

An examination of the liquidity coverage ratio (LCR) in Swedish kronor

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In its Financial Stability Report 2014:1, the Riksbank recommended that a requirement for the Liquidity Coverage Ratio (LCR) in Swedish kronor be introduced. The background to this recommendation is that the Swedish banks' LCR levels in kronor are sometimes very low. This, in turn, may make them vulnerable to liquidity stress, thereby threatening financial stability.

The aim of this Economic Commentary is to provide an account of the background work carried out in advance of this recommendation. This consists of both a descriptive section on the major Swedish banks' LCRs in different currencies from a balance sheet perspective and of a section dealing with the reasoning behind the recommendation and the impact analysis carried out.

During the financial crisis that started in 2007 and escalated with the bankruptcy of Lehman Brothers in September 2008, many banks experienced severe liquidity stress. Several central banks were therefore forced to adopt liquidity support measures in an attempt to curb the economic crisis. Part of the explanation for this turbulence can be found in the fact that several banks had taken large liquidity risks without sufficiently protecting themselves. To increase the banks' resilience and thereby reduce the likelihood of future financial crises, the Basel Committee started the work of developing new rules for capital and liquidity. In addition to strengthened capital requirements, the Basel Committee has developed two quantitative minimum standards for liquidity. The first of these is the Liquidity Coverage Ratio (LCR), which aims to ensure that the banks have enough liquid assets to withstand liquidity stress in the short term. The second is the Net Stable Funding Ratio (NSFR), a measure placing a bank's stable funding in relation to its illiquid assets and which aims to increase the resilience of the banks over a longer period of time.

According to the latest Basel Accord, the LCR is to be phased in over a period starting in 2015. However, in 2013, Finansinspektionen introduced a requirement for the LCR², which also covers separate requirements in the currencies euro and US dollar. The decision to also introduce separate currency requirements was justified by Swedish banks' extensive dependence on market funding in foreign currency, which makes them particularly sensitive to liquidity shocks in these currencies. In addition, as the Riksbank's ability to provide liquidity assistance in foreign currency is limited, it is deemed to be particularly important that the banks themselves are resilient to liquidity disruptions in these currencies.

The Basel Accord places no requirements on the fulfilment of the LCR in individual currencies, but emphasises the importance for a bank to have liquid assets that can cover outflows regardless of the currency these may be in. The Swedish regulations including specific requirements in dollars and euros are thus stricter than the internationally-agreed regulations. Additionally, the Swedish regulations are currently based on the LCR originally proposed by the Basel Committee in 2010, which is more conservative than the revised proposal from 2013.³

The LCR strengthens resilience to short-term liquidity stress

The transformation of maturities and liquidity by banks involves risk as they must constantly renew their funding due to the maturity mismatches arising. In addition, if the assets are mainly illiquid, which is typically the case for banks, the feasibility of selling these in the event that funding cannot be renewed may be limited. A certain amount of liquid assets thus works as a buffer that can be utilised in periods of liquidity stress.

1. The author would like to thank Jill Billborn, David Forsman, Martin W Johansson, Kristian Jönsson and Olof Sandstedt for their valuable comments.

2. In this article, the Liquidity Coverage Ratio (LCR) refers to the definition used in Sweden in accordance with Finansinspektionen's regulations (FFFS 2012:6). "Liquidity buffer" refers to the assets defined as liquid in the regulations.

3. In the new proposal, the assets allowed to be included in the liquidity buffer have been slightly broadened, at the same time as certain outflow weights have been adjusted downwards.

The point of introducing a requirement for the LCR is to make the banks able to withstand shorter periods of liquidity stress by forcing them to have satisfactory liquidity buffers and ensure that a not too large a share of the funding is short-term.

The LCR is constructed like a stress test intended to reflect tough but realistic conditions under severe liquidity stress lasting for 30 days. Calculation is based upon the bank's balance sheet and certain off balance sheet items such as credit and liquidity facilities. Weighting the various items in relation to their risk creates a scenario in which, among other things, the bank's market funding with remaining maturity of less than one month is not renewed and in which a part of the banks' deposits is withdrawn. At the same time, the bank has assets that generate a cash inflow and counteract the outflows, to a certain extent⁴. The difference between the weighted cash outflows and the weighted cash inflows is called a stressed net outflow.

In turn, the LCR is calculated as the ratio of the liquidity buffer to the stressed net outflow (see the equation below). If this ratio exceeds 1, that is 100 per cent, the bank is considered to have passed the stress test.

$$\frac{\text{Liquidity buffer}}{\text{Stressed net outflow during 30 days}} = \text{LCR}$$

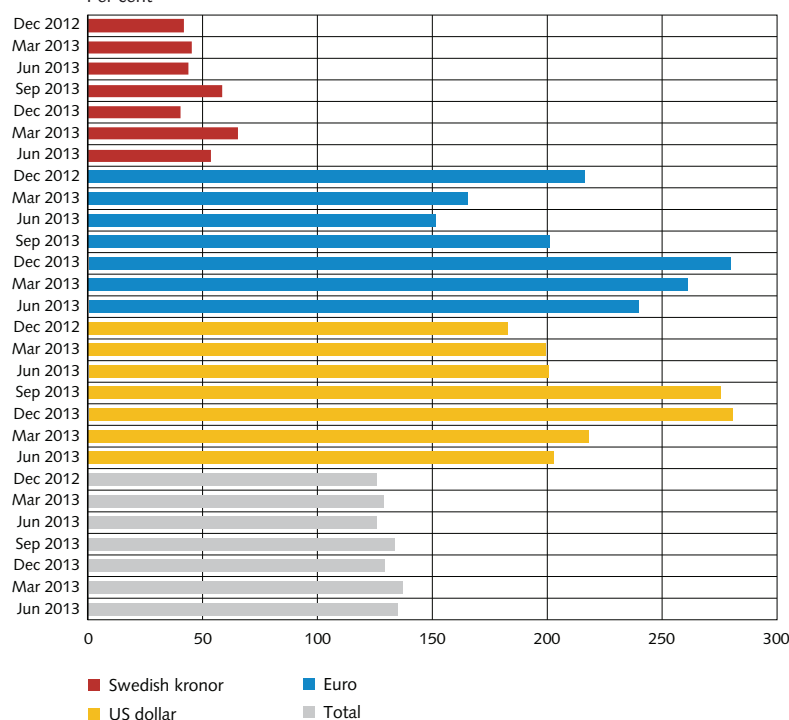
The LCR has been designed to promote diversified liquidity buffers by dividing up the liquid assets into liquid (level 1) and slightly less liquid (level 2) assets. Level 1 assets primarily include balances with central banks and government bonds, while level 2 include covered bonds and certain other securities with high credit ratings. The buffer must be made up of at least 60 per cent level 1 assets. In certain cases, this may mean that assets classified as level 2 can be excluded from the buffer when the LCR is calculated.

For the sake of simplicity, only the term outflows will be used in this commentary from this point on and then only to refer to stressed cash outflows after the application of the outflow weights specified in the regulations, and before reduction with cash inflows.

The major Swedish banks have high LCR levels in dollars, in euros and in all currencies combined (see chart 1). At the same time, levels in Swedish kronor are low. This is because the liquidity buffers are mainly made up of assets in dollars and euros. The next two sections explain the differences between the major banks' LCRs in different currencies by describing the banks' assets and liabilities.

4. The inflows are limited to no more than 75 per cent of the outflows.

Chart 1. The major banks' LCRs in different currencies
Per cent



Note. Refers to LCR at the end of each month.
Sources: The Swedish Financial Supervisory Authority and the Riksbank

The banks' liquidity buffers are mostly held in foreign currencies

The major Swedish banks' operations are of a cross-border nature, meaning that they have assets in a number of different currencies (see chart 2). However, their main operations consist of lending in Sweden, which is reflected by the fact that just over 40 per cent of total assets are in Swedish kronor, followed by almost 20 per cent in euros and only 10 per cent in dollars.

Four-fifths of the assets in kronor consists of lending to the public, which is to say primarily mortgage and corporate lending. In addition to this, they have relatively large holdings of financial assets (15 per cent). Of these, a large part consists of covered bonds and a lesser part of Swedish government bonds. These assets are included in the banks' liquidity buffers as well as held for trading activities so that the banks can meet their commitments as market makers in both government bonds and covered bonds.

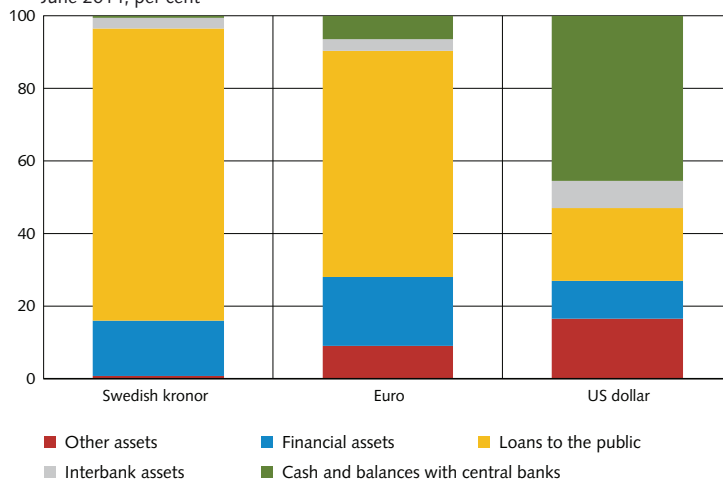
Two-thirds of assets in euros are made up of lending to the public. The banks' lending in euros primarily takes place in the Baltic region and Finland. The remaining part of the assets is mostly made up of liquid assets such as balances with central banks, government bonds and covered bonds.

As the banks' lending in dollars is less extensive, the allocation of these assets differs considerably from that of kronor and euros. Almost half of the dollar assets are placed with the US central bank, the Federal Reserve, to serve as a liquidity buffer. Lending to the public only amount to one-fifth of the assets.



Chart 2. Allocation of the major banks' assets by currency

June 2014, per cent



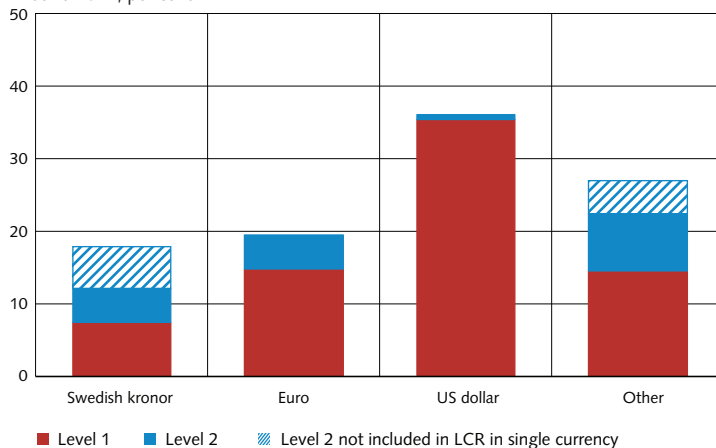
Sources: Bank reports and the Riksbank

Chart 3 shows that liquid assets in dollars make up 36 per cent of the total liquidity buffer. These are almost exclusively made up of balances with central banks or securities counted as level 1. The liquid assets in kronor and euros are approximately the same size, but those in kronor are mostly covered bonds (level 2).

Because of these large holdings of level 1 assets, primarily in dollars and euros, all level 2 assets are included in the combined liquidity buffer. On the other hand, when the LCR is calculated separately in kronor, the amount of covered bonds included in the buffer is limited, as the proportion of level 1 assets is relatively small. The low LCR levels in kronor can thus largely be explained by the banks' relatively small holdings of level 1 assets.

Chart 3. Allocation of currencies in the banks' liquidity buffers in the LCR

June 2014, per cent



Note. When calculating the LCR, the liquidity buffer must consist of at least 60 per cent level 1 assets. A bank with 120 liquid assets, half of which are level 1 and half of which are level 2, may thus include $60 + 60 \times (2/3) = 100$ of the 120.

Sources: The Swedish Financial Supervisory Authority and the Riksbank

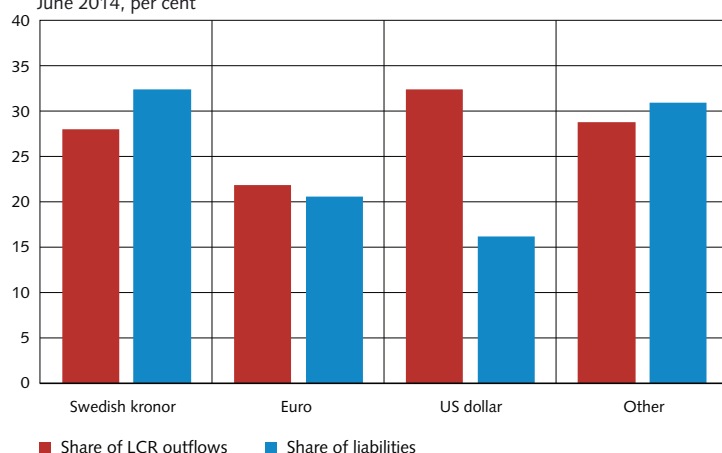
The banks' funding leads to differences in cash outflows in different currencies

Cash flows in the LCR are calculated by assigning a bank's liabilities different predefined outflow weights. Placing the weighted outflows in relation to the unweighted funding for each currency gives a picture of the extent to which each currency contributes towards the outflows in the LCR in relation to the currency's share of total funding (see chart 4).

Outflows in dollars constitute almost one-third of all cash outflows in the LCR but only 16 per cent of the banks' funding. In contrast, Swedish kronor amount to 32 per cent of the funding but only 28 per cent of outflows in the LCR. In euros and other currencies, the proportions are about equal.

The reason for the large differences between the outflows in relation to liabilities between different currencies is that there are large differences in how the banks obtain funding in different currencies. The remaining part of this section will describe these differences.

Chart 4. Outflows and liabilities per currency, proportion of total
June 2014, per cent



Note. Liabilities refers to the major banks' total liabilities excluding equity. The category "other" as a proportion of liabilities is calculated as a residual and therefore also includes liabilities not allocated a currency. The category "other" as a proportion of outflows refers to other currencies combined.

Sources: Bank reports, the Swedish Financial Supervisory Authority and the Riksbank

Banks can obtain funding in a number of different ways. Historically, this has been via deposits from the public or from other banks. As a rule, deposits from the public⁵ are considered to be a stable form of funding when this means deposits from households or when they are covered by a deposit guarantee scheme. In contrast, corporate deposits not covered by a deposit guarantee scheme and where the company does not have other relations with the bank are given a higher outflow weight in the LCR. The Swedish banks fund a relatively small part of their lending with deposits in comparison with other European banks⁶. In both kronor and euros, just over 40 per cent of funding is made up of deposits from the public. In dollars, it makes up almost one-quarter, the majority of which is from corporations.

Interbank deposits make up 6 and 10 per cent of funding in kronor and euros respectively. In dollars, it is somewhat more extensive and amounts to 15 per cent. Typically, interbank deposits are more flighty in liquidity stress situations as the banks tend to withdraw their deposits in other banks in favour of more secure investments when they are uncertain of their future liquidity needs. Consequently, interbank deposits have a high outflow weight in the LCR.

One alternative to obtaining funding via deposits from the public or from banks is to issue securities. One-third of funding in kronor consists of issued securities. This

5. The public refers to households and non-financial companies.

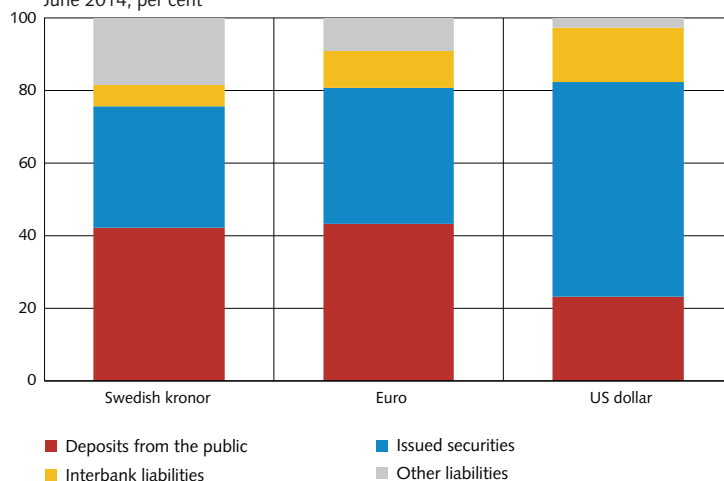
6. See, for example, Financial Stability Report 2013:2.

is almost exclusively covered bonds used to fund the banks' mortgage lending. This funding has a remaining time to maturity of about three years on average. To diversify their funding and gain access to a larger investor base, the banks also issue covered bonds in other currencies, primarily euros. In addition, they have significant short-term funding in euros via bank certificates with maturities of about three months. All in all, issued securities make up 38 per cent of funding in euros.

In dollars, market funding amounts to a significantly larger proportion of total funding, making up almost 60 per cent. In contrast to funding in kronor, funding in dollars is primarily undertaken via bank certificates with remaining times to maturity of about three months. The outstanding amounts are relatively large, meaning that, at any given time, a large part of the outstanding amount of bank certificates will have a remaining time to maturity of less than 30 days and is thus included among the outflows in the LCR.

Chart 5. Allocation of the major banks' liabilities by currency

June 2014, per cent



Note. Other liabilities also includes subordinated liabilities, financial liabilities measured at fair value and derivative liabilities.

Sources: Bank reports and the Riksbank.

So far, this section has described how the banks choose to obtain funding in different currencies and why this leads to differences in cash outflows. A more detailed breakdown of the cash outflows is provided in chart 6 as a complement to this description. This allocation is based on the categories specified in the Swedish liquidity coverage regulations⁷.

The two first categories in the chart cover *household deposits* and *stable deposits not from households*. Both categories include items with low outflow weights but, despite this, give rise to a total of about 25 per cent of outflows in kronor and about 15 per cent of outflows in euros. This is because such deposits are extensive in both currencies.

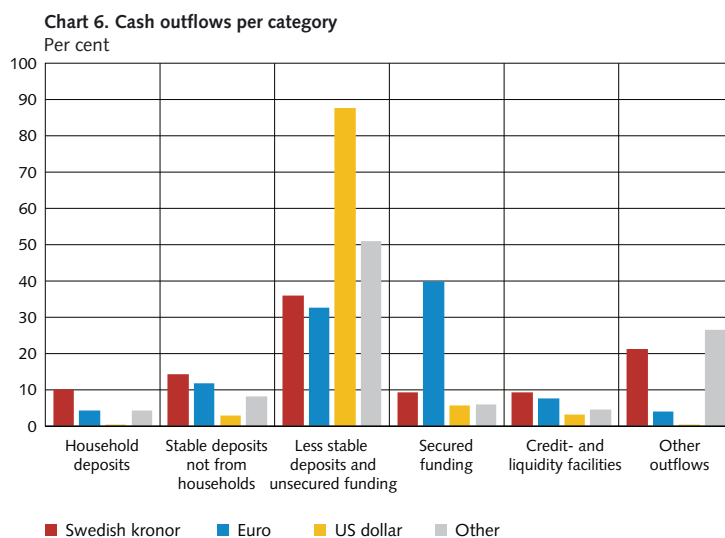
Less stable deposits and unsecured funding covers both corporate deposits not deemed to be stable and interbank deposits. In addition, issued unsecured securities, such as bank certificates, are included. The outflow weights are high in this category, which helps explain why it is the single greatest outflow category for all currencies. In kronor, the outflows primarily consist of corporate and interbank deposits, while, in euros, some maturing bank certificates also are included. In dollars, this category amount to almost four-fifths of total outflows. The main portion consists of maturing bank certificates and interbank deposits.

Secured funding makes up slightly less than ten per cent of the outflows in kronor. This primarily includes cash outflows related to funding with covered bonds, as well as repos and securities lending. *Undrawn credit and liquidity facilities* constitute, in turn,

7. The categories reported in accordance with the liquidity coverage regulations can, in most cases, be linked to some item in the banks' publicly reported balance sheets, but in some cases a given category cannot be linked to a specific balance sheet item. In addition, there may be certain differences between how the banks choose to classify certain objects in their balance sheets.

another almost ten per cent of outflows in kronor. Finally, *other outflows* correspond to just over one-fifth of the outflows in kronor. The outflows in this category consist almost exclusively of what are known as currency swaps. The banks use these to temporarily convert funding in foreign currencies to kronor in order to fund assets in kronor⁸. When the currency swap matures, the bank gets its foreign currency back again, but has to return the kronor at the same time. If a bank is dependent on continually renewing currency swaps to fund assets, a refinancing risk arises. This is reflected by the LCR in that swaps with a remaining time to maturity of less than 30 days give rise to outflows in kronor. For Swedish kronor, the outflows from such swaps are large. Outflows in euros and dollars here are small or non-existent as the Swedish banks, as a rule, do not swap for net amounts of these currencies.

The breakdown of outflows indicates large differences in the driving forces behind the LCR in different currencies. In Swedish kronor, it is various types of deposits and repayment of kronor in currency swaps that largely give rise to the outflows. Deposits and maturing market funding are responsible for most of the outflows in euros. However, in dollars, it is primarily short-term market funding that gives rise to the outflows. This can be interpreted as indicating that liquidity risks in kronor mainly arise because deposits risk disappearing or that the banks are unable to obtain kronor by means of currency swaps during liquidity stress, while those in dollars instead involve a risk that it will not be possible to renew market funding.



Note. Deposits are included in household deposits, stable deposits not from households as well as in less stable deposits and unsecured funding.

Sources: The Swedish Financial Supervisory Authority and the Riksbank

Is there a need for a Liquidity Coverage Ratio requirement in kronor?

As previous sections have shown, assets in foreign currencies, primarily dollars, are largely liquid according to the LCR. At the same time, the outflows are large compared with the liabilities. One reason for this is that the banks fund their assets in dollars at relatively short maturities. However, measured as the LCR, resilience against short-term liquidity stress in foreign currencies is strong. In addition, the liquidity buffers in dollars can be used to meet liquidity requirements in other currencies. As the US dollar acts as a global reserve currency, it can, in most cases, be converted into other currencies on the currency swap market. This means that liquidity stress in kronor and other smaller currencies in general can be dealt with by a bank that has liquid assets in dollars by swapping these to kronor.

Nevertheless, a strengthened LCR in Swedish kronor has several advantages. One-third of the total cash outflows in the LCR are in kronor. It is thus likely that the need

8. The banks also swap foreign currency to other currencies than Swedish kronor.

for liquid funds in kronor would be great if liquidity stress were to arise. As the banks' holdings of level 1 assets in kronor are small, it is likely that they would have to meet the outflows partly by converting foreign currencies to kronor via the currency swap market. However, it is not clear that such a conversion would be unproblematic during a period of severe liquidity stress.

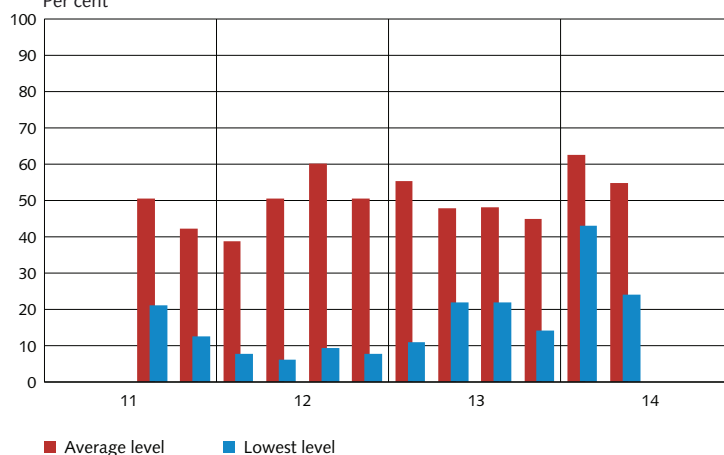
One alternative to using the currency swap market would be to pledge or sell liquid assets in kronor. As holdings of Swedish government bonds are relatively small, it may be necessary to rely, to a large extent, on covered bonds in kronor. Under normal circumstances, these assets have good liquidity. At the same time, the extent to which liquidity can be maintained under stressed conditions⁹, without the support of central bank or central government, is uncertain. This is particularly important as the Swedish banks' liquid assets in kronor are constituted by covered bonds to such a great extent.

On a number of occasions, the LCR levels in kronor have been very low (see chart 7). The potential dependence upon well-functioning currency swap markets and the liquidity of covered bonds can thus be said to be very great on occasion. It is partly because of these low levels that the Riksbank recommended that a requirement for the LCR in Swedish kronor initially be introduced at a level of 60 per cent. Such a level can be seen as constituting a floor preventing the banks from returning to very low levels.

In addition to ensuring larger amounts of liquid assets in kronor in the Swedish banking system, a requirement for LCR in kronor could give the banks a stronger incentive to extend the maturities of their funding in kronor and could thus contribute towards a general improvement in the management of liquidity risks by the banks.

One additional reason for the introduction of the LCR in Swedish kronor is linked to the Riksbank's role as lender of last resort. The Riksbank always has the ability to inject liquidity in kronor into the system. However, this ability may be linked to a risk of moral hazard. If the banking system expects liquidity assistance in kronor, it will lack the incentive to reduce the accumulation of risk in normal times. This could ultimately entail economic costs to society at large. The costs can to some extent be internalised in the banking system by requiring the banks to self-insure against liquidity stress. An LCR requirement is one form of such insurance as the banks themselves will need to hold liquidity buffers.

Chart 7. The banks' lowest and average LCR levels in kronor
Per cent



Note. Refers to the quarterly average of the major banks' reported LCR levels per month and the quarter's lowest reported LCR level for a single bank.

Sources: The Swedish Financial Supervisory Authority and the Riksbank

9. For a more detailed description of covered bonds, see "The market for Swedish covered bonds and links to financial stability", Economic Review, 2013:2, Sveriges Riksbank.

The banks could meet a Liquidity Coverage Ratio requirement in several ways

To comply with a requirement for the LCR in kronor, the banks would have to increase their holdings of liquid assets in Swedish kronor. In particular, their holdings of level 1 assets would have to be increased. Typically, it is not a problem to increase holdings of liquid assets in larger currencies, but liquid assets in kronor are relatively limited. This is because Sweden has a small national debt, which means that the supply of government bonds is small. In addition, the Swedish banking system is large in comparison with the economy, and the potential need for liquid assets is thus also large. At present, the major banks have level 1 assets in kronor equivalent to about SEK 120 billion. If the major banks in combination were to reach 100 per cent in the LCR solely by holding more government bonds in kronor, these holdings would have to increase by a further SEK 115 billion to total close to SEK 250 billion.¹⁰ This can be placed in relation to the fact that outstanding government bonds in kronor amount to about SEK 750 billion.

One alternative to government bonds is balances with central bank. As the banking system's structural liquidity surplus towards the Riksbank needs to be continually balanced, the Riksbank issues certificates in which the banks have the opportunity to invest. These investments are, in turn, considered to be liquid assets in the LCR.¹¹ However, the amount of Riksbank certificates offered is limited by the size of the liquidity surplus, which is just over SEK 50 billion at present.

The LCR can also be improved by reducing cash outflows. This can be accomplished in several ways, but, if we examine Swedish kronor, we can note that deposits constitute a large part of the outflows. These outflows can be reduced by attracting more fixed-term deposits or otherwise turning non-stable deposits into stable deposits.

Outflows arising from funding with contractual maturities can be reduced if the average maturity is extended. In this way, the amount of funding falling due within each given thirty-day period will be smaller, at the same time as total funding remains unchanged. In Swedish kronor, this would primarily be a matter of extending the maturity of currency swaps¹² in which the banks receive kronor, as the market for short-term funding in kronor is practically non-existent.

Conclusion

In summary, there are a number of reasons for introducing a Liquidity Coverage Ratio requirement in kronor, even though it is likely that liquid assets in dollars and euros can be converted to kronor in most cases. In consideration of the limited supply of government bonds in kronor and possible side-effects¹³, the Riksbank recommended in its Financial stability report 2014:1 that the requirement initially be set at 60 per cent.

However, as such a requirement is not as strict as the requirements for other currencies, it would not completely provide the resilience for which the LCR is intended. Instead, it should be seen as a floor aimed at ensuring that the banks do not return to having the very low LCR rates in kronor that have previously been observed.

If the banks themselves have sufficient resilience to manage shorter periods of liquidity stress, this could reduce the probability of a scenario deteriorating. In addition, by delaying the course of events, it could also buy the participants on the financial markets time to act to avoid further escalation. On the other hand, the LCR says very little about resilience to more persistent stresses. It is thus of great importance that the banks also limit their liquidity risks in the longer term.

10. The Riksbank has previously estimated the major banks' increased need of level 1 assets to just over SEK 50 billion in the event of the introduction of an LCR requirement set at 60 per cent.

11. Investments in the Riksbank via fine-tuning operations are also included in the liquidity buffer.

12. However, it should be noted that switching a currency swap in which kronor are received on maturity for one with a longer maturity would also entail a reduction in the corresponding inflows in the foreign currency within 30 days. This would entail a deterioration of the LCR in the foreign currency unless the bank simultaneously also extended this funding.

13. If banks are required to hold more government bonds in kronor there is a risk that they choose to reduce their foreign currency liquidity buffers. The Riksbank has estimated that the reduction is likely to be limited at an LCR level of 60 percent.