considered as a reasonable estimate of the run-off rate associated with a systemic crisis.

9.3 Implications for retail banking

Figure 7 shows that deposits are the main type of funding for financial entities. Going back to 2000, it is striking to observe how the financial structure has hardly changed over the last decade. However, EU-wide average data can be misleading, as significant changes have occurred in individual countries, in particular during the period when interest rates were at a minimum and credit demand by families and companies was exploding. At that time, favourable market conditions allowed financial entities to borrow money at low interest rates and long maturities through financial markets. Since the 2007 financial crisis, the situation has completely changed: wholesale funds have dried up in many countries and deposits are again the main priority for those financial systems.

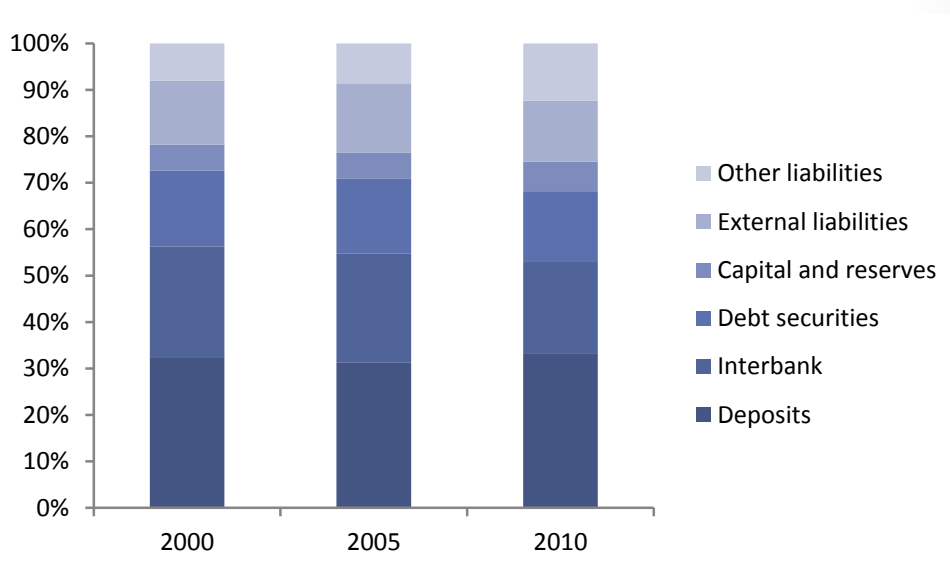


FIGURE 7 - MFI LIABILITIES BREAKDOWN IN THE EUROPEAN UNION - SOURCE: EUROPEAN CENTRAL BANK)

The relative importance of deposits in the banks' funding structure depends on several factors:

- the national savings rate;
- the degree of sophistication of customers (which may reduce demand for traditional deposits as savers move to investment funds, pension funds, securities, etc.);
- the way national policy makers have promoted investment in certain products (e.g. by granting tax benefits for pension funds);
- the ease with which other sources of funding can be accessed (due to overall market conditions and to each bank's individual creditworthiness).

Deposits have proven a key driver of credit growth. As Figure 8 shows, there is a strong correlation between deposits and credit growth even if it has somewhat decreased during the financial crisis, due to the significant deleveraging process experienced by banks. But the key finding remains: growth in deposits allows for credit growth. In other words, the high

correlation between deposits and credit growth supports the fact that the deposits are the main and most stable type of funding.



FIGURE 8 - YEAR-ON-YEAR GROWTH OF DEPOSITS AND LOANS FOR EU BANKS

Retail deposits include term deposits and demand deposits. The former have no explicit maturity, so they pay a lower interest rate; however, they can be as predictable as term deposits, provided that they are well-diversified across depositors and that the rollover rate is stable. Term deposits, too, tend to be automatically renewed upon maturity, so the contractual duration may not be very meaningful in terms of liquidity risk.

9.4 Retail deposits

This section discusses examples of relationships that would allow for the classification of a retail deposit as “stable”. Given the Basel 3 definition (see §9.2), the main focus will be on identifying relationships that are associated with a low run-off rate.

A preliminary exercise has been undertaken using the retail deposit database of a large Spanish retail banking group (Banco Santander). The data consists of liabilities to a natural person or to a small and medium sized enterprise where the aggregate liability to such clients is less than €1 million. The amount of deposits covered by a DGS has been estimated taking into account the effect of co-ownerships³. As mandated by LCR rules, both demand and term deposits have been included. Taking a conservative approach, no exemption for fixed term deposits has been considered⁴.

Figure 10 shows that 91.7% of the clients (39.1% of the total balance) are natural persons covered by an effective deposit guarantee scheme. Covered legal entities account for 6.2% of clients (3.5% of the balance); accordingly, only 42.6% of the balance is covered.

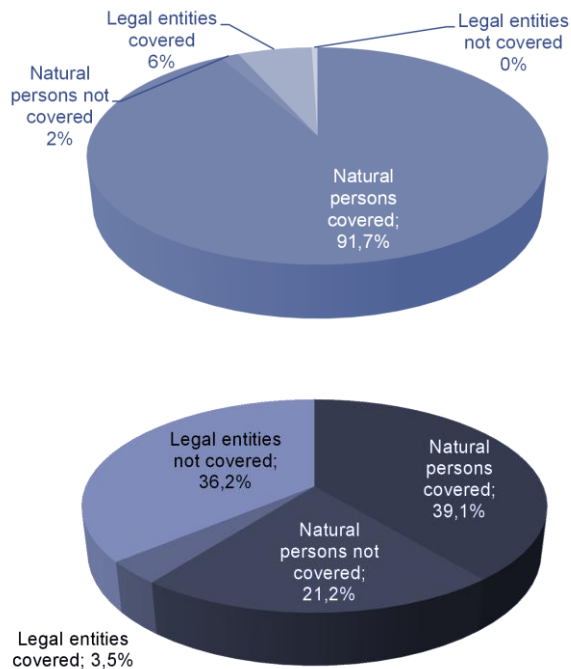


FIGURE 9 – BREAKDOWN BY NUMBER OF CLIENTS (TOP) AND BALANCE (BOTTOM)

Within these deposits, some relationships have been identified as truly stable. A breakdown of the deposits covered by a DGS (see Figure 10) shows that the case of “transactional accounts” is by far the most relevant: 75.4% of the total balance of natural persons and 88.8% for legal entities. Given the nature of legal entities, it seems quite logical that this percentage is higher for this kind of subject.

Relationships other than transactional accounts are the following:

- employees or couples: although the percentage is very low, it is firmly established that employees or couples tend to be less prone to changing banks;
- clients that have been working with the bank for more than 10 years: the probability of these clients leaving the bank is practically non-existent;
- links with others products: when clients have contracted at least three products from the bank, they also tend to be reluctant to abandon the bank;
- other (low engagement): deposits not included in the above categories.

Based on this analysis, one can expect that more than 90% of the covered deposits of a large retail banking group could benefit from a 5% run-off rate.

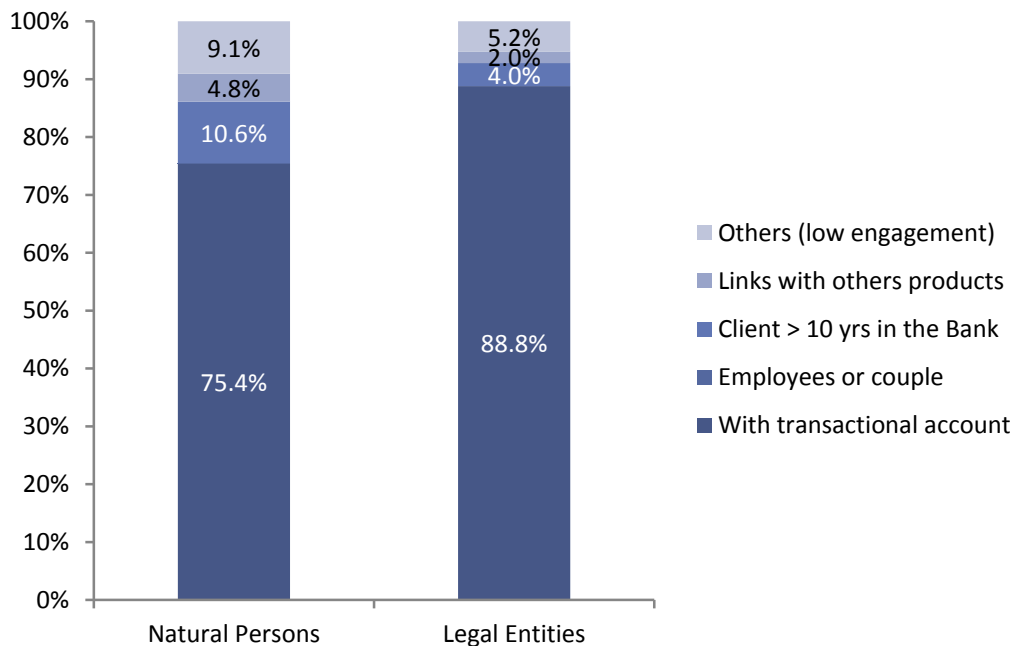


FIGURE 10 - BREAKDOWN OF COVERED DEPOSITS BY BALANCE

9.5 The case of term deposits

As regards term deposits, the following conclusions were observed:

- over a 6-month period, 9.64% of term deposits have suffered an early withdrawal;
- withdrawals were mainly originated by “special deposits”, a product where depositors have a legal right to early withdrawals, which accounted for about 16% of total term deposits;
- the remaining 84% consisted of “traditional” term deposits, where a penalty is imposed for early withdrawals. These deposits show a very low early withdrawal rate, about 1% over 6 months.

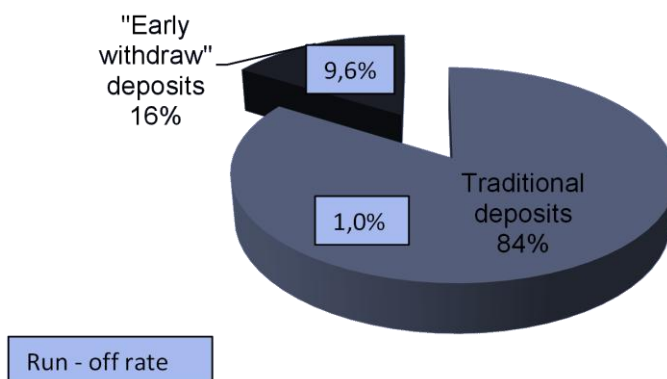


FIGURE 11 – RUN-OFF RATES ASSOCIATED TO DIFFERENT TYPES OF TERM DEPOSITS

These results show that traditional term deposits are significantly more stable than “special” products allowing for early withdrawal, as the depositor commits to leave the funds with the bank for a given period of time. In order for liquidity ratios to reflect this difference, run-off factors should be reviewed and calibrated to account for different contractual provisions.

9.6 Wholesale “operational” deposits

As mentioned in section 9.1, the run-off rate of 25% could also be applied to other relationships apart from clearing, custody or cash management. In fact, there are other products that imply a high degree of substantial dependency for the customer, as they are key for the normal development of business. Also, switching to another bank is made difficult by the fact that it is impossible to provide such products immediately, as certain operational requirements are needed.

Additionally, a drastic differentiation of run-off rates for households and non-financial corporations could discourage banks from designing and offering innovative products and services to non-financial companies. Under the current framework, any deposit above €1 million that does not fit into clearing, custody and cash management would be penalised with a run-off rate of 75% or 100%.

This section discusses some products that could also benefit from a 25% run-off rate. Other examples might be added. One could treat as “operational” all relationships where at least two of the transactional products listed below are present (one of which should in any case be a “payroll payment” or a “social insurance/tax payment”).

The list includes the following products (associated with collection/payment operations which share characteristics associated with operational deposits):

- paper remittances, receipts and factoring (collections);
- POS (points of sale) terminals;
- transfers and cheques collection;

- other collection, including cash, payrolls, pensions and unemployment subsidies;
- transfers payment and confirming;
- payment of payrolls / pensions / unemployment subsidies;
- social insurance and tax payment;
- card payments, including debit and credit cards;
- other payments, like direct billing, bank cheques, cash management;
overseas collections and payments

Each of those products possess the characteristics highlighted by the banking industry⁵ during the last months: In fact, operational deposits:

- should be by-products of, or linked to, the underlying services provided by the banking organisation, not established for the sole purpose of generating interest income;
- should not be sought out by, or booked with, the bank's money market or treasury desk;
- should be held in, or linked to, designated accounts,
- should primarily be held as demand and notice deposits;
- should not be overly price-sensitive even if priced competitively;
- should have pricing terms that are agreed in advance between the service provider and the customer and not altered on a regular or frequent basis.

9.7 Excess balances and remuneration in “operational” wholesale deposits

As indicated in §9.2, funds qualifying for the 25% run-off rate should be net of “excess balances” which do not relate to a specific operational function. However, the underlying rationale for keeping extra money in an operating account resides with the client, leaving the bank without practical means to segregate excess deposits from operating funds. Except for rare spikes in deposit balances (which are mostly due to large, pre-advised inflows deposited by clients wishing to pre-fund time-sensitive or critical transactions), it is difficult to determine the intent of the customer. Typically the cost of estimating excess balances on an account-by-account basis (and the cost of potential inaccuracies in such estimates) far outweighs the benefit of knowing the absolute minimum required deposit. As anecdotal evidence suggests, a 25% run-off rate is above the industry's experience of volatility in such accounts, especially on a portfolio basis, so it should also provide an adequate buffer against the withdrawal of excess balances.

In line with industry requests⁶, we think that only material instances where funds are known to be transitory (such as pre-advised deposits) should be considered as excess balances and subjected to a higher run-off rate. However, as earmarking such transitory funds might prove difficult, a different approach could prove more efficient: e.g., looking at end-of-month balances and monthly averages, and using the smaller of the two to get rid of spurious peaks. Alternatively, one could use a moving average to keep volatility in check and to avoid biases due to exceptional situations.

Basel 3 also establishes that a deposit can be considered as operational only if it is priced below market rates. We suggest that such a requirement should become less rigid, in the light of the following facts:

- it is difficult to choose a price benchmark, especially in the current context where market uncertainty has dented the credibility of traditional benchmarks;
- this is especially important for “stable” demand deposits where the *de facto* rollover period tends to be rather long, although there is no contractual maturity;
- transactional products are characterised by the presence of some kind of service, and the demand for such products is motivated by the fact that those services are essential for the management of the company which is depositing money. Price is only a complementary issue; on a stand-alone basis, it does not represent a key proof of whether a deposit can be considered “operational”.

9.8 Wholesale, non-operational deposits

Under Basel 3, all non-operational wholesale deposits should be subjected to a 75% run-off rate (100% for funds provided by financial institutions). In our opinion, this classification should be made more granular and a new category of wholesale funds should be introduced.

An appropriately conservative approach to market-driven money-market deposits should coexist with a differentiated approach to relationship-based wholesale deposits and to deposits that are placed with individual business lines. The latter two could be assigned run-off rates that are in line with (and possibly more conservative than) the banks’ past experience under distressed scenarios. Adding such intermediate categories of non-operational wholesale deposits would also reduce the cliff effect currently associated with deposits qualifying or not as “operational”.

One possible way ahead could be the methodology proposed by the IIF⁷, which includes the following three buckets:

1. deposits from established, multi-product customers, that are not sought out in the market by banks offering the best available return. The relationship would need to be in place for a period greater than one year to be considered “established”, and the bank would need to deliver two “non-money market” services to the customer to be considered “multi-product”. These deposits would share many of the same

characteristics as operational deposits and are unlikely to flow out during a crisis. Therefore, the run-off rate for these deposits could be 25%;

2. “Intermediate” deposits with a 50% runoff factor. These share some of the characteristics of deposits from an established, multi-product customer relationship (as defined above), although they do not fully qualify for the 25% rate (e.g. because they are booked with the money-market desk or similar business units). Overall, they could be considered more stable than pure wholesale funding, where banks compete for the best rate from market counterparties;
3. deposits not qualifying for the other categories, i.e. “hot” deposits competitively sought after in the money market, for which the IIF is proposing a 75% run-off rate.

9.9 Conclusions and recommendations

Customer deposits constitute the main source of funding for many financial institutions. It is therefore essential that they get a proper treatment, so that their role as financial backer can be preserved.

As seen above, some features of the new liquidity rules may penalise retail and commercial banks. Namely, while most DGS-covered retail deposits appear to be linked to an established relationship that makes withdrawal highly unlikely (and accordingly should be entitled to a 5% run-off rate), wholesale deposits risk being subjected to run-off rates that are both too high and too little differentiated.

In fact, there are other kinds of relationship that could benefit from the same treatment given to clearing, custody or cash management. Furthermore, the gap between the run-off rate assigned to “operational relationships” (25%) and that associated with other funds provided by non-financial entities (75%) appears unnecessarily large. Accordingly, the treatment of corporate deposits should be more granular and an intermediate category be created with a run-off factor e.g. of 50%. This would include deposits with corporates that do not have a trading desk to execute their funding and investment tasks.

Finally, the treatment of retail and SME deposits should be extended to all retail exposures classified as such under the Standardised or IRB approaches for credit risk. In this way, the classification of customers would be consistent on both the assets and the liabilities side. This means that the categorisation of deposits as retail or wholesale funds should not depend on their amount, but rather on the profile of the depositor, which ultimately determines the behaviour and the use of such funds.

¹ This section is based on a contribution by Monica Cueva.

² During the recent impact studies, however, many large financial institutions have applied a 5% run-off factor to term deposits (10% if not covered by a DGS) to avoid the operational costs of proving that they would comply with the Basel 3 definition mentioned in the text.

³ When a deposit belongs to more than one depositor, then in the event of DGS intervention the amount would be divided among them, and the limit for DGS coverage (€100,000) would be applied separately to each depositor.

⁴ We refer to the exemption stating that the maturity of fixed or time deposits with a residual maturity or withdrawal notice period of greater than 30 days will be recognised if the depositor has no legal right to withdraw deposits within the 30 – day horizon, or if early withdrawal would result in a significant penalty that is materially greater than the loss of interest), which results in a more conservative outcome.

⁵ See Institute of International Finance, Proposed Changes to Operational Deposit Language of Basel Liquidity Standards, March 23, 2012.

⁶ See again Institute of International Finance, Proposed Changes to Operational Deposit Language of Basel Liquidity Standards, March 23, 2012.

⁷ See the IIF proposal on corporate deposits issued on April 4, 2012.

The draw-down factors applied to liquidity and credit facilities look overly conservative, particularly for financial institutions. Namely, credit and liquidity lines that the bank has secured from other institutions are assumed to be ineffective and receive a 0% factor. Consequently, banks are disincentivised from holding liquidity lines with other institutions, a key tool that can be used to ease liquidity pressures during a stressed period.

10 Liquidity facilities and lines of credit in the LCR¹

10.1 Rules on liquidity facilities and lines of credit

Paragraph 95 of Basel 3 defines a “liquidity facility” as “any committed, undrawn back-up facility put in place expressly for the purpose of refinancing the debt of a customer in situations where such a customer is unable to obtain its ordinary course of business funding requirements (e.g. pursuant to a commercial paper program) in the financial markets”.

A credit facility is an explicit contractual agreement/obligation to extend funds at a future date to retail or wholesale counterparties which do not fall under the “liquidity facility” definition. Paragraph 95 states that “any general working facilities for corporate entities (e.g. revolving credit facilities in place for general corporate and/or working capital purposes) will not be classified as liquidity facilities, but as credit facilities”.

The CRR does not currently include such formal definitions of liquidity and credit lines. However, it dictates how liquidity facilities and lines of credit are to be treated in LCR computation, according to cash-flow types (as draw-down factors are different for inflows and outflows) and counterparties.

Regarding outflows, undrawn credit and liquidity facilities shall be multiplied by

- 5% if they qualify as retail exposures for credit risk (see Article 412.1);
- 10% for credit lines issued to non-financial and sovereign counterparties (Article 412.3);
- 100% for liquidity lines issued to non-financial and sovereign counterparties (Articles 412.3 and 4);
- 100% for credit and liquidity lines issued to financial institutions (Article 412.4).

As for inflows, it is assumed that credit and liquidity lines cannot be drawn down; accordingly, they receive a 0% factor².

10.2 Issues raised by the current regulatory framework

The current treatment of lines of credit and liquidity facilities raises at least two issues:

1. the factors applied to inflows and outflows look very conservative, particularly for credit lines and liquidity facilities with financial institutions. Also, draw-down factors applied to credit and liquidity lines vary significantly depending on the type of counterparty (ranging from 5%/10% for non-financial counterparts to 100% for financial institutions);
2. credit and liquidity lines (as well as any other contingent funding facilities) that the bank has secured from other institutions for liquidity management purposes are assumed to be ineffective and receive 0% factor. While motivated by the willingness to minimize contagion risk, this might overstate liquidity risks by portraying a “black & white” world, where all unsecured bank funds held by other institutions get withdrawn while liquidity facilities held with other banks provide no relief at all.

This might lead to the following undesirable consequences:

- banks would be dis-incentivised from holding liquidity lines with other institutions, considering the punitive treatment in the LCR and the related costs. This is a perverse result, as liquidity facilities and credit lines are one of the main tools that banks can use in order to ease liquidity pressures during a stressed period;
- banks would also refrain from setting up intra-group liquidity arrangements that otherwise could strengthen the resilience of the single entities in the group to external shocks.

To mitigate such unwanted consequences, two possible calibrations are discussed in the next two paragraphs.

10.3 Using historical data to calibrate draw-down factors

The draw-down factors applied for non-financial counterparts (retail, SMEs, corporates and sovereigns) seem in line with :

- current national regulations in Europe (e.g., the factor applied to credit lines with corporates in France is 15%, compared to 10% in the LCR);
- historical data during the recent financial crisis, which corroborate the 10% factor. In fact, the figures shown in Table 11 and Table 12, based on Wachovia’s failure experience, suggest that the factors used in the LCR are very conservative.

TABLE 11 - CREDIT AND LIQUIDITY FACILITIES – SOURCE: THE CLEARINGHOUSE³

		End August 2008	End September 2008	End October 2008	(a) Change in Usage	(b) Basel Factor	(a) / (b)
Non-Financial Corporate Draws	Commitments	358.3	350.8	349.0			
	Outstandings	193.6	198.6	201.0			
	Utilization	54.0%	56.6%	57.6%	1.0%	10%	10.1
Retail Draws	Commitments	85.7	84.8	83.9			
	Outstandings	29.0	29.3	29.7			
	Utilization	33.8%	34.6%	35.4%	0.8%	5%	6.2

TABLE 12 – DEPOSITS BY CORPORATES AND FINANCIAL INSTITUTIONS – SOURCE: THE CLEARINGHOUSE

		September 15 2008	October 15 2008	(a) change	(b) Basel Factor	(a) / (b)
Operational deposits	Non-Financial	31.0	27.1	-12.5%	-25%	2.0
	Financial	3.2	2.9	-8.0%	-25%	3.1
Non-Operational deposits	Non-Financial	33.6	25.0	-25.4%	-75%	2.9
	Financial	6.4	3.7	-42.4%	-100%	2.4

The main concerns relate to liquidity and credit lines with financial institutions, which are given a 100% draw-down factor. This treatment, while being highly conservative, does not appear fully realistic, as it assumes that all financial institutions will fully use their credit/facility lines in time of stress.

These results suggest that a solution could be to re-calibrate draw-down factors for financial institutions in order to align them with those applied to non-financials.

10.4 A more symmetrical treatment for credit and liquidity lines

The LCR imposes an asymmetric treatment between providers and users of credit/liquidity lines. In fact, all lines provided to other financial institutions are assumed to be fully used, while all facilities obtained from other institutions are thought to become unavailable.

Such a treatment raises the following inconsistencies:

- it contradicts the very aim of the new liquidity requirements, which is to guarantee that banks are able to meet their commitments toward third parties;
- it does not take into account the functioning of the banking market, where credit facilities granted to retail, corporate, sovereign or financial counterparts are usually funded with different types of refinancing structures, including credit/liquidity facilities with other financial institutions;

- a 0% factor looks unrealistic, as it is unlikely that all liquidity/credit facilities will jointly become unavailable, even in a stress scenario.

As a matter of comparison, one could mention the current French regulation (the so-called “May 5, 2009 statement”) where the same factors are applied to outflows and inflows and the liquidity ratio is computed using the net amount of credit/liquidity lines. A 80% factor is then applied to commitments with external financial institutions, while intra-group agreements receive a 100% factor.

Even though liquidity ratios aim at reducing the contagion risk inherent to the interconnectedness of the interbank market, the current drawdown factors for credit and liquidity lines inflows are too punitive and do not reflect the reality even in a severe downturn. A more balanced calibration should be based on the following elements:

- a qualitative analysis of the risk that a counterpart does not honour its credit/liquidity commitments. Such an analysis should cover the contractual clauses used in standard contracts and the legal consequences if the credit line is not honoured. On one hand, it would require banks to carry out a fine-grained screening of all credit lines held towards other financial institutions. On the other hand, it would guarantee that risks related to credit and liquidity facilities are appropriately monitored⁴;
- a quantitative analysis of historical data regarding the available amount of credit/liquidity lines in time of stress. Such an available amount can be expected to be relatively high (say, above 50%) compared to the actual drawdown experienced on the credit lines provided by banks to third parties;
- a full netting of reciprocal bilateral commitments, where the impact of a systemic shock on liquidity can be thought to be roughly neutral⁵. If, e.g., 50% of the gross commitments with financial institutions were reciprocal commitments, then only the remaining 50% could give rise to net liquidity outflows. Assuming that this remaining 50% is drawn at 100% on the outflow side and at 0% on the inflow side (which is conservative), one ends up with a weighted average drawdown of 50%.

10.5 Final remarks

The current draw-down rates applied to credit lines and liquidity facilities to financial institutions look too punitive and unrealistic. The 100% outflow factor is not corroborated by any robust empirical evidence, even in times of stress. The treatment of inflows and outflows is strongly asymmetric.

One could therefore calibrate the drawdown factors on actual values experienced during the recent crisis. Yet, historical data may not adequately predict the future and may not be fully representative of the stress scenario envisaged by the LCR. Also, it may fall short of providing adequate comparability and harmonization across banks, as the results may vary significantly for individual institutions.

Alternatively one could introduce a more symmetrical treatment of inflows and outflows, as in the current French regulation on liquidity risk. This approach has the following advantages:

- it takes into account the way banks operate and refinance their off-balance sheet commitments;
- it does not fully rely on historical observations;
- it is consistent with the key aims of the CRR which should guarantee that financial institutions be able to meet their commitments.

¹ This section is based on a contribution by Sylvie Bourguignon.

² Article 413 2 states that “ the liquidity inflows shall be measured over the next 30 days. They shall comprise only contractual inflows from exposures that are not past due ...”. Contractual inflows do not include the undrawn amounts on credit and liquidity lines.

³ Source : The Clearinghouse, “The Basel III Liquidity Framework: Impacts and Recommendations”, November 2, 2011 (full text available on <http://www.theclearinghouse.org/index.html?f=073043>).

⁴ This is consistent with the approach applied to outflows, which requires to perform a cartography of credit lines or liquidity facilities by type of counterparty.

⁵ Reciprocal commitments could be determined based on the sum of liquidity credit lines granted and hold with the same financial counterpart. Netting should be allowed only if the characteristics of credit or facility lines in terms of maturity and drawing conditions are the same.

11 Trade Finance in the LCR¹

11.1 Introduction

The potential impact of the LCR on trade finance is an area that has been much discussed² – and deservedly so. Trade finance predominantly focuses on the secured funding of import/export transactions and is therefore fundamental to economic growth. The transactions are mostly short in tenor as they liquidate once goods have been received. A typical example could be a three week loan secured by legal documentation (using the goods being shipped as collateral) aimed at helping clients manage their working capital needs.

Such facilities must be clearly distinguished from a standard corporate loan from both a capital and liquidity perspective. Nevertheless, the currently proposed treatment of trade financing transactions does not adequately differentiate them from standard loans, both from the point of view of liquidity and capital requirements. This risks making trade finance economically unviable for banks. . This risks making trade finance economically unviable for banks. However, this treatment may be subject to change in the CRR after the “Trialogue” negotiations are completed³.

This paragraph sets out why the parameters of the LCR should be reconsidered in the context of trade finance and argues that they should be revisited so as to not detrimentally impact a low-risk industry that underpins global economic growth.

11.2 Overview of Trade Finance

The trade finance industry supports USD 14-16 trillion of annual global commerce. Trade finance banking covers a range of product offerings that aim to support clients’ international trade by helping them in managing their risks, e.g. credit risk and delivery risk. Trade Finance banks facilitate this process on both the import and export side of the economy.

LCR parameters for trade finance should be revisited, so as to not detrimentally impact a low-risk industry that underpins global economic growth

For an importer, examples include:

- letters of credit (LCs) - so that the importer needs to make the payment only upon receipt of documentary evidence of shipment (in its simplest form);
- import loans – providing funding against imports;
- import invoice financing – providing funding against presentation of certified true copy of suppliers invoice.

For an exporter, examples include:

- pre/post shipment finance – funding on the basis of a purchase order or an export LC to enable order preparation and completion;
- receivable services – purchasing the receivables from the exporter, with/without recourse financing, collection services;
- export invoice financing – providing funding on the basis of invoices raised to facilitate open account trade.

There are a number of positive characteristics of trade finance which differentiate it from normal course bank lending. These characteristics need to be borne in mind when considering the application of the LCR. Trade finance facilities are:

1. self-liquidating, because they involve conversion of goods into cash in a short time and the counterparty that receives a trade finance loan is not necessarily the party who repays the bank;
2. short term, with a total average of just 147 days, reducing to 80 days for off balance sheet items (such as letters of credit);⁴
3. low risk and with high recovery rates through possible sale of underlying goods. As a result, default rates and losses have been very low in the last three years (see Table 13);
4. typically linked to an underlying shipment or trade. Regardless of the client's credit standing, clients would need to submit proof of the underlying trade/shipment, the sale/purchase through the invoice and other transactional documents as required (e.g. bills of lading, trust receipts etc). Hence Trade Finance products are not in the nature of an on-going financing of the obligor.

TABLE 13 – DEFAULT AND LOSS RATES FOR TYPICAL TRADE FINANCE PRODUCTS IN 2008-2010 (SOURCE: INTERNATIONAL CHAMBER OF COMMERCE⁵)

Product Type	Default %	Loss %
Import LC's	0.077	0.007
Export Confirmed LC's	0.090	0.030
Standby's and Guarantees	0.013	0.0007
Import Loans- Corporate Risk	0.060	0.070
Import Loans- Bank Risk	0.090	0.050
Export Loans- Corporate Risk	0.290	0.017
Export Loans- Bank Risk	0.170	0.010

As every trade loan is linked to an underlying shipment/trade there is consequently no potential for a trade asset to be automatically rolled-over. Clients may request for extension of trade assets but, usually, only under strict criteria.

It may be argued that if an extension were refused, then the client could face liquidity pressures and ultimately default on other obligations to the bank, or that the lending bank may suffer franchise damage. This would imply that, practically speaking, non-rollover is not a genuine option for bank.

However, the trade finance transaction is self-liquidating and so there is effectively no risk that the transaction would itself be defaulted on (with default on other exposures of the bank being a likely breach of those contracts). Furthermore, the current industry practice is to extend non-committed trade finance facilities, therefore the sole discretion to extend or replace trade facilities lies with the Bank. Regarding potential franchise damage, in a short term stress scenario (up to 30 days) the extension of new trade finance facilities can be delayed without damaging client relationships or wound down where the client relationship is not deep/franchise damaging.

11.3 Trade finance cash flows and the LCR

The Basel 3 rules currently prescribe that inflows from exposures to Financial Institutions are recognised entirely in the LCR, whereas only 50% of inflows from corporate clients are taken into account. As evidenced above, given the unique characteristics of trade finance, we would propose that the inflow rate on corporate exposures associated with trade finance be increased to a level significantly closer to financial institutions' 100%.

Besides the statistical evidence shown below, our proposal is motivated by the need to ensure that the banking system is driven by right incentives and that areas of intermediation that are crucial to economic development remain economically appealing. Namely:

- trade finance is a short term business with already tight spreads. Capping inflows at 50%, and therefore adding a liquidity buffer cost to the business, would put pressure on the viability of export/import financing;
- making inter-bank lending preferable to lending to corporate clients, in particular trade finance lending, would result in funds that usually support trade being redirected to banks, increasing interconnectedness and systemic risk;
- finally, in the event of a market-wide stress and a generalized economic slowdown, the 50% conversion rate on trade finance inflows would discourage international trade when the economy needs it the most.

As concerns outflows associated with trade finance guarantees, the CRR currently adopts a binary approach to non-retail off-balance sheet items, which receive either a 10% or 100% outflow under stress. These percentages are too punitive and do not reflect the observed behaviour of Trade Finance products during a crisis, where there is a very low probability of Trade Finance contingents having a material impact on liquidity needs.

For example, in relation to guarantees, disbursement will only occur if there is a failure to perform in accordance with the guarantee documentation. These events of failure have a low probability of occurring (as evidenced in Table 13) and in most cases are not directly correlated with a liquidity crisis.

Our suggestion is that the additional liquidity requirement should be a function of the probability of an outflow for the bank (i.e. conversion into an on-balance sheet item plus the probability of counterparty defaulting on its obligation) plus additional liquidity required by clients who may need financing in a crisis. In order to do this, data should be collected which covers a liquidity crisis. Data should include:

- conversion of trade finance contingent liabilities into trade loans;
- customer defaults on their trade finance contingent obligations;
- level of prepayments and advances required by clients.

11.4 Conclusions

If the requirements of the LCR remain in their current form they will potentially become a significant deterrent for trade finance hurting economic growth and recovery. Initial estimates⁶ show the impact could be as high as a 6% reduction in trade finance capacity and a 5% decline in GDP growth. Accordingly, the stress assumptions underlying the LCR need to be revisited in light of the inherent characteristics of trade finance.

We recommend that trade finance inflows are not capped at 50% for the purposes of the LCR calculation. In addition, the potential outflows arising from off-balance sheet trade finance contingents (such as letters of credit and guarantees) should be calibrated taking into account the characteristics of trade finance instead of being treated a standard credit facility.

¹ This section is based on a contribution by Pamela Walkden.

² See e.g. Financing Growth and Development' B20 working group paper, p115 (and others), June 2012 (<http://b20.org/documentos/B20-Complete-Report.pdf>); 'The Impact Of Regulatory Reforms on Emerging Markets' B20 report, p15 (and others), June 2012 (<http://b20.org/documentos/TheImpactOfRegulatoryReformsOnEmergingMarkets.pdf>); the ICC Global Report on trade Finance - "ICC Global Survey 2012 – Rethinking Trade and Finance".

³ Trade Finance loans may receive up to 100% inflow treatment – an approach consistent with the arguments set out in this paragraph.

⁴ Source: International Chamber of Commerce, *Global Risks – Trade Finance 2011 - An initiative of the ICC Banking Commission*, October 26, 2011.

⁵ See again International Chamber of Commerce, *Global Risks – Trade Finance 2011 - An initiative of the ICC Banking Commission*, October 26, 2011, p. 3.

⁶ Standard Chartered Bank estimate based on own Basel III impact assessments and extrapolation of market data

Update to Section 4 ("The State-of-the-Art of Bank Liquidity Rules in Europe")

Prior to the 2007-2009 financial crisis, some countries like Germany, Austria and the Netherlands traditionally possessed comparatively detailed regulations concerning liquidity issues (the liquidity rules - "LiquiV"s - in Germany and Austria as well as the Dutch supervisory requirements were issued prior to the crisis¹). **The Dutch liquidity regime, first sketched in the 1970s, was profoundly reviewed in 2003. De Nederlandsche Bank ("DNB") introduced concrete and legally binding supervisory liquidity requirements**, including off balance sheet commitments and derivatives. The liquidity rule implied a "hard" constraint based on a reporting.

Following the financial crisis and the Lehman default, a number of national regulations were quickly enacted or updated to address such requests, with a focus on institutions' survivability in short-term market-distress. The Netherlands supplemented its existing rules with the 2011 Liquidity Regulation, setting out detailed liquidity weights for classes of assets and specific standards for liquidity guarantees. The "ILAAP" (Individual Liquidity Adequacy Assessment Process) requirements are accompanied by additional monitoring metrics which must be reported periodically. If De Nederlandsche Bank deems the liquidity of a bank or clearing institution inadequate, the Regulation also allows for additional liquidity requirements to be set on an individual basis.

Currently, DNB asks for detailed liquidity requirements to be complied with - including requirements on a consolidated basis that are quite similar to the LCR. Liquidity testing is basically carried out at group level including domestic and foreign operations of an institution and covering positions in all (except in some cases for non-local, non-convertible and non-substantial) currencies. Exemptions from the reporting principles exist for example for interests of subsidiaries and are subject to strict conditions.

Additionally, DNB requires banks to perform an "ILAAP" (Individual Liquidity Adequacy Assessment Process) similar to Pillar 2's ICAAP; once its ILAAP results are assessed, additional liquidity constraints may be imposed on individual institutions. Finally, a number of monitoring metrics have been developed, which must be reported periodically.

KEY PROVISIONS

	Scope	Group Level Regulation	Requirements	Liquid Assets	Liquidity Outflow
Netherlands	Clearing institutions and credit institutions; insurers; collective investment schemes; financial services; other services.	Yes (Memorandum 6101 - 04.3)	"Shall be sufficiently liquid." (Part 3.3.7. / Section 3:63 AFS) For a first-week test and a full-month test, actual liquidity must exceed required liquidity (Memorandum 6101-03.1)	Banknotes/coins, receivables from central banks, collection documents, unencumbered readily negotiable debt instruments accepted as collateral by a recognised central bank, amounts receivable, receivables in respect of repurchase and reverse repurchase agreements (other than with central banks and securities lending/borrowing transactions, gold, other liquid shares (repurchasable), unmarketable shares and bonds and official standby facilities (recognised), receivables in respect of derivatives (2011 Liquidity Regulation under the Wft, annex to article 2)	Liabilities including money borrowed from central banks, debt instruments issued by the bank or clearing institution itself, deposits and other fixed-term loans, amounts owed under repurchase and reverse repurchase agreements (other than with central banks) and securities lending/borrowing transactions, credit balances and other moneys borrowed with an indefinite effective term, official standby facilities, liabilities in respect of derivatives and other contingent liabilities and irrevocable credit facilities (2011 Liquidity Regulation under the Wft, annex to article 2)

¹ In Germany liquidity rules were the successor to "Grundsatz II" which, in its last revision, governed liquidity management since 2002 and reached back to the 1960's. The Netherlands issued supervisory liquidity requirements in the 1970's and 1980's which were fundamentally reviewed in 2003.