Short-term funding in foreign currency by major Swedish banks and their use of the short-term currency swap market

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The major Swedish banks' short-term wholesale funding is conducted almost exclusively in foreign currency. Instead of issuing short-term securities directly in Swedish krona (SEK), the banks have opted to convert part of their foreign funding to SEK on the currency swap market so as to finance SEK-denominated assets. Thus in this article, we study why the banks have acted in this manner. We study the banks' counterparties in short-term currency swaps and the motives of these players for using currency swaps. We also describe the resulting risks for the banks and their counterparties from the use of short-term currency swaps.[1]

In the article, we conclude that one of the reasons that the major banks[2] choose to issue foreign currency and convert it to SEK on the currency swap market is that their clients demand foreign currency to finance and currency hedge foreign assets. Because the banks exchange foreign currency for SEK with their clients via currency swaps, the clients gain access to their requisite foreign funding while the banks gain access to funding in SEK. For a protracted period, it has also been less costly for the banks to fund their short-term SEK requirements in this manner rather than issue SEK directly on the capital market.

By studying how foreign assets and liabilities are distributed among various players in the Swedish economy, we identify the players who may need to currency hedge foreign assets using currency swaps. Proceeding on this basis, we can conclude that financial institutions, primarily life insurance and pension companies, are the types of players with the greatest need for currency hedging.

We also state that these companies expose themselves to a refinancing risk because they use short-maturity swaps although they invest in long-term assets. These risks could be reduced through improved maturity matching between swaps and foreign assets. Such a change could also result in life insurance and pension companies being able to act more

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1 This article represents part of a survey of the Swedish currency swap market that commenced in 2011. The previous part focused primarily on how Swedish banks use long-term currency swaps to convert long-term funding in foreign currency to Swedish krona. Refer to Eklund, Milton and Rydén (2012).

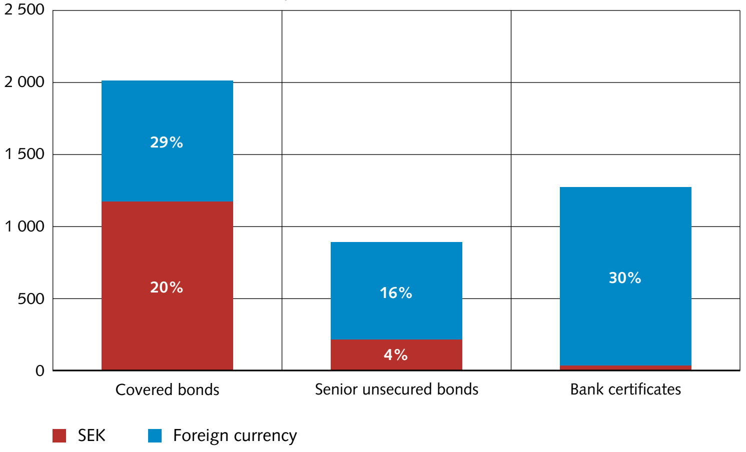
2 The major banks refer to Handelsbanken, Nordea, SEB and Swedbank.

prominently as counterparties to the major banks in the long-term currency swaps that the latter use to fund Swedish mortgage loans through covered bonds in foreign currency. The banks would then have less need to turn to foreign banks to conclude long-term currency swaps; and this could also partly diminish the need for short-term foreign funding in the Swedish economy.

The major Swedish banks funding in foreign currency

The major Swedish banks fund their assets partly through deposits and partly by issuing bonds and bank certificates on the financial markets. Of the total funding of the four major Swedish banks, wholesale funding accounts for approximately half, of which some 75 per cent consists of funding in currencies other than SEK (see Figure 1).

Figure 1. Wholesale funding by the major Swedish banks
December 2012, SEK billion, percentage of total wholesale funding



Sources: Bank reports and the Riksbank

The foreign currency-based wholesale funding of the major banks may be distributed among three categories (see also Figure 2). Firstly, the banks use foreign currency funding to fund part of their illiquid assets in foreign currency. These assets consist primarily of the lending conducted as part of the banks' foreign operations in, for example, the other Nordic countries. In addition, major Swedish enterprises often raise loans in foreign currency. This involves, inter alia, certain types of companies active in industries that have traditionally been closely linked to the US dollar (USD), such as shipping. Secondly, wholesale funding in foreign currency is used to fund liquid assets in foreign currency such as deposits in central banks and investments in foreign government bond holdings. These assets constitute a liquidity buffer that is included, inter alia, in the calculation of the liquidity measure, LCR.[3] Finally, wholesale funding in foreign currency is also used to fund assets in SEK (see the blue rectangle in Figure 2). The Riksbank estimates that about 25 per cent of the major banks' foreign funding is used to fund Swedish assets. The banks use currency swaps to convert this funding to SEK, thus entailing that they conclude an agreement with a counterparty to exchange foreign currency for SEK over a predetermined period.[4]

Figure 2. Bank utilisation of wholesale funding in foreign currency

Source: The Riksbank

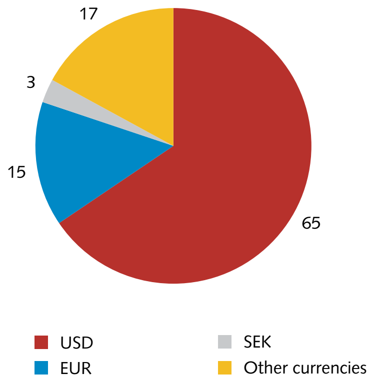
THE MAJOR BANKS' SHORT-TERM FUNDING IN FOREIGN CURRENCY

Bank certificates with a maturity of less than one year account for most of the short-term portion of the major banks' wholesale funding. Because the SEK-denominated certificate market is small, by far the largest share of Swedish banks' certificates outstanding is denominated in USD. Moreover, the major banks also issue certificates denominated in EUR and other currencies, including British pounds. At year-end 2012, certificates outstanding amounted to a value of SEK 1,300 billion, of which some 65 per cent was denominated in USD and 15 per cent in euro (EUR) (see Figure 3).

3 Liquidity Coverage Ratio (LCR) is a short-term liquidity measure defined by the Basel Committee entailing that banks must hold a sufficient liquidity buffer to cover outflows of liquidity throughout a predetermined stress period of 30 days.

4 For a more detailed explanation of how currency swaps function, see Appendix 1.

Figure 3. Bank certificates outstanding among the major Swedish banks, broken down by currency
December 2012, per cent



Note. The item "Other currencies" refers primarily to British pounds and Nordic currencies.

Sources: Bank reports and the Riksbank

It is no coincidence that the largest proportion of certificates outstanding of the major banks is denominated in USD; the US market for certificates emerged as early as the 1970s and has subsequently become the dominant market for these types of securities. US Money market funds are, inter alia, significant short-term funding counterparties for many banks. These funds manage substantial volumes deriving both from households and businesses and are essentially designed to function as conventional savings accounts. Consequently, they invest in interest-bearing assets in which the inherent risks are deemed as low, such as government securities and certificates issued by banks with a solid credit rating. Official regulations govern the funds' potential to assume interest rate, credit and liquidity risks.[5]

Accordingly, the money market funds accept only minor risks and consequently they can change their investment decisions promptly and exit from any market in which problems or uncertainty emerges. This occurred, inter alia, during the global financial crisis of 2008–2009 when US money market funds reduced their exposure to Europe, including Sweden, due to dwindling confidence in European banks. In pace with growing confidence in Swedish banks, the exposure of US money market funds to them regained impetus. At year-end 2012, the US money market funds' holdings of Swedish bank certificates corresponded to SEK 560 billion,[6] or to almost 70 per cent of the USD-denominated value of the major banks' certificates outstanding.

5 US money market funds are regulated by the Investment Company Act.
6 In certain cases, the money market funds elect to invest their resources as deposits with banks instead of purchasing certificates. Such deposits are included in the above total. Volumes and percentages according to Crane Data, Investment Company Institute and Fitch Ratings.

THE MAJOR SWEDISH BANKS HAVE A FUNDING SURPLUS IN FOREIGN CURRENCY

Since the major Swedish banks use part of their foreign wholesale funding to fund assets in SEK, it could be said that they have a funding surplus in foreign currency. Alternatively, this may be viewed as a funding deficit in SEK that is instead covered by means of foreign-currency funding. At the close of 2012, the four major Swedish banks had a total of some SEK 5,000 million in SEK-denominated assets, of which approximately SEK 600 billion was funded by the banks first issuing foreign currency on the capital markets and subsequently exchanging this for SEK on the currency swap market (see Table 1).

Table 1. Total assets in SEK and foreign currency of the major Swedish banks
December 2012, SEK billion

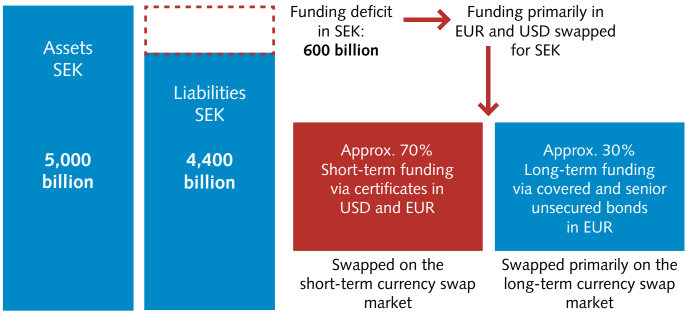
	SEK	FOREIGN CURRENCY
Assets	5 000	7 500
Liabilities	4 400	8 100
Funding surplus/-deficit	-600	600

Sources: Bank reports and the Riksbank

The Swedish banks issue foreign currency on the capital markets, both through long-term maturities by issuing bonds and through short-term maturities by issuing bank certificates (see Figure 1). Both long-term and short-term funding is used to a certain extent to fund SEK-denominated assets. The Riksbank estimates that some 30 per cent of the banks' funding surplus in foreign currency is made up of foreign currency bonds that are subsequently converted to SEK on the currency swap market (see Figure 4). In most cases, this involves covered bonds, notably in EUR, that the banks issue in order to fund Swedish mortgage loans. Currency swaps directly related to these operations frequently have long maturities.[7] The remaining 70 per cent of the funding surplus consists of short-term funding, denominated primarily in USD and EUR. This is subsequently swapped for SEK on the short-term currency swap market for use in the funding of Swedish assets. These assets could comprise, inter alia, corporate lending with short-term maturities and holdings of securities such as covered bonds. This article concentrates primarily on the short-term funding in foreign currency, which is converted to SEK using currency swaps (see the red area in Figure 4).

7 Read more about the long-term funding in foreign currency that is swapped for SEK in Eklund et al. (2012). A brief summary of this article is also enclosed in Appendix 2.

Figure 4. Aggregate use by major Swedish banks of currency swaps to fund assets in SEK



Note. The funding deficit in SEK matches the funding surplus in foreign currency.

Sources: Bank reports and the Riksbank

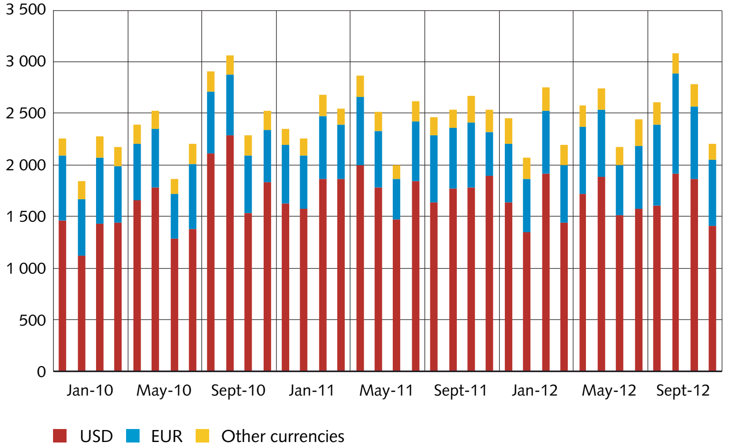
Breakdown of maturities, currencies and counterparties among short-term currency swaps undertaken by the major Swedish banks

Within the framework of this article, we have analysed data and conducted interviews in an effort to gain a deeper understanding of the configuration and functioning of the short-term currency swap market in Sweden. Interviews were made with the major Swedish banks and a number of non-financial enterprises and pension companies viewed as significant players on the Swedish currency swap market. The underlying data is based on information from the Riksbank's statistics on turnover (SELMA), as well as a compilation of data regarding the major Swedish banks' largest exposures and their most significant counterparties in currency swaps.

We noted earlier that the major Swedish banks use the currency swap market to convert foreign currency to SEK with an overall value of some SEK 600 billion. Of this amount, approximately 70 per cent is estimated to be funding converted to SEK using short-term currency swaps.[8] The statistics confirm that turnover on the Swedish market for short-term currency swaps is extensive. During the period 2010 to 2012, the monthly turnover of short-term currency swaps for the four major Swedish banks averaged more than SEK 2,500 billion (see Figure 5). This is considerable in relation to their funding deficit of SEK 600 billion and may be due to the fact that a significant share of the contracts has very short maturities. Approximately 50 per cent of the swap turnover among the major Swedish banks relates to overnight (o/n) or tomorrow next (t/n) maturities. The commonest maturity in this category is tomorrow next, entailing that a swap transaction commences one banking day after the parties conclude the swap agreement and is settled on the next banking day. As a result of the short maturities, such contracts are refinanced frequently, which in turn gives rise to a high monthly turnover.

8 Here, short-term currency swaps refer to swaps with a maximum maturity of one year. Short-term currency swaps are frequently referred to as *FX-swaps*.

Figure 5. Monthly turnover of Swedish short-term currency swaps for the major Swedish banks
SEK billion



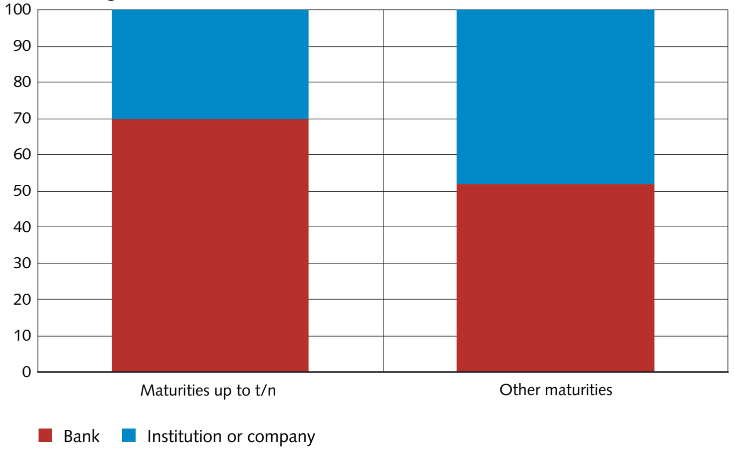
Note. The information in the diagram has been obtained from turnover statistics for Swedish currency swaps as reported to the Riksbank (SELMA). The underlying data has been limited to encompass swaps reported by Handelsbanken, Nordea, SEB and Swedbank. Thus, the diagram shows the total amount of swaps concluded by the major Swedish banks in which SEK has been bought or sold in exchange for other currencies. Figure 6 and Tables 2 and 3 are based on the same underlying data.

Source: The Riksbank (SELMA statistics)

When the major Swedish banks conclude currency swaps with overnight or tomorrow next maturities, other banks are the commonest counterparties (see Figure 6). One reason for this is that the banks use the shortest swaps to match their daily incoming and outgoing payments, that is, to manage cash flows. Short-term currency swaps with slightly longer maturities are frequently concluded with other types of counterparties. One explanation for this may be that these swaps relate in many cases to the bank clients' needs to borrow[9] foreign currency so as to currency hedge their foreign assets or cash flows and that this is usually done using slightly longer maturities.

9 The term "to borrow" a currency refers throughout the article to the receipt of a currency (spot) in a swap while simultaneously conveying another currency (selling a futures contract) during the course of the transaction's maturity.

Figure 6. Breakdown of counterparties in short-term currency swaps with various maturities
Percentage of total turnover in 2012



Note. The term "Other maturities" refers to maturities exceeding t/n but with a maximum of one year.

Source: The Riksbank (SELMA statistics)

Looking at the breakdown of currencies among the major Swedish banks' short-term currency swaps, transactions in which USD is swapped for SEK, or vice versa, account for the largest share of turnover (see Figure 5). This applies both to the absolutely shortest swaps and the slightly longer instruments. It is not surprising that USD swaps account for the largest percentage of turnover, since the major share of short-term wholesale funding by the banks also is conducted in USD. Statistics on turnover also indicate that other banks are the most common counterparties for the major Swedish banks in USD swaps (see Table 2). The major Swedish banks undertake some swaps with each other, but the foremost counterparties are foreign banks. As mentioned earlier, however, it should be noted that swaps undertaken among banks frequently have very short maturities, thus giving rise to high monthly turnover. Interviews and compiled data indicate that Swedish pension companies, including the national pension funds, are also significant counterparties to major Swedish banks in USD swaps and that these particular players account for a large share of the banks' total exposure in USD swaps.

Table 2. Counterparties to the major Swedish banks in short-term USD swaps
Percentage of total turnover, 2012

TYPE OF COUNTERPARTY	PERCENTAGE OF USD SWAPS
Other Swedish banks	76
Institutions or companies	24

Source: The Riksbank (SELMA statistics)

As regards the major Swedish banks' EUR swaps, the turnover statistics show that institutions and companies are the commonest counterparties (see Table 3). Just as in the case of USD swaps, this indicates that the major Swedish pension companies are significant counterparties. Data compilation regarding the major Swedish banks' largest and most significant counterparties also shows that many of the major counterparties in this case are Swedish non-financial enterprises. This probably reflects the fact that many major Swedish enterprises pursue extensive operations in EUR markets, including export and import activities via these markets, and thus need to manage part of the inherent currency risks.

Table 3. Counterparties to the major Swedish banks in short-term EUR swaps
Percentage of total turnover in 2012

TYPE OF COUNTERPARTY	PERCENTAGE OF EUR SWAPS
Other banks	35
Institutions or companies	65

Source: The Riksbank (SELMA statistics)

Finally, this survey also shows that it is possible to identify certain patterns in how the various counterparties of the major Swedish banks behave in the currency swap market. Pension companies generally need to borrow currency via currency swaps to enable them to currency hedge their foreign assets. Thus, the swaps undertaken among the banks and these players mean that, in most cases, the banks lend foreign currency and receive SEK in return. As a result, the major Swedish banks convey part of their foreign funding to these companies via the currency swap market. A similar pattern is also noted in the currency swaps undertaken by major Swedish banks and non-financial enterprises, although it is not as explicit as in the case of pension companies. The reason for this is that the companies frequently currency hedge cash flow in the form of incoming and outgoing payments and, consequently, may require to borrow SEK and foreign currency from Swedish banks. Swap transactions among Swedish and foreign banks ultimately entail that the Swedish banks lend SEK in an approximately similar volume as the opposite transactions. As noted earlier, this is because transactions among the banks are largely undertaken so as to manage cash flows in various currencies, thus leading to day-to-day variations in the requirement for a certain currency. Overall, the major Swedish banks are, however, net lenders of foreign currency, which means that their lending in foreign currency and receipts of SEK through currency swaps exceed the transactions done in the opposite direction.

Why is the Swedish market for short-term currency swaps so extensive?

There are several reasons underlying the Swedish banks' decision to fund part of their domestic assets using foreign currency swapped for SEK. Firstly, the banks wish to diversify their investment base. This is particularly relevant for long-term funding, since the Swedish bond market is relatively concentrated, with limited investor demand. As a result, the banks choose to issue bonds in foreign currency and subsequently convert the proceeds to SEK to fund lending in Sweden. Similarly, part of the short-term funding in foreign currency swapped for SEK may be attributable to the banks' attempts to gain a diversified investor base. By issuing certificates in USD and EUR, the Swedish banks can reach a broad group of investors and liquidity in these markets is, normally, highly favourable.

Secondly, the banks' securities issuance in foreign currency may satisfy the funding and currency hedging requirements for foreign assets among players in the Swedish economy. By issuing foreign currency and then lending further through currency swaps, the banks can supply their clients with foreign currency. The banks earn from this process; moreover, the SEK-based funding they receive is frequently less costly than issuing SEK directly on the capital market.

HOLDING FOREIGN ASSETS MAY RESULT IN A CURRENCY HEDGING REQUIREMENT

To understand how extensive the demand for foreign currency is in the Swedish economy, one may commence with an analysis of how assets and liabilities in foreign currency are distributed among different players (see Table 4). The analysis shows that Swedish financial institutions and non-financial enterprises alike have assets in foreign currency that far exceed their particular liabilities in foreign currency, totalling approximately SEK 4,800 billion. Hence, it may also be assumed that there is a potential need for currency hedging in Sweden corresponding to this amount.

Table 4. The aggregate currency position in Sweden
December 2012, SEK billion

	ASSETS IN FOREIGN CURRENCY	LIABILITIES IN FOREIGN CURRENCY	NET
Financial institutions (incl. pension companies and national pension funds)	2 190	32	2 159
Non-financial enterprises	2 574	499	2 075
Households	366	0	366
The Riksbank*	341	23	318
Kingdom of Sweden	87	194	-107
Potential demand for foreign currency	5 557	747	4 810
Swedish banks **	2 416	3 142	-726

Note. The statistics refer to transactions between players in Sweden and abroad. Assets in foreign currency include direct investments and portfolio investments abroad and other foreign currency-denominated investments. Foreign currency-denominated liabilities include portfolio investments and other investments. The Swedish players' liabilities and claims accruing to players abroad are excluded, as are derivatives.
* The Riksbank's liabilities in foreign currency are reported under "Kingdom of Sweden".
**The term "Swedish banks" refers to all Swedish monetary financial institutions (MFI), which thus include more players than the major Swedish banks and whose foreign currency surplus was estimated at SEK 600 billion earlier in the article.

Sources: Statistics Sweden and the Riksbank

To hedge their assets in foreign currency, companies and institutions in many cases need to turn to banks that can supply them with foreign currency. However, the Swedish bank sector's total foreign currency surplus does not match the potential demand for currency hedging of some SEK 4,800 billion, amounting instead to approximately SEK 730 billion. The primary factor underlying this difference is that Swedish players do not currency hedge all of their foreign assets. Accordingly, to gain an assessment of how large the total currency hedging requirement is in Sweden, certain assumptions must be made regarding the extent to which the various types of players currency hedge their foreign assets.[10]

CURRENCY HEDGING REQUIREMENTS AMONG PENSION COMPANIES

Swedish pension companies account for a substantial portion of the foreign assets of financial institutions, as noted in Table 4.[11] These companies essentially have only liabilities to savers and policyholders in SEK; however, to diversify their risks, they have elected to invest part of their Swedish pension resources in foreign assets. As a result, currency risks arise that, in many cases, the pension companies wish to limit, and thus they borrow foreign currency through currency swaps.

At year-end 2012, the pension companies' holdings of foreign assets accounted for almost 40 per cent of their total assets (see Figure 7). The percentage of their foreign assets has increased over the past 20 years, due largely to changes in the Swedish Insurance Undertakings Act and the National Pension Insurance Funds (AP Funds) Act in the mid-

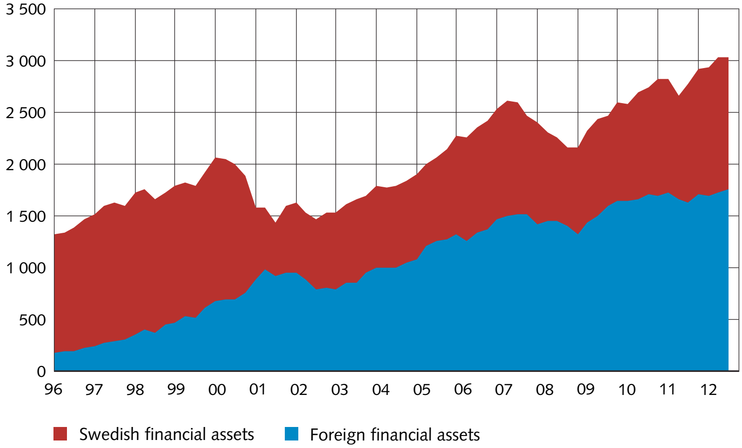
10 The next two paragraphs present a number of assumptions regarding the extent to which the various Swedish players currency hedge their assets. These are solely assessments but they may nevertheless provide an indication of the magnitude of the total requirement for currency hedging in the Swedish economy.

11 In this context and in the remainder of the article, the term "pension companies" refers to life insurance, pension companies and the national insurance funds.

1990s and early 2000s, respectively. As a result, the pension companies gained the potential to start investing in foreign assets.

Figure 7. Financial assets of Swedish pension and insurance companies

SEK billion



Note. The figure illustrates assets among the Swedish insurance companies and the social insurance sector. It includes life insurance, pension companies and national pension insurance funds as well as unit-trust and non-life insurance.

Sources: Statistics Sweden and the Riksbank

The reason why the pension companies need to curtail their currency risks is that they have future, SEK-denominated commitments to their savers; there are also internal and external regulations limiting the pension companies' exposure to currency risks.[12] Accordingly, the companies usually currency hedge a considerable portion of their foreign assets.[13]

The Swedish national pension funds and pension companies have varying portfolio compositions and pursue different strategies, as well as being subject to different regulations. This means that they also currency hedge their foreign assets to varying degrees. However, in order to gain an assessment of how extensive the use of currency swaps is among pension companies and other financial institutions,[14] we have made, within the framework of this article, a number of general assumptions as to how these players currency hedge various types of assets. As regards holdings of foreign interest-bearing assets such as bonds, we assume that these are currency hedged in most cases. At year-end 2012/13, institutional holdings of bonds totalled some SEK 460 billion and, thus, we can assume that the currency-hedging requirement is an equivalent amount. There is probably

12 According to the National Pension Insurance Funds (AP Funds) Act, a maximum of 40 per cent of the national pension funds' assets may be exposed to currency risks. The currency risks of life and pension companies are curtailed, in part, by the "traffic light system", which is one of Finansinspektionen's supervisory tools, and, in part, by the companies' investment policies, which is subject to the approval of Finansinspektionen. The companies' internal regulations also limit the currency risks associated with their portfolios.

13 Pension companies also offer their clients unit-linked insurance. Foreign assets are generally not currency hedged within the framework of unit-linked insurance policies.

14 The term "Other financial institutions" refers to non-monetary credit market companies, securities funds, securities companies and fund brokers.

less need to currency hedge assets with uncertain cash flows, such as shares, and, thus, the companies frequently choose to currency hedge only part of these holdings. Based on the information from several pension companies and on our own estimates, we believe that an average of 20 per cent of the foreign shareholdings, which exceed SEK 1,700 billion, is currency hedged. Overall, this results in an estimated currency hedging requirement among pension companies and other financial institutions of some SEK 800 billion (see Table 5).

The interviews conducted indicate that the currency swaps in which pension companies are involved are largely short-term. The maturities vary but many companies appear primarily to use currency swaps with three-month maturities that are regularly renewed. This is despite the fact that the maturities of pension company investments are frequently long, indicating that currency hedging of assets should also take the form of long-term maturities. However, it must also be taken into consideration that longer maturity currency swaps can prove difficult to close out prematurely and that, accordingly, they are not appropriate for currency hedging of all asset types. The interviews also reveal that a number of pension companies have IT systems that impose certain restrictions on the potential to conclude longer maturity currency swaps. In many cases, it also appears that the practice has been to deploy currency swaps with short maturities.

CURRENCY HEDGING REQUIREMENTS AMONG NON-FINANCIAL ENTERPRISES

As shown by Table 4, the net foreign currency position of non-financial enterprises exceeds SEK 2,000 billion, which is approximately equal to the net position of the financial institutions. This sizeable amount is primarily due to the fact that there are many Swedish large international companies that own subsidiaries and other companies abroad, thus entailing that they hold assets in foreign currency.

Just as in the case of pension company holdings of foreign shares, it could be argued that the incentives for Swedish enterprises to currency hedge their asset holdings in foreign subsidiaries may be limited. This is also confirmed in interviews with a number of Swedish enterprises. Based on these interviews and on our own assessments, we assume that non-financial enterprises currency hedge 20 per cent of their foreign assets. As a result, we believe that the non-financial enterprise sector's currency hedging requirement is equivalent to some SEK 180 billion (see Table 5).

Non-financial enterprises also use short-term currency swaps to currency hedge cash flows. Consequently, the companies may have costs and income in foreign currency that need to be converted to SEK or vice versa. However, the net of these transactions in relation to total currency hedging is minor and thus we disregard this factor in estimating the total currency-hedging requirement.

TOTAL CURRENCY HEDGING REQUIREMENT IN SWEDEN

We can confirm that there is a considerable currency-hedging requirement in the Swedish economy. However, the real requirement is less than the potential volume as indicated by the aggregate foreign currency position. Typically, neither households nor the Riksbank or the State currency hedge their foreign exposures. Consequently, financial institutions – particularly pension companies – primarily account for the currency-hedging requirement. But also non-financial enterprises account for some of the requirement. On the basis of the assumptions described above, we estimate that that the overall currency-hedging requirement of Swedish players exceeds SEK 950 billion (see Table 5). Of this total, Swedish banks are believed to account for some SEK 730 billion, while the remainder derives from foreign banks. One reason why the foreign banks participate in these swaps is that they have clients who need to currency hedge assets in SEK. This may involve, inter alia, a non-Swedish pension company that holds Swedish government bonds and, thus, wishes to borrow SEK via currency swaps to currency hedge the bonds. Because the non-Swedish banks initially lend money to Swedish players via currency swaps, they simultaneously receive SEK. In turn, these SEK proceeds may be lent on to foreign players needing to currency hedge Swedish assets.

Table 5. Estimated demand for currency hedging
December 2012, SEK billion

	TYPE OF ASSET	AMOUNT	PERCENTAGE, CURRENCY HEDGING	AMOUNT, CURRENCY HEDGING
Financial institutions (incl. pension companies and national pension funds)	Shares	1 726	20 %	345
	Interest-bearing assets	459	100 %	459
Non-financial enterprises	Direct investments	2 369	20 %	474
	Interest-bearing investments	204	100 %	204
Total				1 482
Total demand (less liabilities in foreign currency)				951
Supply, Swedish banks				726
Supply, foreign banks				225

Note. Table 4 shows the volume of the players' liabilities in foreign currency.
Sources: Statistics Sweden the Riksbank

WHY FOREIGN BANKS PARTICIPATE IN THE SWEDISH CURRENCY SWAP MARKET

The foreign banks can thus function as intermediaries between the foreign companies who need to borrow SEK and the Swedish enterprises with the opposite requirement, that is, the need to borrow foreign currency. Another reason that foreign banks participate in the Swedish currency swap market is that they also regularly act as intermediaries when Swedish banks issue covered bonds in foreign currency, which will subsequently be used to finance Swedish mortgage loans. In such cases, the Swedish banks need to conclude long-term currency swaps to transform their issued currency to SEK. The Swedish pension companies need to conduct reverse swaps; that is, to offer SEK for foreign currency so as to currency hedge their foreign assets. In most cases, however, the pension companies wish solely to conclude currency swaps with short maturities. Consequently, it is instead common practice that Swedish banks borrow SEK from foreign banks in exchange for foreign currency in long-term currency swaps.[15] In many cases, the foreign banks have no natural access to SEK but instead fund the transaction by, in turn, borrowing SEK in a short-term swap. Through this transaction, the pension company's need to borrow foreign currency can be met. Thus, the foreign bank conducts a maturity transformation on behalf of the Swedish players (see Figure 8).

Figure 8. Participation of foreign banks as intermediaries in the Swedish currency swap market

Note. The transaction commences with the Swedish bank issuing a covered bond in EUR with a maturity of five years. To exchange EUR to SEK, the Swedish bank subsequently concludes a long-term swap with a five-year maturity with a foreign bank. In turn, the foreign bank funds this transaction by concluding a currency swap with a three-month maturity with a pension company.

Source: The Riksbank

Risks associated with the use of short-term currency swaps by Swedish players

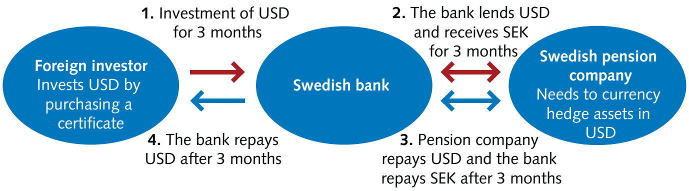
Normally, the fact that Swedish banks fund part of their Swedish assets via currency swaps does not give rise to liquidity risks in foreign currency. Instead, the liquidity risks that may arise resemble those that would emerge when the bank fund the Swedish assets directly using Swedish funding, that is, liquidity risks in SEK. If a bank issue foreign currency using a bank certificate and subsequently lends this on through a currency swap, the bank will regain the foreign currency when the swap matures. The bank can then use the foreign currency to repay investors in the certificate when it matures (see Figure 9). However, this requires that the maturity of the currency swap does not exceed that of the certificate issued by the bank. If the swap's maturity is longer, similar refinancing risks arise as in the case the maturity of the bank's lending exceeds the maturity of the funding.[16]

Although the funding of Swedish assets by means of currency swaps does not entail liquidity risks in foreign currency for the banks, it may nevertheless contribute to problems if stress emerges in the financial markets. The use of currency swaps is extensive in Sweden, which entails that various players in the financial system are interconnected, resulting in a risk of contagion. In particular, this contributes to growing linkage between Swedish banks and pension companies.

15 It is also relatively common for Swedish banks to act as counterparties to each other in long-term currency swaps. See Eklund et al. (2012).

16 For a more detailed discussion of the risks entailed in foreign currency-based securities funding by banks, see Sveriges Riksbank (2013).

Figure 9. Securities-based funding in foreign currency and associated swap transactions



Note. The transaction begins with a Swedish bank issuing a certificate in USD with a three-month maturity, which is purchased by a foreign investor. The bank subsequently concludes a currency swap with a three-month maturity with a Swedish pension company, through which the Swedish bank lends USD to the pension company and in return receives SEK. When the swap contract matures, the pension company repays USD to the bank and the bank immediately repays SEK to the pension company.

Source: The Riksbank

WHAT HAPPENS IF THE BANKS' ACCESS TO FOREIGN FUNDING DETERIORATES?

Due to the considerable use of foreign wholesale funding among the major Swedish banks, they could easily be affected by disruptions in international financial markets. The clearest risk arises because the banks partly use short-maturity funding in foreign currency to fund long-term illiquid assets in the same currency. Should the banks fail to renew this funding, they could rapidly experience liquidity problems and, ultimately, the Riksbank could be required to provide liquidity support in the foreign currency concerned to ensure the banks' ability to fulfil their commitments.

As we noted earlier, the portion of foreign funding swapped for SEK does not normally give rise to foreign currency liquidity risks for the banks. This funding is used to fund SEK-denominated assets, thereby providing access to the SEK-based financing the banks need to fulfil their commitments. Access to SEK cannot really disappear since the Swedish financial system is a sealed krona system. Nevertheless, if access to foreign funding deteriorates, one could expect the banks to be impacted, since they would no longer be able to "create" short-term SEK funding in the conventional manner using currency swaps.[17] If the major banks' access to foreign wholesale funding deteriorates, this would probably also affect their counterparties in the currency swaps. The banks' diminished access to foreign currency would probably prompt them to impose higher charges on lending foreign currency through swaps; and if access to funding were to become acute, it is even possible to imagine the banks refraining from swap transactions with their clients. Since pension companies and non-financial companies usually use relatively short-maturity currency swaps to borrow foreign currency, they frequently have a continuous need to renew these contracts in order to manage their currency risks. In turn, this entails that these players could quickly be adversely impacted if the banks' funding position worsens.

17 Although a shortage of SEK in the Swedish banking system cannot arise, a lack of confidence among banks could nevertheless lead to the banks experiencing krona-related liquidity problems.

If we suppose that foreign currency funding problems could be quarantined within Swedish banks, then Swedish pension companies and enterprises would probably increasingly turn to foreign banks to borrow foreign currency via currency swaps. However, this requires that there are foreign banks that are still willing to conclude such swap contracts. If the situation in the financial markets become very severe, one could expect Swedish enterprises and pension companies to encounter difficulty in finding counterparties who are willing in the first place to lend foreign currency against SEK in currency swaps. As a result, the currency swaps outstanding would no longer be renewed, and instead would fall due for payment on maturity. In this event, Swedish enterprises and pension companies would need to repay the foreign currency received from their swap counterparties, with no possibility to conclude new swap contracts.

In such a situation Swedish enterprises would be able to conduct conventional currency exchange transactions to obtain foreign currency and continue funding their foreign assets, but such funding would expose them to currency risks. To avoid these risks, they would probably be compelled to sell part of their foreign assets. Pension companies would probably be the player most severely affected in such a situation: firstly, they currency hedge a substantial volume of foreign assets and, secondly, they are subject to internal and external ceilings regarding their portfolios' currency exposure level. Consequently, this could prompt them to dispose of parts of their foreign share and bond holdings and instead acquire Swedish assets.[18] A fall in asset prices ahead of these premature disposals could lead to substantial losses for pension companies and might also be expected to fuel a negative spiral, with continuously falling prices and escalating financial uncertainty.

A situation marked by deteriorating access to foreign funding for Swedish banks arose recently, namely, during the financial turbulence of 2008–2009. The liquidity problems facing the banks induced the Riksbank to boost liquidity – both in SEK and USD – in the banking system. Due to growing illiquidity among the banks, costs also rose for Swedish enterprises and pension companies from their currency hedging of foreign assets and, in certain cases, they could no longer renew all their currency swaps as they matured. This challenging situation eased fairly soon, however, after the Riksbank launched its lending programme. This provision of funds helped the banks gain the requisite USD funding, also permitting them to lend USD on to clients via currency swaps. Consequently, it did not lead to an acute situation involving, inter alia, major foreign asset disposals by Swedish pension companies. Nonetheless, this episode showed that there were also players outside the banking system that experienced USD shortages due to poor access to USD funding among the banks.

18 Another alternative for pension companies would be to use the repo market to gain access to foreign currency, whereby they could pledge their foreign securities and receive liquid assets in return.

Conclusions

In this article, we have stated that Swedish banks have elected to fund part of their SEK-denominated assets by issuing securities in foreign currency and then converting to SEK on the currency swap market. Some 30 per cent of these securities are long-term bonds, while the remaining 70 per cent consist of short-term securities. One of the reasons that Swedish banks fund their SEK assets in this manner is to broaden their investor base.

Another factor is that the banks' issuances in foreign currency can satisfy the requirements to fund and currency hedge foreign assets among players in the Swedish economy. We estimate that the overall currency-hedging requirement of Swedish institutions and enterprises totals approximately SEK 950 billion. Accordingly, these players need to borrow foreign currency to be able to currency hedge their foreign assets. As a result, a business opportunity arises for Swedish banks in the form of their capacity to issue securities in foreign currency and subsequently conclude currency swaps and lend on currency to those demanding it. This particularly results in some of the banks' short-term funding in foreign currency being conveyed further to other players in the economy.

It is estimated that financial institutions – notably pension companies – account for some 80 per cent of the total currency-hedging requirement in Sweden. The reason for this is that they have chosen to diversify their investment portfolios by investing in foreign currency assets. To be able to manage the associated currency risks, they must borrow foreign currency via currency swaps. The geographic diversification of pension companies offers positive effects thanks to risk diversification, in addition to greater potential to gain a healthy return on public pension savings. Meanwhile, the extensive use of currency swaps contributes to tighter linkage between the banks and pension companies in the Swedish financial system. Since the pension companies usually borrow foreign currency via short-maturity currency swaps, they also face a continuous need to renew their swap positions to continue to currency hedge their foreign assets. In turn, this means that the currency swap market becomes a channel through which potential bank funding problems could rapidly infect pension companies, who may then find it more difficult to manage their currency risks.[19] The next stage could well result in pension companies having to dispose of portions of their foreign assets, and thereby also risk incurring losses.[20]

Pension companies could reduce their refinancing risk in foreign currency by improving the maturity matching between foreign assets and the currency swaps used to hedge them. If pension companies begin to demand more long-term swaps, the major Swedish banks could also be compelled to extend the maturities of their foreign wholesale funding. Otherwise, the banks could be exposed to a refinancing risk, since they would be lending foreign currency using long-maturity swaps while funding this activity on a short-term basis.

19 If the funding problems alone were to hit the Swedish banks, it is conceivable that the pension companies would turn to foreign banks to borrow foreign currency via currency swaps.

20 There may also be other possibilities open to the pension companies. For example, internal regulations could be revised to permit greater currency exposure and, thus, the companies would not need to dispose of assets.

However, the major Swedish banks already hold a portion of long-term wholesale funding in foreign currency, which could match the pension companies' requirements to borrow foreign currency using long-term maturity swaps. The banks issue covered bonds in foreign currency to finance Swedish mortgages; and since they wish to exchange the foreign currency for SEK, they need to find counterparties willing to lend SEK in long-term swaps. Nowadays, foreign banks typically do so. If instead Swedish banks could borrow SEK on long maturities from pension companies, who in return could borrow foreign currency from the banks, the requirements of the banks and the pension companies alike could be matched without involving foreign banks. Moreover, such matching could somewhat reduce the need for short-term foreign funding in the Swedish economy. This is because the foreign funding that the banks lend on to pension companies via swaps could in such cases derive to a greater extent from covered bonds with longer maturities rather than from short-term bank certificates.

References

Eklund J., Milton J. and Rydén A. (2012), "Swedish banks' use of the currency swap market to convert funding in foreign currencies to Swedish kronor", *Sveriges Riksbank Economic Review* 2012:2, pp. 18-43.

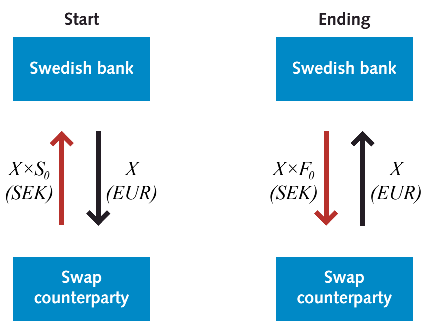
Sveriges Riksbank, "The major Swedish banks' funding in US dollar", *Financial stability Report* 2013:1, pp. 53-56.

Appendix 1. How the banks' currency swaps function

Using currency swaps, the banks can gain access to a currency without having to issue the currency directly on the capital market. For example, we can assume that a bank has issued a EUR-denominated certificate with a three-month maturity, but actually has a SEK-denominated funding requirement with a similar maturity. The bank can then choose to sell these euros on the spot market and simultaneously conclude a contract to sell SEK against EUR at a predetermined price three months ahead. By this means, the bank has created funding in SEK with a three-month maturity via a short-term currency swap in which the currency risk is eliminated.[21] A currency swap is thus an agreement between two parties to simultaneously buy and sell one currency against another at two different dates.

Figure A1 shows the configuration of flows in a short-term currency swap. The nominal amounts are exchanged both when the contract is concluded and when the swap matures. In this case, the Swedish bank exchanges X EUR for SEK at the current (spot) exchange rate, S_0. At the same time, the Swedish bank and its counterparty conclude a contract to the effect that the Swedish bank will buy back X EUR three months later. Application of the forward rate on the date the contract is concluded determines the SEK-denominated amount that the Swedish bank will have to pay when the contract expires. In turn, the forward rate is set by the interest rate differential between the two currencies that the parties exchange in the swap.[22]

Figure A1. Schematic representation of the flows in a currency swap



Note. X is the nominal amount involved in the swap, S_0 is the spot price between SEK and EUR when the contract is concluded. F_0 is the forward rate that is set when the parties conclude the swap contract and is based on the interest rate differential between the two swapped currencies on this date.

21 Short-term currency swaps are frequently referred to as *FX-swaps*.

22 $F_0 = S_0 \times \frac{(1+Rate_{EUR})}{(1+Rate_{SEK})}$

Appendix 2. Long-term funding in foreign currency by the banks and their use of the long-term currency swap market

This article focuses primarily on short-term funding in foreign currency by Swedish banks and the use of currency swaps. However, to provide a comprehensive picture of how the banks convert their foreign funding to SEK, we present in this appendix a brief description of how the banks swap their long-term funding in foreign currency to SEK. The description below is based on part of the Riksbank's survey of the currency swap market conducted during 2011.[23] It focuses on swaps between EUR and SEK, since the largest portion of the banks' long-term wholesale funding in foreign currency is in EUR.

THE BANKS' ASSETS DETERMINE THE REQUIREMENT TO SWAP LONG-TERM FUNDING IN FOREIGN CURRENCY

All four major banks issue some of their bonds in foreign currency, notably in EUR. These bonds are used, in part, to fund assets in the same currency and, in part, to fund Swedish assets. The bonds in foreign currency used to fund Swedish assets are primarily EUR-denominated covered bonds, which are used to finance Swedish mortgages. To be able to fund Swedish mortgages in this manner, the banks need to convert EUR to SEK. This is done by the banks concluding currency swaps through which they provide EUR and receive SEK. In most cases, these swaps have maturities that resemble those of the issued bonds (that is, long-term maturities).

The main reason for the Swedish banks partly funding assets in SEK by means of bonds in foreign currency is that the Swedish bond market is relatively concentrated, with limited demand. Since bond holders are spread abroad, the banks can widen their investor base and also reduce their dependence on the domestic market. However, the scope of the banks' foreign operations differs, entailing that the banks swap their foreign funding for SEK to varying degrees. Handelsbanken and Swedbank have a sizeable share of their lending in SEK, and thus swap more than half of their foreign currency bonds for SEK. On the other hand, SEB and Nordea primarily use their foreign currency bonds for funding their lending in foreign currency. At the same time, this means that these banks have SEK-denominated deposits and bonds that already largely cover their long-term funding requirements in SEK.

THE BANKS' COUNTERPARTIES IN CURRENCY SWAPS

When the Swedish banks issue covered bonds in foreign currency and then wish to convert this to SEK on the currency swap market, they frequently turn to foreign banks. Data shows that more than 60 per cent of long-term swaps, in which Swedish banks borrow SEK in exchange for EUR, are conducted with foreign banks as counterparties. In addition, the Swedish banks are to a relatively significant extent counterparties to each other in these

23 For more information, see Eklund et al. (2012).

types of swaps. Finally, other players also act to a certain extent as counterparties to the Swedish banks in long-term currency swaps; this involves Swedish and foreign companies, including pension companies (see Table A1).

Table A1. Counterparties to the Swedish banks in long-term EUR swaps
December 2012

TYPE OF COUNTERPARTY	PERCENTAGE OF EUR SWAPS
Other Swedish banks	23
Swedish institutions or companies *	9
Foreign banks	63
Of which, Nordic banks	38
Other foreign players or companies	4

Note. The table is based on data covering the banks' gross exposure to their ten major counterparties in long-term currency swaps, in SEK/EUR. *The item "Swedish institutions or companies " includes the Swedish National Debt Office, Swedish life insurance and pension companies and Swedish non-financial enterprises.

Source: The Riksbank (SELMA statistics)

Foreign banks that do not pursue significant operations in Sweden do not generally have any natural access to SEK – nevertheless some of them are counterparties to the Swedish banks in long-term swaps. This is possible because these banks can, in turn, finance long-term swaps by means of the short-term currency swaps that they often conclude with Swedish banks or pension companies. Thus, in these cases, the foreign banks perform a maturity transformation on behalf of the Swedish banks.