

How much equity does a central bank need?

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Over the past few decades many central banks have been given a significantly greater degree of autonomy as it is believed that this will aid their conduct of monetary policy. One question that has only been broached to a limited extent is to what extent this independence also relies on the central banks holding equity. The discussions on this subject have often lacked analytical foundation and have either been based on superficial analogies with the risk capital requirements of private companies or on strict principles of accounting methodology. There is therefore a need for an analysis of the principles determining why a central bank might need equity. This article is an attempt to provide such an analysis.

A decision by the Swedish Riksdag (parliament) in 1998 gave Sveriges Riksbank a statutory position of independence in monetary policy. The significance of this decision, which came into force the following year, was further emphasised by the fact that the Riksbank was also given responsibility for implementing foreign exchange policy, as this is an important part of monetary policy. On the other hand, the independent position determined by parliament did not include the Riksbank's financial position. The recent discussions within the Riksdag's Finance Committee regarding the Riksbank's need for equity have indicated that there is political support for the opinion that an independent central bank should be well capitalised. However, there appear to be differences of opinion with regard to the size of this capital.

This article therefore contains a discussion of the two questions of why a central bank needs equity and the size of this equity. The assessment of the size of the equity uses Sveriges Riksbank as an example. We arrive at the conclusion that it is

To what extent does a central bank require equity in order to carry out its tasks independently?

impossible to provide a precise answer. The amount of equity that is needed is, in the final analysis, a question of what safety margins the principal, in Sweden's case the Riksdag, decides to allot to the central bank as a means of guaranteeing its autonomy. This in turn depends on what it would cost the state to build up the central bank's equity.

Why does a central bank need equity?

A central bank needs equity to give it so much financial independence that there is no risk of its autonomy being restricted.

Before we look at the question of why a central bank needs equity, a number of matters of principle need clarifying. Unlike a private sector bank or company, a central bank can always, in some sense, pay upon demand.

This makes bankruptcy in the accepted sense a meaningless concept in the context of a central bank. A central bank can always pay its day-to-day expenses or repay its debts by issuing banknotes, since these have the status of legal tender. As long as the total demand among the public for banknotes has not changed, however, these newly printed banknotes will be quickly exchanged at the central bank. This means that the bank has to finance itself by issuing accelerating¹ interest-bearing debt. If this is perceived as an institutional weakness, the general public's confidence might be undermined. To avoid borrowing, the central bank could instead increase the general public's demand for banknotes by lowering the interest rate. In the long run, this will result in rising inflation, which in turn will increase the demand for banknotes. Lowering the prime rate as a means of stimulating the interest in holding banknotes is, of course, not compatible with the role of a modern central bank in the field of monetary policy. Without these opportunities the state would, in a situation where the central bank had financial problems, need to inject more capital, which could undermine the ability of the central bank to conduct its monetary policy. That is because one cannot rule out the possibility that the capital injection would come with special conditions attached constraining the central bank's activities. Nor is it possible to exclude the possibility that the bank's financial weakness, even if it is a direct consequence of its central bank mandate, could be exploited by the principal with the object of replacing an awkward bank management by not discharging it from liability.² The con-

¹ By accelerating is meant that the issue of debt certificates leads to higher interest costs, which, other things being equal, increases the borrowing requirement and thus pushes up interest costs even further, and so on.

² In the event of the central bank's financial difficulties being a consequence solely of mismanagement, the principal would naturally have to consider replacing the management.



clusion therefore is that a central bank needs enough equity to give it such a large degree of financial independence so that there is no risk of its autonomy being restricted on account of problems in financing its activities.

Why, then, does a central bank need to have equity? In broad outline, a central bank could need equity firstly to secure the long-term financing of its operating costs, which normally consist of wages and salaries, the cost of premises and the cost of printing bank-

notes and minting coins; secondly, it has to be able to cover losses that may be incurred as a consequence of its mandate as a central bank. The risk of any individual central bank incurring a loss is thus associated with the specific mandate that bank has been given. However, the mandate of most central banks is in one way or another to conduct monetary and foreign exchange policy and to maintain a secure and stable payment system. This means that losses can be incurred on the day-to-day management of the currency reserves and as a consequence of the bank granting emergency credits.

Losses can be incurred on the day-to-day management of the foreign reserves if market interest rates rise or the country's currency has strengthened by the time the securities that make up the foreign reserves are realised. If the securities are held until maturity the interest rate risk will disappear, whilst the currency risk will remain. But in the event of the securities being realised before maturity, which could, for example, be the case in connection with interventions on the foreign exchange market or if the portfolio has to maintain a given duration, both of these risks could materialise, as a result of which the central bank will incur losses. Over and above these risks, there may also be a credit risk. However, it is probably quite limited as a central bank's financial assets normally consist of securities with very low credit risk. This is also true for the collateral taken for the lending connected to monetary policy.

However, to prevent a financial crisis from leading to the collapse of a country's financial system central banks normally have the right to grant credits, in domestic or foreign currencies, to banks against poorer collateral than would normally be required. This is known as emergency liquidity

Firstly, the bank's day-to-day operating costs have to be covered.

Secondly, a buffer in the form of equity is needed to cover any losses that might be incurred.

Losses incurred by a central bank on its day-to-day activities can be due to interest risk, currency risk or credit risk.

If there are particularly pressing reasons a central bank is entitled to grant emergency credits, on which it could incur losses.

assistance.³ In Sweden, such credits may only be provided with the object of improving liquidity. This has been interpreted to mean that emergency credits can only be granted to solvent institutions, whereas responsibility for dealing with insolvent institutions rests on the government. In a financial crisis, however, it may be difficult to decide which institutions are solvent and which are not. Since, in such circumstances, loans have to be granted at very short notice one cannot exclude the possibility that in exceptional circumstances credits will have to be provided without adequate collateral. The risk that such commitments could involve the central bank in losses depends primarily on the possibility that the bank or company that has received an emergency credit will go bankrupt and that the value of the collateral that has been accepted falls short of the amount of the credit.

Assessment of the amount of equity

On the basis of the principles outlined above regarding why a central bank needs to have some equity, it would naturally be interesting to make an assessment of how much equity it might need. In this section we have endeavoured to make such a calculation, basing it specifically on the Riksbank's needs. However, we would like to emphasise that this exercise should primarily be seen as an illustrative example, firstly since there is so much uncertainty associated with the individual estimates and secondly since opinions differ regarding exactly what safety margins should apply to cover operating costs as well as potential losses. In order to properly understand the following discussion we need first of all to provide a brief description of the Riksbank's balance sheet.

Riksbank's balance sheet

**Total equity – balancing account,
capital and result for the year –
amounted to 117 billion kronor
at December 31, 2001.**

The active side of the Riksbank's balance sheet consists of the gold and foreign reserves, monetary policy repos, lending facilities, fine-tuning operations, and other assets. The equity is on the passive side, which shows how the Riksbank's assets have been financed. The aggregate equity, which consists of the balancing account, capital and result for the year, amounted to 117 billion kronor

³ In Sweden's case this applies only to banking institutions and companies subject to supervision by Finansinspektionen (The Swedish Financial Supervisory Authority), (Chapter 6, §8 of the Act concerning Sveriges Riksbank (1988:1385)).

at 31 December, 2001. Otherwise the passive side consists of notes and coins in circulation, borrowing facilities and other liabilities.

Table 1. Sveriges Riksbank: balance sheet at 31 December, 2001

Million kronor

Assets		Liabilities	
Gold and foreign reserve	165,134	Banknotes and coins	107,111
Monetary policy repos	65,118	Deposit facility	48
Lending facility	29	Other liabilities	11,805
Fine-tuning operations	3,988	Balancing account	26,401
Other assets	1,263	Capital	70,890
		Result for the year	19,277
	<hr/> 235,532		<hr/> 235,532

In a discussion of a central bank's equity only the gold and foreign reserves and the volume of outstanding notes and coins are relevant. All the other items can in fact be described either as residuals (monetary policy repos⁴, borrowing and lending facilities and fine-tuning operations), where the Riksbank's mandate does not require any given volume, or items that have no direct significance for its core activities (other assets⁵ and liabilities). Since our discussion is concerned in principle with what approach should be adopted to the question of equity we will take the level of the foreign reserves as given.

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The Riksbank's capital requirement

As can be seen from the Riksbank's balance sheet, the bank has a large volume of notes and coins in circulation, which represent, in a formal sense, a liability. However, it is a very special kind of liability as it carries no interest and does not have any predetermined duration. On the other hand it generates a great deal of ope-

⁴ Monetary policy repos are a residual in the sense that if the asset side is less than the liability side the Riksbank needs to satisfy the commercial banks' borrowing requirement at the Riksbank by issuing monetary policy repos. This means that the stock of repos will fall automatically if the volume of notes in circulation declines, given that the currency reserves remain unchanged. In a situation where the banks need to place funds on deposit at the Riksbank this is handled by issuing certificates. The steering of interest rates (and signals regarding the stance of monetary policy) can be arranged equally well regardless of whether the Riksbank uses monetary policy repos or issues certificates. See Mitland & Vesterlund (2001).

⁵ Other assets include tangible fixed assets (real estate, machinery and equipment), financial fixed assets (equities and shares in AB Tumba Bruk, Pengar i Sverige AB, Swift, BIS and the European Central Bank), derivative instruments (market values stated net of the Riksbank's forward positions) prepaid costs and accrued income and staff loans to employees of the Riksbank and Pengar i Sverige AB.

We have assumed that the Riksbank is capitalised with the security margins that are required to cover a decline in or the total disappearance of seigniorage.

complete guarantee that this seigniorage income will continue. New means of payment are being developed very quickly and even though banknotes have so far maintained their position to a surprising extent, an abrupt reduction on the part of the public cannot be excluded in the future. In our example, therefore, we have assumed that the Riksbank has been capitalised with the security margins that are required to handle a radical reduction in, or even the total disappearance of seigniorage.

With a nominal interest rate of 5 per cent a base capital of 10 billion kronor would meet this need.

Based on this security margin we can calculate the Riksbank's equity capital requirement in the following way. The Riksbank's operating costs in 2001 amounted to approximately 0.8 billion kronor. At present this amount is more than covered by the seigniorage that is generated by the outstanding banknotes and coins. Were seigniorage to disappear, a large proportion of the cost of producing and handling banknotes and coins would also be eliminated. Based on the level of operating costs for 2001 current operating income of just over 0.5 billion kronor would be required to cover the operating costs. With a nominal interest rate of 5 per cent, which is a reasonable assumption based on historical experience, capital of 10 billion kronor would be adequate to ensure that the Riksbank could carry on its business in a situation where the public had ceased to use banknotes and coins. One could alternatively suppose that the capital might instead be built up gradually as the seigniorage declines. However, there is a risk that the principal would impose special conditions if capital were to be built up successively in this way, which is one argument for seeing that the capital needed to cover operating costs is already in the balance sheet.

It is difficult to estimate how much buffer capital is needed to cover losses on day-to-day operations.

rating income for the Riksbank in the form of seigniorage.⁶ As long as the public is willing to hold the same amount of cash as it is today, the Riksbank has a source of finance that can play the same role as equity. The problem, however, is that there is no complete

guarantee that this seigniorage income will continue. New means of payment are being developed very quickly and even though banknotes have so far maintained their position to a surprising extent, an abrupt reduction on the part of the public cannot be excluded in the future. In our example, therefore, we have assumed that the Riksbank has been capitalised with the security margins that are required to handle a radical reduction in, or even the total disappearance of seigniorage.

Based on this security margin we can calculate the Riksbank's equity capital requirement in the following way. The Riksbank's operating costs in 2001 amounted to approximately 0.8 billion kronor. At present this amount is more than covered by the seigniorage that is generated by the outstanding banknotes and coins. Were seigniorage to disappear, a large proportion of the cost of producing and handling banknotes and coins would also be eliminated. Based on the level of operating costs for 2001 current operating income of just over 0.5 billion kronor would be required to cover the operating costs. With a nominal interest rate of 5 per cent, which is a reasonable assumption based on historical experience, capital of 10 billion kronor would be adequate to ensure that the Riksbank could carry on its business in a situation where the public had ceased to use banknotes and coins. One could alternatively suppose that the capital might instead be built up gradually as the seigniorage declines. However, there is a risk that the principal would impose special conditions if capital were to be built up successively in this way, which is one argument for seeing that the capital needed to cover operating costs is already in the balance sheet.

⁶ The Riksbank's seigniorage (monetary income) is generated by the interest income the Riksbank earns by holding financial assets that are financed by interest-free banknotes and coins.



er potential losses on its day-to-day operations we need to know firstly what changes in the value of the krona and market interest rates can be expected, we need to have a view about how often interventions on the foreign exchange markets are likely to be made in the future and how often it will be necessary to sell securities to maintain the duration of the Riksbank's foreign reserves. Under the present floating exchange rate regime, the risk of losses on day-to-day operations would normally be modest, but with a fixed exchange rate regime there is a higher probability of currency intervention and thus a greater risk of loss. This could happen if the Riksdag were to decide that Sweden should join the third phase of the EMU. Losses would then be incurred if the Riksbank's intervened to strengthen the krona, as the securities in the foreign reserves might then have to be realised at a time when market rates had risen. On the other hand, the risk of loss as a consequence of changes in exchange rates is probably very small, as intervention to strengthen the krona would in normal circumstances probably mean that the Riksbank would sell foreign reserve assets in a situation where the krona was weaker than it was when these assets were acquired.

When it comes to what losses might arise as a result of granting emergency credits, the level of uncertainty is, if possible, even greater. Such an assessment has to be based on estimates of several unpredictable sets of circumstances, among them the sequence of events and scope of financial disturbances or crises in the future. For example, will one or more institutions be hit by problems? In addition to this, the final loss will depend on whether the collateral that has been accepted to cover these credits is adequate or not. Moreover, we need to know how any losses will be shared between the Riksbank and the government.

If, despite all of this uncertainty, one had to indicate what amount of buffer capital might be needed to handle future losses as a result of granting emergency credits, we could base our estimate on our experiences from the Swedish banking crisis at the beginning of the 1990s. The support paid to the banking sector at the time amounted to some 65 billion kronor. However, it has been estimated that the final cost of the banking crisis amounted to 35 billion kronor.⁷ It should not be assumed, however, that the course of events in the future

Estimating the losses that could be incurred as a result of granting emergency credits is an even more uncertain process.

An amount in the region of 25 to 45 billion kronor would in our view be adequate to cover losses resulting from emergency liquidity assistance.

⁷ See Jennergren & Näslund (1997).

will be the same as it was during the early years of the 1990s. For example, growing internationalisation has strengthened the links between different countries' financial systems, and thus created additional risks. In this context, the banking sector's short-term currency borrowing could play an important role, and, in the event of a crisis, could involve the Riksbank in losses. At the same time the banks are now more capable of assessing and protecting themselves against the various risks that might arise. This makes it impossible to say that the losses that could be caused by a banking crisis in the future would be more or, for that matter, less than those that arose in connection with the Swedish banking crisis at the beginning of the 1990s. On account of this uncertainty, and the uncertainty regarding losses on other day-to-day operations, we would suggest that the capital buffer that could be needed would be in an interval centred on the 35 billion kronor that the last banking crisis cost the state. If this argument can be accepted, capital in the region of 25 to 45 billion kronor would be adequate.

According to these principles, the Riksbank's financial autonomy would be secured with capital of 35 to 55 billion kronor.

In order to ensure the financial autonomy of the Riksbank in the long term, therefore, the bank would in present circumstances, and according to our example, need equity between 35 and 55 billion kronor.

Factors relating to accounting methodology

A discussion of how much equity a central bank needs must also take into account the question of how unrealised profits and losses are to be handled and whether these should be allowed to influence the bank's stated equity. Should unrealised profits on the Riksbank's asset management activities be added to the equity and thus become available for dividend, if the equity is already regarded as high enough? Or should it be possible for unrealised losses to be netted off against equity?⁸ The answer to both these questions is in the negative, and we will explain why this is so in the following section.

According to generally accepted accounting practice unrealised profits should not be paid out as dividend.

The Riksbank regularly values its assets in the form of gold and foreign reserves at market values and states these values in kronor. The value of assets that are not realised is also affected. According to generally accept-

⁸ According to the Sveriges Riksbank Act (Chapter 10, §1) the bank shall have an equity capital of at least 1.5 billion kronor divided into capital and a balancing account. Over and above this the Riksbank should also have a contingency reserve. The law stipulates no specific amount for this reserve.



ed accounting practice, unrealised profits should not be paid out as dividend. The reason for this is that it is not possible to determine in advance whether such profits will continue until the assets need to be realised. In order to avoid misunderstanding about what lies behind changes in various balance sheet items it would be desirable if unrealised profits could be reserved on special entries in the balance sheet. For the sake of clarity these reservations could be distinguished from each other on the basis of what caused the unrealised profits, which could be changes in exchange rates, market interest rates or the price of gold. The variations in the level of these liability items that will occur with time, would be reflected by corresponding variations on the asset side, that is to say, in the value of the gold and foreign reserves. This would make it clear that it is only a matter of reservations made in order to handle changes in value due solely to accounting practice.

The most visible of these transfers is the reserve for changes in the value of the foreign reserves that take place when the krona depreciates or appreciates. It is, for the sake of comprehensibility, important to emphasise that it is the number of units in foreign assets, and not the value of these assets in kronor at

It is the number of units of foreign assets not the corresponding value in kronor at any given time that is critical if the foreign reserves are to serve the purpose for which they were created.

any given time, that is the key to whether the foreign reserves are capable of serving the purposes for which they were created, which is to say that the Riksbank should, when necessary, be able to give emergency liquidity assistance in foreign currency and intervene on the foreign exchange market. As at 31 December, 2001, approximately 38 billion kronor had been reserved in the Riksbank's accounts as a consequence of the depreciation of the krona since the fixed exchange rate was abandoned in 1992.

It is fairly obvious that these funds cannot be regarded as an addition to the Riksbank's equity. The fact that the value of the foreign reserves is stated in kronor is due to the fact that other items in the Riksbank's balance sheet are also stated in kronor. If the value of the krona depreciates, this would mean that the value of the foreign reserves, expressed in kronor, will increase, and vice versa.

When the foreign reserves and the Riksbank's kronor-denominated assets are valued at market values unrealised profits also arise owing to the effect on the result of falling market interest. As with currency effects, such bookkeeping profits should not be paid out as dividend. One reason for this

As with currency effects, unrealised bookkeeping profits caused by falling market rates of interest should not be available for distribution.

is that profits and losses will by definition match each other if fixed-income securities are retained until maturity. The reservations made in the Riksbank's balance sheet up until 31 December, 2001 for unrealised profits on changes in long-term interest rates amounted to 0.5 billion kronor.

The Riksbank also has a gold reserve. Changes in the price of this should be treated in the same way as changes in the value of the foreign reserves, which is to say that profits should only be distributed in so far as they have been realised. The reservations made as a consequence of an increase in the price of gold amounted as at 31 December, 2001 to just over 16 billion kronor.

To the extent that unrealised losses are incurred these should naturally be netted off against any unrealised profits that have arisen earlier. Should these profit reservations not be sufficient it would be reasonable for the bookkeeping losses to be netted off against a special item on the balance sheet, which could from time to time be negative, on the passive side of the balance sheet. The same principle should also apply to realised losses except that losses over and above any unrealised profits should not be netted off against the above mentioned item. When there are no accumulated profits remaining to net such losses off against, the Riksbank would in fact be in the very situation in which the buffer capital of 25 to 45 billion kronor, which should be set up to handle real losses, should be used.

This would mean that total provisions of 90 to 110 billion kronor would be needed.

As outlined in our argument above as to why the central bank needs equity, 10 billion kronor would be needed to finance the Riksbank's operating costs, and 25 to 45 billion

kronor would be needed to cover potential losses on the Riksbank's activities. Since, at 31 December, 2001, the Riksbank had unrealised profits of some 55 billion kronor, total reserves of 90 to 110 billion kronor would be needed.

What drawbacks are associated with having too much equity?

If there were no drawbacks, there would be no problem in letting the Riksbank have an equity that covers the needs discussed above by a wide margin.

The point of the above discussion was to show that the equity should not be allowed to become too small. If the Riksbank were undercapitalised its ability to carry out its mandate independently could be challenged. As the exact level of equity, excluding provisions

for unrealised profits, is, in the final analysis, a matter of judgement it is, however,

reasonable to ask what drawbacks would be associated with too high a level of equity. If one reaches the conclusion that there are no drawbacks, in that case there would be no problem in allowing the Riksbank to have an equity that meets the needs discussed above by a wide margin.

One drawback associated with having too much equity arises if the return earned on this capital is not higher than the interest the state pays on the corresponding amount in the form of loans, naturally assuming that the country has a national debt. In such a situation it could be worthwhile for the state sector as a whole if the extra capital could be used to reduce the national debt. If, on the other hand, the central bank can invest its assets in such a way that the return they earn at least matches the cost to the state of its borrowing this would not be a problem.

What is the situation in this regard at the Riksbank? As far as the return on its assets is concerned, it should be emphasised that by far the greater part of the Riksbank's assets is invested in the foreign reserves, in other words, in foreign securities with long durations. Even though the size and types of asset in the foreign reserves must primarily be determined by their role in the execution of foreign exchange policy, the question of cost should cause few problems as the assets in the foreign reserves have a longer duration than the central government debt. As the yield curve against time normally has a positive slope, the assets invested in the foreign reserves should therefore not represent a cost when it comes to public finances. The answer is not equally obvious in the case of the outstanding stock of monetary policy repos whose durations are short in comparison with the corresponding government borrowing. As was mentioned above, the yield curve normally slopes upward, retaining the repo stock could involve the state in unnecessary costs. By investing in securities with longer durations, however, this cost could probably be reduced. As there are no monetary or foreign exchange policy grounds for maintaining the repo stock at any given level⁹, this would be possible.

There are several different means of lengthening the duration of the assets that are at present held in the form of monetary policy repos. However, the

A change in the structure of the assets portfolio must not be allowed to impair the Riksbank's ability to carry out its mandate.

⁹ The purpose of monetary policy repos is to satisfy the banking systems need to borrow from the Riksbank. If instead the banking system has a placement requirement vis-à-vis the Riksbank this is satisfied by issuing certificates. The Riksbank's ability to control interest rates is, however, the same, regardless of whether liquidity is injected into or withdrawn from the banking system. There is, however, a risk that administration could become more difficult if the Riksbank were to issue certificates one week and inject liquidity in the form of repos the next, but this cannot be seen as a particularly telling argument for retaining the repo stock at its present level.



options are limited by the condition that any change in the structure of the assets must not have an adverse effect on the Riksbank's ability to execute its monetary and foreign exchange policy and to ensure the country has a reliable and efficient payment system.

A reduction in the monetary policy repo stock can have consequences for the execution of monetary and foreign exchange policy.

It is not likely that responsibility for the payment system would be influenced by a reduction in the volume of the repo stock. On the other hand, such a reduction could have consequences for the execution of monetary and foreign exchange policy. A direct transfer from monetary policy repos with durations of one week to domestic securities with longer durations would in fact mean a portfolio change vis-à-vis market players and could, therefore, be regarded in practice as identical to an intervention by the Riksbank on the fixed-income securities market.¹⁰ Similar problems arise if durations are lengthened by direct purchases of foreign securities. In this case the change could be perceived as an intervention on the foreign exchange market, and thus as a signal regarding the future direction of monetary policy.¹¹ However, such effects can be avoided either by reducing the repo stocks successively in accordance with a given timetable or by neutralising the effects on markets using the means provided by the markets in derivative instruments.

Conclusion

In our discussion we have examined whether having equity is of importance for a central bank's ability to carry out its mandate as an autonomous player. We have drawn attention to certain risks that the under-capitalisation of a central bank could involve. These risks consist partly of the conditions that could be imposed on the central bank in the event of an injection of capital by the state turning out to be necessary and partly of the risk that public confidence could be undermined if the central bank were not perceived to be adequately consolidated for the performance of its mandate.

In order to avoid ending up in a situation that could require an injection of new capital, a central bank, according to the principles discussed in this article, needs to have adequate financial resources to enable it to cover both current

¹⁰ Since in present circumstances the Riksbank only accepts securities as collateral for its loans in the form of repos, such a change in the portfolio would, however, have a relatively limited effect on the yield curve.

¹¹ Corresponding restrictions also apply to the future management of the assets that are the result of the reduction in the repo stock.



operating costs as well as potential losses arising from the carrying out of its mandate. Losses could be incurred partly as a result of its administration of the foreign reserves and partly in connection with emergency liquidity assistance in order to help financial institutions weather a crisis that threatened the payment system. Based on these principles, we have presented a numerical example using the Riksbank as a model. This shows that the Riksbank could probably manage with equity of between 35 and 55 billion kronor, provided that the unrealised profits that arise from time to time as a result of the accounting practice adhered to by the bank are not paid out as dividend.

It should be emphasised that the estimate of how much capital the Riksbank might need involves considerable uncertainty, and this is also reflected in the relatively broad interval in our estimate. Depending on what assumptions are made regarding the risk of loss and the future pattern of banknote usage, it is a relatively easy matter to arrive at a higher or lower figure.

If one regards the autonomy of a central bank as important for the economy at large and wishes to safeguard its credibility, one should endeavour to give the bank a generous amount of equity. Adhering to this principle is made easier by the fact that the capital held in the central bank need not involve any additional cost to public finances in the sense that the return on assets held in the central bank are lower than the cost to the government of its borrowing to finance these assets.

This means that there is no reason on grounds of cost to encroach on the central bank's ability to perform its mandate by allotting it an inadequate equity.



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