

ARTICLE – Short-term liquidity risks in the major Swedish banks

One of the Riksbank's tasks is, where necessary, to provide liquidity assistance to the banking system in the event of a crisis. This liquidity provision should be regarded as a last resort and it is therefore important that the banks first and foremost manage their own liquidity risks. Banks are exposed to various types of liquidity risk. To measure and control these risks, the Basel Committee has produced two measures: The LCR (Liquidity coverage ratio) and the NSFR (Net stable funding ratio). The Riksbank has previously pointed out that the measures do not cover all of the liquidity risks and that the major Swedish banks must therefore continue to reduce their risks, even though they currently meet the requirements for the LCR and report relatively high levels for the NSFR. This article discusses the banks' short-term liquidity risks, based on both LCRs and a stress test carried out by the Riksbank. The Riksbank's test shows that in a stressed scenario lasting more than 30 days, the banks would risk experiencing a significant liquidity need. This article illustrates the importance of measuring liquidity risks in different ways to increase transparency regarding risk-taking by the banks.

The banks' maturity transformation give rise to liquidity risks

A central component of a bank's operations is borrowing money at short-term maturities and then lending it at longer maturities.⁶⁸ This maturity transformation is beneficial to society in that the customers who deposit money in the bank have immediate access to their funds and those who borrow from the bank do not risk needing to pay back the loan before it matures. At the same time, the maturity transformation means that the bank is taking a liquidity risk. The transformation means that the bank's financing must normally be repaid before the bank has received in return the money that it has lent. The bank must therefore renew its financing several times during the course of a bank loan. If the bank's ability to pay is questioned, it may be forced to renew the financing at a higher price, or it may get into a situation where it cannot succeed in renewing its financing at all. The bank then risks becoming illiquid and ultimately being forced to call in loans for payment.

Important that the banks insure themselves against liquidity risk

To reduce the risk that the banks will have problems with their financing, it is important that they do not allow their maturity transformation, and thereby liquidity risk, to become too large. The banks thus need to insure themselves against overly large liquidity risks.

When the banks manage their liquidity risks, they focus primarily on their own operations. However, the banks' total operations can add risks to the financial system as a whole, what are known as systemic risks, which the individual bank does not normally take into account in its risk management.⁶⁹ Thus, the individual bank probably underestimates the total risk for the financial system in its liquidity management.

In addition, central banks, in their role as lender of last resort, can supply liquidity to banks in distress. Although this function is important for financial stability, it entails a moral hazard problem, as systemically-important banks,⁷⁰ with the awareness that they can obtain help from central banks in a crisis, may take larger risks than they would otherwise have done.⁷¹

If the banks do not insure themselves sufficiently against systemic risk, the probability that the central bank will need to provide liquidity assistance increases, which means that the central bank is subjected to credit risk. This means that the banks' liquidity risks could ultimately lead to costs that have to be covered by taxpayers. Too little insurance can also lead to the banks failing to price liquidity risks correctly when lending money. This leads to the general public being able to take out cheaper loans, which increases the demand for loans and risks building up further systemic risk.⁷²

The Riksbank has previously noted that the major Swedish banks do not insure themselves against liquidity

⁶⁸ Segura, A. and Suarez, J. (2016), How excessive is banks' maturity transformation? *Working Paper Series* No 3. European Systemic Risk Board.

⁶⁹ Farhi, E. and Tirole, J. (2012), Collective Moral Hazard, Maturity mismatch, and Systemic bailouts, *American Economic Review*, Vol. 102.

⁷⁰ A systemically-important bank is a bank that, if it suffers problems, could threaten the stability of the financial system.

⁷¹ Korinek, A. (2011), Systemic risk taking, amplification effects, externalities, and regulatory responses. *Working paper series*, No 1345. European Central Bank.

⁷² Acharya, V. and Naqvi, H. (2012), The Seeds of a Crisis: A Theory of Bank Liquidity and Risk-Taking over the Business Cycle. *Journal of Financial Economics*, Volume 106, Issue 2.

risk to an adequate extent. There is thus reason to regulate the banks' liquidity risks.

Current liquidity regulation

There are two measures in the Basel III Accord that measure liquidity risks in banks. One is the LCR (Liquidity Coverage Ratio) that measures the banks' resilience to a short-term stress that lasts 30 days.⁷³ The other measure, NSFR (Net Stable Funding Ratio) provides a picture of how large a share of stable funding (wholesale funding with a maturity of more than one year or other stable funding) the banks use to finance their long-term lending.

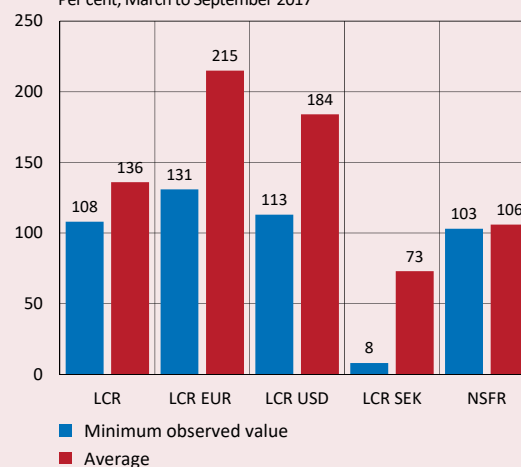
As of 2013, Swedish banks must meet FI's minimum requirement of 100 per cent in LCR for EUR, USD and for all currencies taken together. At present there is no corresponding LCR requirement for other significant currencies including SEK. The NSFR has not yet begun to apply, but will be implemented when the ongoing EU negotiations on this issue are complete. As of January 2018, an EU-wide LCR requirement will also be implemented to replace FI's current requirement.⁷⁴ The major Swedish banks currently meet the 100 per cent requirement for both the LCR and the NSFR (see Chart C1).⁷⁵ At first glance, it may thus appear that the major banks' liquidity risks are limited.

The Riksbank has earlier pointed to deficiencies in current liquidity regulation

However, the LCR and the NSFR do not capture all liquidity risks.⁷⁶ Although the major banks manage the LCR in total and show relatively high levels for EUR and USD, there can be liquidity risks in other individual currencies. The Riksbank has earlier pointed to the need for supplementary liquidity requirements for LCR in SEK and other significant currencies (in addition to EUR and USD).⁷⁷ Even if the banks meet the LCR requirement at a total level, this is not a guarantee that they would be able to manage large outflows in these individual currencies. As there is no LCR requirement in SEK and other significant currencies, the major banks have at times had very small liquidity buffers in these currencies (see Chart C1). In certain cases, the buffers have been so small that for some banks they have been insufficient to cope with one week's stressed liquidity outflows in accordance with the LCR.

Chart C1. The major banks' LCR and NSFR

Per cent, March to September 2017



Note. Refers to daily observations for LCR and monthly for NSFR.

Source: The Riksbank

The Basel regulations do not capture short-term liquidity risks beyond 30 days

The LCR is based on the banks having to hold a liquidity reserve to be able to manage the outflows expected to arise in a stressed scenario that lasts 30 days. These outflows arise when short-term market funding cannot be renewed and when a certain part of the deposits are withdrawn from the banks. The outflows are counteracted to some extent by inflows in the form of short-term loans to financial counterparts that expire and are not renewed. However, the LCR does not describe how a bank would manage stress that lasts longer than 30 days. If the bank has a liquidity reserve that is adapted to manage a stress for 30 days, but the stress turns out to last longer, there is a risk that the bank would have a liquidity need (see Figure C1). The financial crisis, in particular, demonstrated that a period of liquidity stress can be long, when the Riksbank had to provide liquidity in USD to the banking system through the autumn of 2008 and just over one year thereafter. In the first three months alone, the banking system borrowed USD from the Riksbank at several auctions in an amount corresponding to about SEK 200 billion.

As the LCR also only measures resilience in one of several possible stressed scenarios, an approved LCR level does not provide any guarantee for a bank in practice being able to manage 30 days liquidity stress.

⁷³ Basel III: *The Liquidity Coverage Ratio and liquidity risk monitoring tools*, January 2013. Bank for International Settlements (BIS).

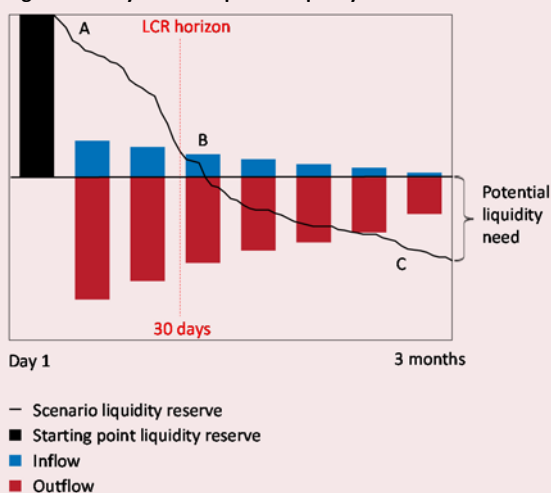
⁷⁴ The EU's current proposal on Delegated Act only covers LCR requirements for all currencies taken together. With effect from 2018, Finansinspektionen's regulations on LCR will cease to apply. It follows on from this that potential liquidity requirements in individual currencies must be introduced from the turn of the year as so-called Pillar 2 requirements.

⁷⁵ NSFR according to the definition in Basel III.

⁷⁶ Roszbach, K. et al. (2016), *The major Swedish banks' structural liquidity risks*, Riksbank Studies. Sveriges Riksbank

⁷⁷ Short-term liquidity risks in significant currencies. Article in *Financial Stability Report 2016:2*. Sveriges Riksbank.

Figure C1. A stylised example of a liquidity scenario



Note. The figure only shows a stylised example and proportions of in and outflow, for example, are not exact.

Figure C1 shows a stylised example of a bank subjected to liquidity stress. At time point A, that is before the stress scenario begins, the bank has the whole of its liquidity reserve intact. At time point B, large net outflows⁷⁸ have meant that the liquidity reserve is down at zero. In practice, however, it is likely that the bank would have problems and need to apply for liquidity support from the central bank before all of its liquidity is gone, that is, sometime between A and B. An example of how large the liquidity need, and thus the potential central bank support, might be after three months is illustrated by time point C in the stress scenario.

LCR and the risks in the Swedish banks' short-term market funding

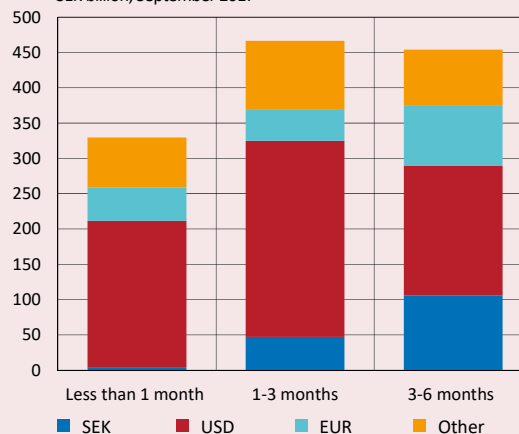
To assess the liquidity risks in the banks, it is important to have a clear idea of liquidity reserves, lending, deposits and market funding. The maturities of the various assets and liabilities are also important.

Half of the major Swedish banks' funding consists of market funding, corresponding to just over SEK 4,000 billion. Just over SEK 1,000 billion of this funding matures continuously over the next six months (see Chart C2). However, the LCR calculation only captures the part of the market funding that falls due within 30 days. This means

that maturities after 30 days is not included in the stress scenario on which the LCR measurement is based.

Chart C2. The major banks' short-term market funding per currency and remaining maturity

SEK billion, September 2017



Source: The Riksbank

Stress test shows large outflows in lasting financial stress

Table C1 shows the major Swedish banks' liquidity positions according to the stress scenario in LCR that last 30 days and according to an alternative stress scenario that the Riksbank has designed and which covers 90 days.⁷⁹ Both stress scenarios cover the banks' assets and liabilities in all currencies converted into SEK.

In the Riksbank's stress test, the major banks have at the start total liquidity reserves of SEK 2,359 billion. This is somewhat less than in the LCR scenario and is due to stricter assumptions on which securities can be used for the liquidity reserves in the Riksbank's test.⁸⁰ During the first 30 days of the stress, net outflows are somewhat larger in the Riksbank's stress test than in the LCR scenario, which is mainly because the banks are assumed to renew all existing lending to the general public in the Riksbank's scenario, which is to say that no tightening of lending occurs. The LCR scenario assumes that half of the lending that matures is repaid to the bank. However, a further difference is that the scenario in LCR lasts for 30 days, while the Riksbank's stress test continues a further two months. The further outflows during these two months consist mostly of the banks' short-term market funding which falls due over a period of one to three months (see Chart C2). In the LCR scenario, the major

⁷⁸ Net outflows refers to the bank's outflows minus its inflows.

⁷⁹ The Riksbank's stress test uses detailed supervisory data for the banks' assets and liabilities divided by contractual maturity. Together with certain assumptions, this data forms the basis for the banks' in and outflows as used in the Riksbank's stress test. In addition to the length of the stress scenario, there are other differences between the LCR and the Riksbank's stress test. Only central bank investments and government bonds are assumed to be usable as a liquidity reserve in the Riksbank's test but, in the LCR, the liquidity reserve may also consist, to a certain extent, of covered bonds. In addition, the Riksbank's test assumes that the banks' existing lending to the general public is regularly renewed, while lending in the LCR is assumed to generate inflows upon maturity. Five per cent of total deposits from

households is assumed to disappear over the Riksbank's three-month scenario, while the LCR assumes that five to ten per cent of deposits from households is withdrawn over a month. In addition, the Riksbank's scenario assumes that 25 per cent of total deposits from non-financial corporations disappears, while the LCR assumes there will be an outflow of between five and 40 per cent, depending on the type of exposure. The banks' wholesale funding is assumed to be impossible to renew, both in the LCR and the Riksbank's scenario. See *Consultation response to the proposal referred to the Council on Legislation regarding the Riksbank's financial independence and balance sheet*, April 2017. Sveriges Riksbank.

⁸⁰ This depends on the handling of covered bonds - see the previous footnote.

banks have a liquidity surplus of SEK 625 billion after 30 days when the scenario ends. In the Riksbank's scenario, which lasts for 90 days, the banks have a deficit or a liquidity requirement of SEK 586 billion. This amount covers all currencies but the major part of the requirement is in foreign currencies. One of the assumptions in this scenario is that the banks have the possibility to switch between currencies via the currency swap market. However, in a stressed situation it is not certain that this will be possible. This means that a liquidity problem can arise in individual currencies, which are not included in the scenario, which would in that case worsen the situation for the banks and the aggregate liquidity need would increase.

The Riksbank's stress test thus shows that large outflows can occur beyond 30 days of lasting stress. The calculations that form the base for the Riksbank's stress test can of course be done in different ways, however, and the Riksbank's scenario is just one of several possible ones.

Table C1. Liquidity positions at different points in time in the Riksbank's stress scenario and the LCR's stress scenario

SEK billion, June 2017

| | |
|---|--------------|
| Stress scenario in LCR | |
| Liquidity position at start | 2,754 |
| Net outflows 30 days | 2,129 |
| Liquidity position after 30 days | 625 |
| The Riksbank's stress scenario | |
| Liquidity position at start | 2,359 |
| Net outflows 30 days | 2,361 |
| Liquidity position after 30 days | - 2 |
| Further net outflows after 30 days | 584 |
| Liquidity position after 90 days | - 586 |

Note. The table shows the major banks' liquidity reserves and net outflows in total for all currencies converted to SEK.

Source: The Riksbank

Supplementary liquidity measures can give a more complete picture of the banks' liquidity risks

This article illustrates the fact that the major Swedish banks take short-term liquidity risks that are not fully captured in the LCR. The fact that the banks attain the minimum requirement for the LCR does not say very much about how they would cope with stress that lasts more than 30 days.

The Riksbank's stress test shows large potential liquidity needs for the major Swedish banks in a stress situation that lasts for 90 days. Even if the scenario in the Riksbank's stress test is only one of several possible ones, it shows the importance of measuring short-term liquidity risk in different ways as a complement to the LCR.

The IMF highlighted in 2016 the need to measure short-term liquidity risk in the major Swedish banks in

different ways.⁸¹ The IMF recommended that the banks be supervised with a supplementary measure corresponding to the LCR, but for stress lasting three months. The Riksbank shares the assessment that it is important to measure and supervise the banks' short-term liquidity risks according to different measures, in addition to the LCR. This would increase the transparency of their liquidity risks.

⁸¹ Sweden, *Financial stability assessment*, November 2016. International monetary fund (IMF).