

Excessive leverage is a common denominator in most economic crises. Despite this, there are no direct restrictions in the regulatory framework as to how much leverage banks can take on. During the years prior to the crisis, for instance, many banks were able to expand their operations substantially using debt financing, while showing good capital adequacy. To reduce the risks linked to excessive leverage, the Basel Committee for Banking Supervision, which is responsible for drawing up international recommendations on banking standards, has agreed to introduce a new capital adequacy requirement – a leverage ratio. This aims to set a limit on the amount of debt banks can use to finance their operations, regardless of the risk their activities are considered to entail. This Economic Commentary explains what the leverage ratio entails and shows that it can be a good complement to the traditional capital adequacy requirement. The Swedish banks already meet the proposed leverage ratio requirement, even though, on average, they are slightly below the international average of 3.8 per cent.

## The leverage ratio – what is it and do we need it?

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It has been almost five years since the global financial crisis broke out, yet central banks and politicians around the world are still facing economic challenges. In the early stages of the crisis, it looked as though the problems were concentrated to the US housing market, but it soon turned out that there were serious deficiencies in large sections of the financial system, not least in Europe. One fundamental problem was that many banks had too little capital of sufficiently good quality to absorb the losses arising. This can partly be explained by gaps in the financial regulatory framework which applied prior to the crisis. For example, some banks, including the US investment banks, were able to lower their capital adequacy requirement by transferring their assets from their balance sheet to the unregulated sector. Another problem was that there was uncertainty over how well the risk weights<sup>2</sup> that form the basis for the calculations of capital adequacy requirements reflect the banks' actual risks and thus their capital needs<sup>3</sup>. Moreover, there was a blind faith in certain types of capital instruments. This included hybrid capital, a mixture of equity and debt, which turned out to have a much poorer ability to compensate for loss than one had believed.

The financial crisis exposed these deficiencies and provided the trigger for an extensive international reform agenda. In autumn 2010, a new revised framework for bank regulation (Basel III) was presented, which entails tougher capital requirements, both with regard to the level and quality of the capital, as well as stricter regulations for the banks' liquidity management. The Basel III Accord also introduces a new capital adequacy requirement, what is known as a "*Leverage Ratio*".<sup>4</sup> This is similar to the traditional capital adequacy requirement in that it aims to ensure that banks have sufficient capital to be able to sustain losses. The difference is that it is not based on risk weights. Instead, it sets a ceiling for the banks' leverage on the basis of the size of the respective bank's capital and its unweighted assets. As such, it limits the extent to which banks can expand their balance sheets, even for banks which operations are considered relatively risk-free.

### How is the leverage ratio designed?

The leverage ratio is expressed as the ratio between capital and total assets. This means that a bank with little capital and large debts will have difficulty in meeting

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2. Risk-weighting of assets means that the value of each asset is adjusted on the basis of its risk in accordance with current capital adequacy regulations.

3. The problems with the risk weights were not limited to new and complex instruments such as structured products; they also applied to conventional assets such as mortgages and government bonds. In addition, the problems applied to both risk weights based on standard models and credit ratings and those based on more advanced, internal models that the banks can apply if they have approval from Finansinspektionen (the Swedish Financial Supervisory Authority). For a more detailed discussion of the weaknesses in the banks' internal models, see the Riksbank's consultation response on the "risk-weight floor" for Swedish mortgages, which is available on the Riksbank's website, [www.riksbank.se](http://www.riksbank.se) (although only in Swedish).

4. In Basel III the leverage ratio is expressed as a tool for micro supervision, that is, a tool that aims to limit risks in individual institutions. Some countries have discussed the possibility of using a time-varying leverage ratio as a countercyclical macroprudential tool, that is, a tool that aims to reduce the risks to the financial system as a whole and that evens out credit granting across the business cycle. This Commentary focuses on a leverage ratio as expressed in the Basel III Accord, that is, as a static microprudential tool.

the requirement, while a bank with substantial capital and little debt will probably be affected to lesser extent. To meet the requirement, a bank must hold what is known as Tier 1 capital<sup>5</sup> equivalent to at least three per cent of the value of its total assets. Put simply, this means that a bank may not lever its capital more than 33 times.

The idea is that the leverage ratio should be a simple and transparent measure. Therefore, unlike the traditional capital requirement, the leverage ratio regulation is not based on the risk-weighted value of the bank's assets, but on their book value. In addition, there are off-balance sheet commitments, such as credit assurances to companies and households and derivatives. These types of commitments are also included in the risk-weighted capital requirement, although to a lesser extent as the latter takes into account the risk linked to the commitments (see example 1 in the appendix). To ensure the measure is comparable between countries, an adjustment is also made for the differences in accounting standards<sup>6</sup>.

As the leverage ratio disregards the assets' risk profile, banks should not take into account to whom or for what they are lending when they calculate their total assets. Moreover, the requirement limits the use of risk-reducing measures, such as netting of assets and liabilities and of collateral.

According to the Basel III Accord, the regulation shall be introduced as a reporting and publication requirement from January 2015, with an aim to become a binding minimum requirement in January 2018.<sup>7</sup> The details of the regulation are yet to be decided. The Basel Committee only published a consultative document on a proposed design of the leverage ratio on 26 June<sup>8</sup>. To ensure that investors and other market participants understand how the leverage ratio regulations are designed, the Basel Committee proposes that the banks should report not just their leverage ratios, but also a compilation of their total assets.

## A number of countries already use a leverage ratio, but in different forms

Both Canada and the United States have used the leverage ratio since the early 1980s. The design of the requirement differs from the definition in the Basel III Accord, however, with regard to both scope and wording. For instance, the Basel III version puts greater emphasis on the off-balance sheet commitments, particularly in comparison with the US version, which is only based on assets that are recognised on the balance sheet.<sup>9</sup> Another important difference is that the US leverage ratio regulations previously did not include investment banks. It was these banks that suffered major problems during the crisis, and because of aggressive debt funding. Today only two of the five investment banks that were then exempted from the regulations still exist (Goldman Sachs and Morgan Stanley). They have now been transformed into holding companies and therefore come under normal bank regulations.

For some years now, Swiss authorities have also applied leverage ratio requirements to their two major banks, UBS and Credit Suisse. In actual fact, they use two varieties, a temporary requirement that was introduced during the acute phase of the financial crisis and a permanent requirement that was introduced in January this year. The former aims to limit the banks' international exposures and therefore does not cover domestic lending. However, the requirement introduced in January this year does, and it also has a definition similar to the Basel Committee's proposal.

5. Tier 1 capital is a definition of capital that comprises equity capital and retained earnings as well as certain permitted hybrid capital instruments, that is, capital instruments that are a mixture of debt and equity.

6. Banks that report under the European accounting standards, IFRS, generally show a higher leverage than banks reporting in accordance with the US GAAP. The reason for this is that the IFRS takes a stricter view of netting assets and liabilities than the US GAAP. The leverage ratio makes adjustment for this as it disregards the netting allowed for accounting purposes and instead refers to the netting permitted in the capital adequacy regulations.

7. The Basel Committee issues recommendations on minimum requirements that are only binding when they are incorporated into a country's national legislation. As a member of the EU, Sweden has to follow EU regulations and takes part in the decision-making process when new common regulations are drawn up and agreed. The implementation of the Basel III Accord will take the form of a new EU Directive and a new EU Regulation, which are known as the CRD IV and the CRR.

8. The consultative document is available at [www.bis.org](http://www.bis.org) and is open for comments until 20 September 2013.

9. The US accounting regulations have been adjusted since the crisis, however, and now cover some commitments that were previously off-balance sheet and thus not covered by the leverage ratio regulations. The Canadian leverage ratio regulations include some specific off-balance sheet commitment, for instance direct loan substitutes and repo transactions.

## Swedish banks meet the proposed leverage ratio requirement

The major Swedish banks can already manage a leverage ratio requirement of three per cent. However, in an international perspective the Swedish banks are at a relatively low level. The average for the four major Swedish banks is 3.4 per cent, which can be compared with the global average of 3.8 per cent.<sup>10</sup> One important reason why Swedish banks are below the global average is that a large share of their balance sheets is made up of mortgages, which have low risk weights and therefore require little capital in absolute terms in comparison with mortgage lending in many other countries.

As the leverage ratio is to function as a complement to the traditional capital requirement, it is important to understand how the two requirements relate to one another over time, that is, which will be more restrictive.<sup>11</sup> This can be determined by looking at how much capital, in absolute terms, the banks need to hold to meet the various requirements. The result of such a calculation is illustrated in Charts 1 and 2. Perhaps the most important observation in this comparison is that the leverage ratio requirement would have become more restrictive relative to the risk-based capital requirement during the years prior to the crisis, a period when many banks, in Sweden and abroad, were expanding their balance sheets substantially. It otherwise appears as though the leverage ratio would have been more restrictive than a capital adequacy requirement of six per cent during the greater part of the observation period, but that a capital adequacy requirement of ten per cent would have been more restrictive. This outcome is not unexpected. The leverage ratio of three per cent is calibrated according to the capital ratios stated in Basel III, that is, the minimum requirement for Tier 1 capital of six per cent plus a capital conservation buffer<sup>12</sup> of 2.5 per cent, and not according to the higher capital requirements advocated by the Swedish authorities.<sup>13</sup>

## Leverage ratio – a good complement

Most financial supervisory authorities and policymakers are agreed that no individual regulation could have prevented the financial crisis from happening and that several different tools are needed to avoid future crises or at least reduce the risk of them arising.

However, opinion is divided as to whether or not a leverage ratio should be included in such a toolkit. Some say that the leverage ratio punishes banks that generally take small risks and that banks are therefore encouraged to invest in higher risk assets. Others say that the leverage ratio should be given a more important role in the financial regulatory framework and that the risk-sensitive capital requirement and leverage ratio regulation should put on an equal footing. The motivation is that the traditional capital requirement has become too complex and that some calculations have shown that a simple requirement such as the agreed leverage ratio is a better at predictor of bank failure than a risk-sensitive capital requirement.<sup>14</sup>

There is something to be said for both of these arguments. For this reason, the leverage ratio should constitute a complement to the traditional capital requirement rather than a substitute. A regulation that does not take risk into account could lead to socioeconomic inefficiency and lead to increased risk taking. At the same time, incorrectly estimated risks can also contribute to imbalances. The Basel Committee is therefore working intensively on reviewing the more advanced models for measuring risk, as well as the simpler so-called standardised approach. There is thus good reason

10. The leverage ratios for the Swedish banks are based on the Riksbank's own calculations. As these are to some extent based on approximations, they differ somewhat from the figures presented in the Basel Committee's report, "Basel III monitoring", which is available at [www.bis.org](http://www.bis.org).

11. Validating future regulation on the basis of historical data is always surrounded by uncertainty. Although the banks have begun to adapt to the new stricter capital requirements, it is necessary in the time interval used here to take into account the fact that the banks' capital levels are adapted to earlier regulatory requirements. As a result of inadequate data, for instance, on the banks' off-balance sheet commitments, the analysis is partly based on approximations, which makes the base for the analysis somewhat uncertain.

12. The capital conservation buffer is a new element within the Basel regulations. It is designed to ensure that the banks build up a capital buffer during the good times that can be drawn down in bad times. If the banks use the buffer, their capacity to pay dividends, repurchase shares and/or pay bonuses is limited.

13. The higher capital requirements refer to Core Equity Tier 1 capital. It differs from Tier 1 capital which serves as the basis in the leverage ratio and in the calculations made for the purpose of this economic commentary.

14. See Andrew G. Haldane and Vasileios Madouros (2012), "The dog and the frisbee".

to keep the traditional capital requirement at the same time as building safety belts into the system, for instance, in the form of a leverage ratio. It should be added that the leverage ratio is only one of many complements to the traditional capital requirement. Another example is the regulatory framework for measuring and controlling large exposures.<sup>15</sup>

One example of how the leverage ratio requirement can comprise an important complement to the more risk-sensitive capital requirement can be obtained by studying the Swedish banks' balance sheets and their actions to attain the new Common Equity Tier 1 capital requirement of 10 per cent of the risk-weighted assets. The banks have increased their capital levels, both through retained earnings and new issues. But the improved capital ratios are above all a result of having reduced their risk-weighted assets (See Chart 3). They have done this by abandoning high-risk projects in favour of less risky activities. But the banks have also reclassified parts of their loan portfolios so that a larger proportion of the assets are risk classified on the basis of the banks' own internal models, which in most cases generate lower risk weights than the standardised approach. In the latter case, the risk weights have thus decreased even though the actual credit risk associated with the loans has probably not changed. A leverage ratio that disregards risk weights could ensure that the banks do not improve their capital ratios merely by making greater use of advanced risk models, but also by expanding their capital, or by reducing their balance sheets while holding their capital unchanged.

With regard to the question of the complexity of the risk-sensitive capital requirement, the Basel Committee is working intensively to simplify the framework. This is important work, not merely in terms of the traditional capital requirement, but also in terms of the leverage ratio, which has proved to be more complicated than was originally intended. This is because it requires a number of difficult calculations, considerations and assumptions, especially with regards to financial instruments, for which the reported values do not always provide a fair picture of a bank's total exposures. While these adjustments to the value of the instruments are necessary to obtain a correct picture of the banks' leverage positions, it is also important that the Basel Committee, which is now finalising the details of the leverage ratio, does not allow the endeavour to achieve perfection lead it to forego transparency and simplicity. Because neither the more risk-sensitive capital requirement nor the leverage ratio regulations are or will be perfect. However, together they have the potential to provide a more stable framework than the one we currently have.

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15. On 26 March this year the Basel Committee presented a proposal for a new, revised framework that is to ensure that the banks do not expose themselves to excessive credit-related concentration risks. The proposal can be read on the Basel Committee's website and are open for comments until 28 June 2013.

## Appendix with charts and examples

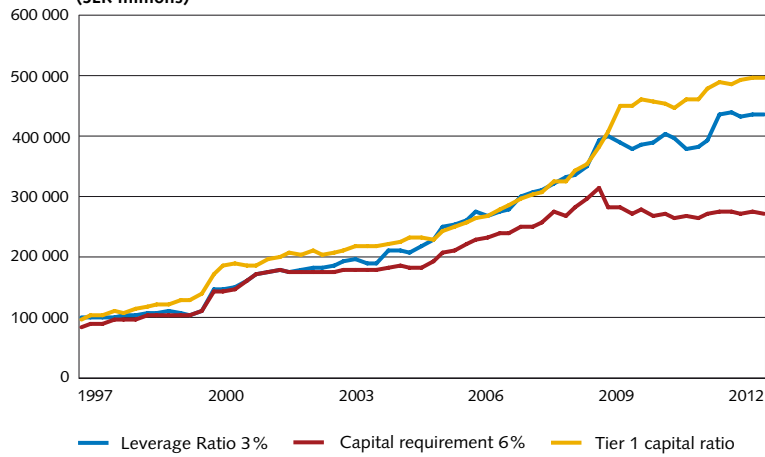
Example 1. Capital requirements for off-balance sheet items under the traditional capital adequacy requirement and the leverage ratio

A	L+E	Assets/commitments	Risk-based capital requirement	Leverage ratio requirement
100	80	On balance	$100 * \text{Risk weight} * 0.08$	$100 * 0.03$
(100)	20	Off balance	$100 * \text{CCF} * \text{Risk weight} * 0.08$	$100 * \text{CCF} * 0.03$

The statutory capital requirement sets a minimum level for how much capital the banks must hold in relation to their risk-weighted assets. These are calculated by multiplying the amount of the exposure for each credit exposure with a risk weight that varies between 0 and 1 250 per cent.

For off-balance sheet items, the Basel regulations give conversion factors (CCF), which state how large a percentage of the measures should be capitalised. In the traditional capital requirement, the conversion factors vary between 0 and 100 per cent. In the leverage ratio requirement, on the other hand, almost all commitments are allocated a conversion factor of 100 per cent, with the exception of the commitments that are unconditionally cancellable at any time without prior notice, which are allocated a conversion factor of 10 per cent. This includes, for instance, credit card limit assurances that the bank has an unconditional right to withdraw.

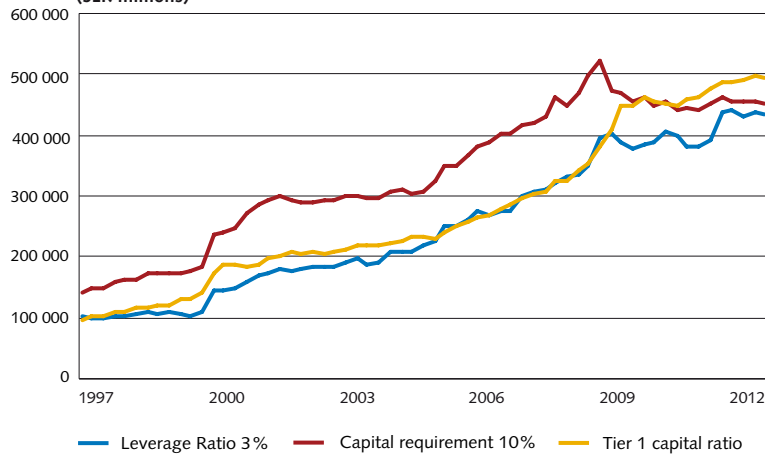
**Chart 1. The banks' regulatory capital in relation to various capital requirements (SEK millions)**



Note. The figure shows the banks' Tier 1 capital level and the amount of Tier 1 capital they must hold to meet the minimum requirement for Tier 1 capital under Basel III (six per cent) and a leverage ratio requirement of three per cent. Please note that the amount of capital required to meet the leverage ratio is based on the Riksbank's own calculations. As these are to some extent based on approximations, the amount is not directly comparable with what is needed to meet a leverage ratio of three per cent as defined in Basel III.

Sources: Bank reports and the Riksbank

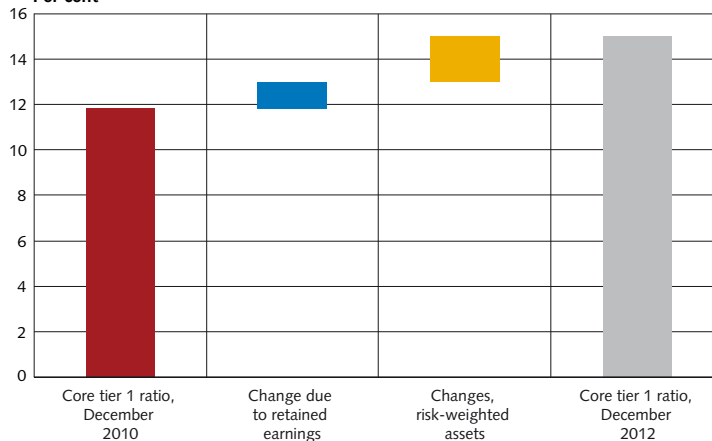
**Chart 2. The banks' regulatory capital in relation to various capital requirements (SEK millions)**



Note. The figure shows the banks' Tier 1 capital level and the amount of Tier 1 capital they must hold to meet the agreed leverage ratio requirement of three per cent and a Tier 1 capital requirement of ten per cent. Please note that the amount of capital required to meet the leverage ratio is based on the Riksbank's own calculations. As these are to some extent based on approximations, the amount is not directly comparable with what is needed to meet a leverage ratio of three per cent as defined in Basel III.

Sources: Bank reports and the Riksbank

**Chart 3. Changes in the Core Tier 1 capital ratios for the major Swedish banks**



Sources: Bank reports and the Riksbank