ARTICLE – The interconnectedness of insurance companies, National Pension Insurance Funds and banks via the foreign exchange market

The reason that insurance companies, National Pension Insurance Funds (AP Funds)[66] and Swedish banks are interlinked on the foreign exchange market is that they are able to satisfy one another's different needs for currency. The insurance companies and AP Funds are present on the foreign exchange market to invest in foreign assets but, at the same time, they do not want to be fully exposed to the exchange rate risks such investments entail. The banks are there to offer the currencies demanded by their customers and, in return, to receive the funding in kronor arranged via the foreign exchange market. When the actors enter into a foreign exchange transaction, in which different currencies are exchanged for each other, an interaction is created in which each party gets the currency it wants. When access to foreign exchange deteriorates, this interaction is disrupted. This is demonstrated by experiences from the global financial crisis of 2008-09 and by the current coronavirus pandemic. This article focuses on how the Swedish insurance companies, the AP Funds and the banks are linked together through the foreign exchange market, and the risks this may involve for financial stability.

Swedish companies need foreign exchange

Sweden is a small, open economy with considerable foreign trade and a financial system that is dependent on international financial markets. In addition, a large part of Swedish households' pensions are invested in foreign assets. This means that there is a need among Swedish non-financial corporations and companies managing Swedish households' pension assets to gain access to foreign exchange and to be able to manage exchange rate risk. The Swedish banks can help companies with these needs by entering into various financial contracts and conducting transactions with foreign exchange. However, to be able to offer such transactions, the Swedish banks first need to gain access to foreign exchange by borrowing in financial markets.

Access to foreign exchange in periods of stress is often more limited

However, the need for foreign currency among various actors in the financial system is linked with risks, which tend to materialise during periods of stress. Not least, this can be illustrated by the course of events we have seen recently during the coronavirus pandemic, in which a general deterioration in dollar supply impaired Swedish banks' ability to borrow dollars in international financial markets (see also the chapter "Vulnerabilities and risks in the financial system"). Access to dollars also weakened substantially during the global financial crisis of 2008-09. Both now and then, the consequence was that it became both more difficult and more expensive for other companies in the Swedish economy to gain access to dollars.

The previous experiences and the high degree of international dependence in the Swedish financial system underline the importance of understanding how the various actors in the Swedish financial system are interconnected and how problems in one part of the chain can easily spread to other parts. In this article, we focus on how the Swedish insurance companies, the AP Funds and the banks are linked together through the foreign exchange market and the risks this may entail for financial stability.

The Swedish insurance companies and the AP Funds invest large assets in foreign exchange

To protect themselves economically from various types of risk and save for their pensions, Swedish savers and insurance policyholders regularly pay premiums and savings in kronor to the insurance companies. These assets are called *investment assets* and make up the capital that the insurance companies manage to meet their financial commitments.[67] The national AP Funds also manage assets (buffer capital), which is used to manage the differences that may arise between the pension

[66] The National Pension Insurance Funds (AP Funds) have existed in Sweden since the 1960s. They have changed character, name and direction over the years. The present classification was created in 2001.

[67] Some investment assets are managed by customers themselves (for example unit-linked life insurance policies).

contributions paid over the year and the payments for the year in the state pension system.[68]

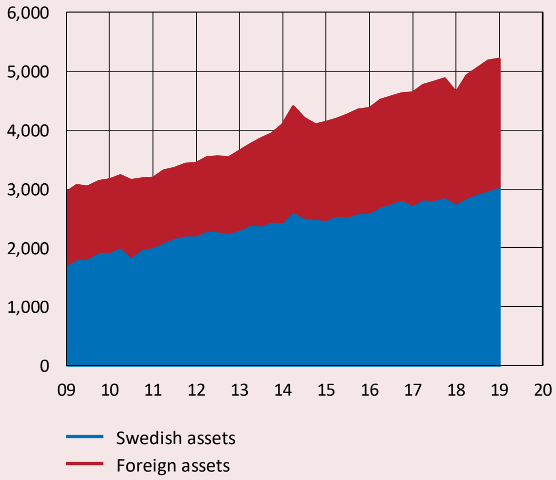
At the end of the fourth quarter of 2019, the Swedish insurance companies' total investment assets amounted to just over SEK 5,400 billion. The corresponding amount for the AP Funds' assets was about SEK 1,700 billion.[69] Together, the two actors' assets correspond to about 140 per cent of Sweden's GDP. Almost all assets are invested in equities and bonds in various currencies. At the end of the fourth quarter of 2019, about 30 per cent[70] of the insurance companies' investment assets were in foreign currency (SEK 1,054 billion) and about 65 per cent of the AP Funds' assets (SEK 1,106 billion) (see chart 47).

Foreign investments spread the risks...

The insurance companies and AP Funds invest in foreign assets because they wish to diversify their assets to spread the risks and potentially raise the risk-adjusted return.[71] Their policyholders and the pension system also thereby gain access to a global market and the returns that this can entail. In addition, the actors together have such large assets that it may be difficult for them to invest sufficient sums in certain Swedish asset markets without affecting price formation to an excessive degree.

Chart 47. Assets of insurance companies and AP Funds by geographical provenance

SEK billion



Note. The insurance companies' own fund holdings and the policyholders' unit-linked life insurance policies have been excluded for the reasons given in footnote 70. These holdings amounted to just over SEK 1,900 billion at the end of the fourth quarter of 2019 and cannot be separated by provenance in the underlying data. The AP Funds are defined in accordance with footnote 69.

Source: Statistics Sweden

... but simultaneously give rise to exchange rate risk

Parts of the assets of the insurance companies and AP Funds (investments) are thus in foreign currency. At the same time, their liabilities, which is to say the commitments they have to policyholders and the pension system, are almost exclusively in kronor. The gap between assets and liabilities gives rise to *exchange rate risk*, which is to say the risk of making losses because the exchange rates have developed unfavourably.

To reduce or avoid such exchange rate risks, the insurance companies and AP Funds can *hedge* their foreign investments, which is to say limit their exchange rate risk, through various financial transactions with banks.

Regulations and internal guidelines aim to reduce exchange rate risk

Above all, the insurance companies hedge their investments in foreign bonds and only a smaller percentage of their investments in foreign equities.[72] There is no regulation requiring the insurance companies to hedge a specific percentage of their foreign holdings. However, such currency hedging reduces the insurance companies' risks, thereby giving them lower capital requirements too. Many insurance companies have also taken the decision themselves to restrict such foreign currency exposure in their internal investment guidelines.

For the AP Funds, the situation is different, as they are subject to different regulations than the insurance companies. No more than 40 per cent of the assets of the AP Funds (First to Fourth AP Funds) may be exposed to exchange rate risk.[73] Consequently, unlike the insurance companies, they must restrict their foreign holdings to 40 per cent or hedge the excess percentage.

The foreign exchange market is used for currency hedging

Therefore, to be able to purchase foreign assets and simultaneously reduce or avoid exchange rate risk, the insurance companies and AP Funds choose to currency hedge their foreign investments through various financial

[68] In addition, the Seventh AP Fund manages pension capital for the Swedish people within the framework of the premium pension system.

[69] Defined as 'social security funds', which is actually a broader concept. This includes the AP Funds in the public pension system (that is, the First to Fourth and Sixth AP Funds), but also the traditional insurance within the premium pension system, as well as certain other assets and liabilities that the Swedish Pensions Agency manages within the premium pension system (but not the funds marketplace or the Seventh AP Fund).

[70] This figure excludes unit-linked life insurance, as these assets are not usually currency hedged (the policyholders themselves choose in which funds they wish to invest from the range supplied by each insurance firm and thus bear the actual investment risk), and own fund holdings, as these assets cannot be separated by geographical provenance (except for together with the unit-linked life insurance policies in the underlying data).

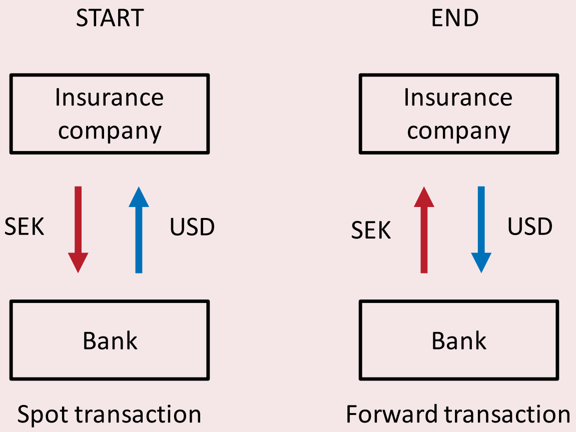
[71] Risk-adjusted return is return that considers how much risk has been taken to attain this return.

[72] This is because the exchange rate risk is considered high in relation to the return on the bonds. However, for equities, equity price risk is considered to be considerably higher than exchange rate risk, so many actors consider no or only low currency hedging to be necessary.

[73] National Pension Insurance Funds Act (2000:192).

transactions with the banks. A common derivative in such transactions is a *foreign exchange swap*.[74] A foreign exchange swap consists of both a purchase and a sale of the same currency pair (for example USD/SEK) but on two different occasions (see figure 1).

Figure 1. A foreign exchange swap consists of a spot transaction and a forward transaction



Source: The Riksbank

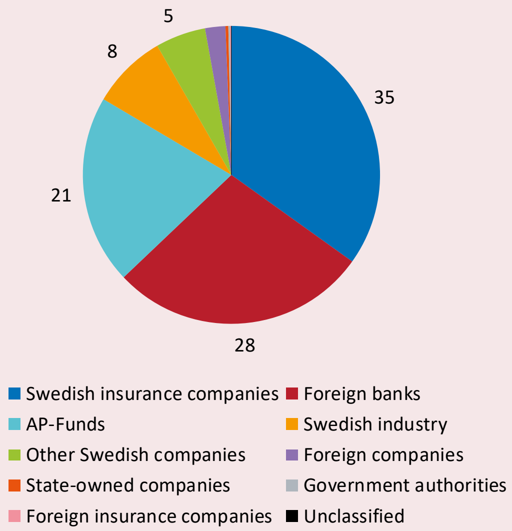
When an insurance company or AP Fund receives new premiums that it wishes to invest in foreign assets, it needs to enter into a foreign exchange swap if it wishes to avoid the exchange rate risk this investment will entail.[75] The insurance company first purchases foreign exchange, for example dollars, from a bank in exchange for kronor through a spot transaction. The insurance company then uses the foreign exchange to purchase a foreign bond, for example. At the same time as it executes this spot transaction, the insurance company also enters into a forward contract in which it commits, in the future, to sell the foreign exchange back to the bank in exchange for the kronor. When the forward contract matures, the insurance company thus returns the foreign exchange and the bank returns the kronor. It could be said that the foreign exchange swap in this example means that the insurance company has borrowed foreign exchange and the bank has borrowed kronor for a specific period against collateral in the other currency.[76]

Foreign exchange swaps with short maturities are common

The major banks in Sweden are often counterparties to the insurance companies and the AP Funds in foreign exchange swaps (see chart 48). Even though the insurance companies and AP Funds often invest in foreign assets with very long maturities[77], they most often use foreign exchange swaps with maturities of 3-4 months to currency hedge such investments (see chart 49). There are probably several reasons for this preference for short term maturities. One is that it is often more expensive for customers to enter into foreign exchange swaps with longer maturities.[78] At the same time, the insurance companies and AP Funds want to have the flexibility to allow them to adjust their currency hedged foreign investments when necessary. They have this to a greater degree when they use shorter foreign exchange swaps.

Chart 48. The major banks in Sweden's counterparties in FX swaps

Percentage of total outstanding nominal amounts



Note. The term foreign exchange swaps here refers to both forward transactions and foreign exchange swaps (which combine a spot and a forward transaction). The chart is based solely on foreign exchange swaps where the major banks in Sweden sell dollars in exchange for kronor. The major banks' foreign exchange swaps with one another are excluded. "Unclassified" refers to counterparties that each have a small percentage of the total outstanding nominal amounts. Division into sectors is subjective. Based on outstanding contracts as per 30 September 2019.

Source: The Riksbank

[74] The term foreign exchange swap is used interchangeably with *FX swap* in this article. In addition to such swaps, there are also *cross currency basis swaps* (CCY swaps), which have longer maturities and also include interest payments over the maturity of the contract. CCY swaps are used to much less of an extent between the actors mentioned and consequently do not receive any more attention in this article.

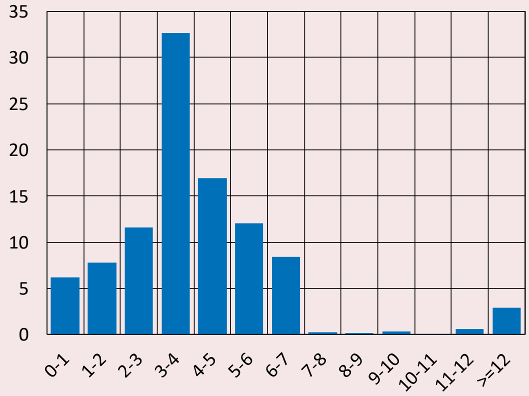
[75] Using foreign exchange swaps does not, however, remove all risks. If an actor wishes to currency hedge an asset's value of USD 100 with a foreign exchange swap, it is only the initial amount that is currency hedged through the swap; no rise in the asset's value is covered by the currency hedge. In addition, there is a *refinancing risk* linked to foreign exchange swaps, assuming that these are intended to be renewed when they mature, which is the risk of not being able to gain access to a new foreign exchange swap when it needs to be renewed or of the foreign exchange swap being more expensive to enter into at that point. The shorter the maturity of the foreign exchange swap, the more substantial the refinancing risk becomes, as refinancing must be carried out more often.

[76] As a foreign exchange swap is a financial derivative, the liability the contract generates is not included on the balance sheet. It therefore does not affect indebtedness.

[77] Swedish insurance companies' interest-bearing holdings consist virtually exclusively of bonds, i.e. not shorter debt securities.

[78] The cost/revenue for borrowing/lending foreign exchange through a foreign exchange swap depends on the relationship between the spot and forward rates for the currency pair in question. In turn, the forward rates are affected by factors such as yield differentials and supply and demand factors for the currencies over different maturities. It can often be simpler and cheaper for the banks to borrow foreign exchange for shorter maturities, which then leads to higher prices for foreign exchange swaps for longer maturities.

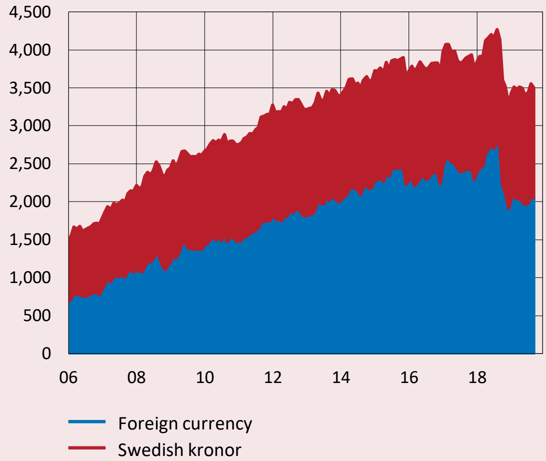
Chart 49. Maturities measured in months for the foreign exchange swaps entered into by insurance companies and AP Funds with all of their counterparties
Percentage of total outstanding nominal amounts



Note. The term foreign exchange swaps here refers to both forward transactions and foreign exchange swaps (which combine a spot and a forward transaction). Foreign exchange swaps in all different currency pairs are included. The first bar refers to contracts that have an initial maturity of less than a month. Based on outstanding contracts as per 30 September 2019.

Source: The Riksbank

Chart 50. Wholesale funding via Swedish parent companies and subsidiaries for the major banks in Sweden
SEK billion



Note. The major banks' foreign subsidiaries are not included in the figure. Handelsbanken, Nordea, SEB and Swedbank are included in the chart. The volume of wholesale funding in foreign currency decreased from 1 October 2018 as Nordea relocated its parent company to Finland.

Sources: Statistics Sweden and the Riksbank

The banks borrow foreign exchange that they convert to kronor

For the financial system as a whole, pension saving has led to that Sweden invests capital abroad over the long term (positive current account). Part of the capital thus flows out of the Swedish financial system. One reason that the Swedish banks borrow abroad may thus be that households' pension saving takes place, to a certain extent, in assets in foreign currency.[79]

In practice, the Swedish banks thus bring back the capital invested abroad when they obtain funding in foreign exchange. Part of this happens when the banks issue certificates in foreign currency that are often purchased by foreign money market funds. The banks can then offer their customers, such as insurance companies and AP Funds, the opportunity to borrow this foreign currency through foreign exchange swaps. As chart 50 shows, the banks' wholesale funding in foreign exchange is significant and has increased over the longer term.

Through these transactions, the banks can serve their major customers with the diverse services and products that they demand, such as foreign exchange swaps. In this way, they strengthen the business relations with their major counterparties. In turn, the foreign exchange swaps give the banks access to relatively favourable funding in kronor.[80]

Foreign exchange swaps link together actors with opposing interests

Figure 2 summarises the flows and interconnections that arise between insurance companies and banks when they enter into the transactions described above.

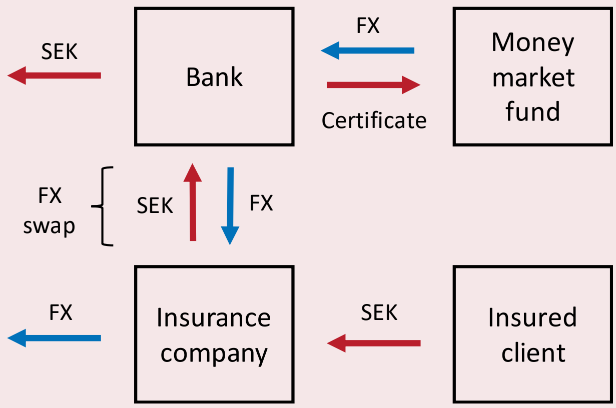
For example, a bank issues a certificate in foreign exchange (FX) with a maturity of 3 months in which a foreign money market fund invests. The bank then gets foreign exchange that it converts to kronor (SEK) through a foreign exchange swap with an insurance company. The insurance company then obtains access to foreign currency that it can use to purchase foreign assets and the bank can use the SEK to fund SEK-denominated assets. When the foreign exchange swap is entered into, the parties also promise to repay both currencies in 3 months.

To sum up, one way of looking at it is that the banks, insurance companies and AP Funds, through foreign exchange swaps, interact with each other so that all actors get the currency they need. The policyholders and pension system receive the potential return from foreign investments without taking any exchange rate risk of their

[79] See Nilsson, C., Söderberg, J. and Vredin, A. (2014), The significance of collective pension saving for the Swedish financial system, *Economic Commentary* no. 3. Sveriges Riksbank.

[80] In, for example, chart 2 in the chart appendix and chart 30 in this report, it is clear that it has historically been cheaper for banks to obtain access to SEK by first borrowing USD and converting them to SEK via FX swaps compared with borrowing directly at the STIBOR 3-month rate.

Figure 2. Summary of the flows and interconnections that arise between insurance companies and banks when they enter into their typical foreign exchange rate swaps



Note. The arrows that represent the foreign exchange swap show the direction that the flows take when the foreign exchange swap is entered into. When the foreign exchange swap matures, the flows go back in the opposite direction.

Source: The Riksbank

own. The banks, in turn, gain the possibility of providing their customers with a product that they demand and, in addition, gain access to funding in kronor.

The system is vulnerable when there is financial stress

In normal times, this interaction usually works without problems. Insurance companies, AP Funds and banks renew their foreign exchange swaps with each other, on average, every third or fourth month without the conditions changing particularly much. However, when shocks arise in global financial markets, the banks can have reduced access to dollars and this shortage can, in turn, spill over onto the foreign exchange swap market. This is because it is the USD, above all, that forms one of the currencies in swaps of this type.

In a stressed situation, the short maturity of the foreign exchange swaps and the banks' short-term funding in foreign exchange entails a risk and makes the system vulnerable.

This spring's turbulence in financial markets has highlighted vulnerabilities

During the ongoing coronavirus pandemic and the stress in global financial markets, some US money market funds[81] have had large outflows, as investors chose to withdraw money from the funds as uncertainty increased. This led the funds to become unwilling to invest in the banks' dollar certificates.[82] The worldwide deterioration of access to dollars for the banks in turn affected those of the banks' customers needing dollars. This was evident, not least on the foreign exchange swap market, where prices for borrowing dollars against other currencies through foreign exchange swaps rose heavily.[83]

This was noticeable in Sweden when insurance companies and AP Funds turned over lower amounts per foreign exchange swap over this period. In addition, the maturities were shortened from the normal 3-4 months to only a few days or weeks, at the same time as the price for borrowing dollars via foreign exchange swaps rose. At the same time, several non-Nordic banks that are normally common counterparties to insurance companies in foreign exchange swaps reduced their activity on the Swedish foreign exchange swap market during the period of stress.

Due to the stress in global financial markets, the Federal Reserve chose to supply dollars to the financial system and to extend and set up swap agreements[84] between the Federal Reserve and other central banks, including the Riksbank. The swap agreements made it possible for other central banks to set up their own dollar facilities and, in the EU, it was the ECB's dollar facility, above all, that increased access to dollars. These measures allowed the most acute situation worldwide to be averted. These measures also contributed towards improving the conditions on the foreign exchange swap market in Sweden for Swedish insurance companies and AP Funds.

[81] The money market funds investing in short-term corporate securities, known as prime money market funds, have had major outflows. Other money market funds that primarily invest in government securities have experienced major inflows over the period.

[82] See, for example, Avdjiev, S, Eren, E and McGuire, P. (2020), Dollar funding costs during the Covid-19 crisis through the lens of the FX swap market. *BIS Bulletin*, No.1. 1 April 2020. Bank for International Settlements.

[83] The price of a currency swap reflects the difference between the forward and spot rate for a currency pair, as mentioned in footnote 78. The difference is affected in part by rate differentials (according to the so-called rate parity condition). For a time during this period, there were heavy deviations. See, for example, Avdjiev, S, Eren, E and McGuire, P. (2020), Dollar funding costs during the Covid-19 crisis through the lens of the FX swap market. *BIS Bulletin*, No.1. 1 April 2020. Bank for International Settlements.

[84] By creating additional domestic currency the Riksbank can easily lend kronor. On the other hand, the Riksbank cannot create foreign currency. To lend US dollars, the Riksbank must first acquire them, for example by exchanging kronor for dollars, selling financial assets denominated in dollars or conducting repos. The Riksbank can also borrow via the Swedish National Debt Office. Another possibility is for the Riksbank to ask to borrow directly from the Federal Reserve through a swap agreement. A swap agreement means that one currency is exchanged for another over a predetermined period according to specific conditions.

How are insurance companies affected when foreign exchange swaps can no longer be renewed?[85]

The foreign exchange swap market was never completely closed during the financial crisis and this has not happened during the coronavirus pandemic either. If the foreign exchange swap market had closed, the insurance companies would have been unable to enter new foreign exchange swaps or renew the existing ones and would therefore have been unable to gain access to dollars that way. Below, we describe, in simplified terms, three different alternatives with a more serious scenario like this as their starting point.

Alternative 1: The insurance companies turn to non-Nordic banks to borrow foreign exchange

In a situation of financial stress affecting Nordic banks in particular, the insurance companies could, instead, only turn to non-Nordic banks (mainly US banks if this concerns dollars) to renew their foreign exchange swaps and thus obtain foreign exchange.[86]

How such a situation would play out is difficult to know in advance, and it is not clear that it would be possible for the insurance companies to enter into new foreign exchange swaps with non-Nordic banks. When a non-Nordic bank conducts such a foreign exchange swap with an insurance company, it lends foreign exchange and receives kronor. But if the non-Nordic bank does not have any balance sheet of its own in kronor, for example a portfolio with lending in kronor, it is likely that the bank will want to get rid of the kronor it receives through the foreign exchange swap.

To get rid of the kronor, it would be natural for the bank, in turn, to enter into another foreign exchange swap with a Nordic bank.[87] In such a case, the non-Nordic bank would lend kronor to the Nordic bank and receive foreign exchange. However, in a situation where the Nordic banks are not able or interested in entering foreign exchange swaps with Swedish insurance companies, it is reasonable to assume that they will also have fewer opportunities to enter into foreign exchange swaps with non-Nordic banks. It is thus unclear how inclined non-Nordic banks would be to entering into swap agreements with Swedish insurance companies in this type of situation.

Alternative 2: The insurance companies convert currencies on the spot market

If the insurance companies do not manage to renew their foreign exchange swaps with the Nordic banks or non-Nordic banks (alternative 1), they will mature. In this case, the insurance companies will get back the kronor they lent and will have to repay the foreign exchange they borrowed to the bank.

In such a situation, the insurance companies may exchange kronor for foreign exchange on the spot market and thereby repay the foreign exchange to the bank. The insurance company will thus fulfil the binding contract that a foreign exchange swap is and close its positions towards the bank. However, it is notable that such an exchange on the spot market could be very large in relation to the volumes that are normally traded there and this could lead to the krona depreciating. The exchange could thus have a great impact on price formation on the market, depending on which insurance companies - and how many of them - need to make such exchanges.

Once the insurance company has repaid the foreign exchange and closed the foreign exchange swap, the foreign investments will no longer be currency hedged. The insurance company thus has an *open currency position*, which is to say assets in foreign exchange and liabilities in kronor, and thereby risks making losses should exchange rates develop unfavourably in the future. How likely it is that the insurance companies would choose to have large open positions is difficult to say in advance and the choice is amongst other affected by capital requirements, the companies' own internal guidelines[88] and their risk appetite. How long the position would need to be open may also play a role.

Alternative 3: The insurance companies sell foreign investments

When the foreign exchange swap with the bank matures, the insurance company gets back the kronor it had lent and must repay the foreign exchange to the bank. The insurance company therefore needs to obtain foreign exchange to repay to the bank and, as an alternative to exchanging into foreign exchange on the spot market (alternative 2) the insurance company may, instead, choose to sell parts of its foreign assets.

In this case, which foreign assets the insurance company chooses to sell to be able to repay the foreign exchange to the bank depends on several different factors, for example the type of stress that has arisen in the financial markets and which asset types have been affected by the stress.

[85] This section investigates the various choices an insurance company faces when it becomes difficult to renew foreign exchange swaps. The same choice applies in principle to the AP Funds, with the exception that they cannot choose to leave foreign exchange exposure in excess of 40 per cent of the assets open, according to the legislation that applies for them.

[86] Some of the Swedish insurance companies regularly agree some of their foreign exchange swaps with foreign banks in times without financial stress.

[87] The foreign bank may also choose to deposit the kronor with the Swedish bank where it has its account for Swedish kronor.

[88] The insurance companies' internal guidelines may limit how much exchange rate risk their investments may have and thus also affect the insurance companies' actions in such a situation.

If these unplanned sales have been preceded by falling prices for assets, this could entail significant realised losses for the insurance companies.[89] For an insurance company that already had low solvency or traffic light ratios[90] before the stressed scenario, this could have particularly negative effects. Large sales of assets from a broad group of players could also contribute to a negative spiral with further price falls, especially in smaller markets or where liquidity is low, and thereby aggravate financial unease.

How would Swedish banks be affected by such a scenario?

As described above, Swedish banks receive access to financing in kronor that is lent by insurance companies and AP Funds through foreign exchange swaps. If these swaps are no longer entered into, the insurance companies and the AP Funds will instead hold these kronor, and the banks will no longer obtain kronor through this channel. As there is on each occasion a given amount of kronor in the Swedish payment system, the kronor will be placed in the banks through other channels instead, that is, the banks will in total have access to the same amount of kronor. However, the access to kronor may be redistributed between the banks. How the different banks are affected will depend on the amount of kronor they receive, from whom and at what price, and also how well the liquidity can be distributed between the banks.[91]

Foreign exchange swaps with longer maturities would be positive for financial stability

This article is not intended to investigate either which ratio of Swedish to foreign assets would be optimal for the insurance companies and AP Funds or the optimal degree of currency hedging. Instead, it has proceeded from how the situation looks today with current balance sheets as a starting point. We have described how the insurance companies and AP Funds have long-term foreign assets that they wish to currency hedge by entering into foreign exchange swaps with short maturities. The Swedish and Nordic banks are large counterparties in these swaps, which, in turn, are based on the ability to borrow foreign exchange regularly in financial markets. Entering into the transactions described here creates economic gain for the participants in the transactions, at the same time as it creates vulnerabilities in the Swedish financial system.

In March, the situation in global financial markets became strained, which also affected the Swedish foreign exchange swap market. Despite this, the Swedish insurance companies and AP Funds still essentially had access to the dollars they needed and thus did not need, to any great extent, to sell their foreign assets or take more exchange rate risk. The banks could thereby provide their customers with these services during the period. However, as financial markets functioned less well globally, the terms for the Swedish foreign exchange swaps became less favourable than under normal circumstances, for example with higher prices and shorter maturities. During the spring, the Federal Reserve offered swap agreements with other central banks, with the purpose of providing central banks with the possibility of supplying reasonably priced dollars to the financial system. However, even though the Riksbank, over the spring, has offered its monetary policy counterparties loans in dollars, at interest rates most of the period lower than those in financial markets, the dollars have so far not benefited the Swedish financial system.

When the turbulence linked to the coronavirus pandemic has passed, it would be positive for the financial system as a whole to have a situation in the future in which insurance companies and AP Funds enter into foreign exchange swaps with longer maturities. Foreign exchange swaps with longer maturities would give the insurance companies and AP Funds more breathing space in a stressed situation as they would then not have to renew their foreign exchange swaps as frequently. The banks, which are counterparties in the swaps, would also have greater incentive to extend the maturity of their foreign financing, with the corresponding positive effect as a result.

Different types of measure could lead to it becoming more common to have longer maturities. For instance, increased transparency requirements, where the actors must openly report their maturities, could contribute to increased awareness of the risks of shorter maturities and thereby can create incentives to extend them. Another measure could be to regulate the insurance companies and AP Funds with the aim of limiting their maturity risks in different currencies. In addition to direct requirements, it is also possible to use the regulations to create incentives. The insurance companies currently benefit from currency hedging with regard to capital adequacy

[89] The insurance companies report their assets at *real value*, that is to say, market valued at the time of each report. However, as long as they are not sold, no potential losses are realised.

[90] Solvency ratio is a measure aimed at measuring how well insurance companies are meeting their commitments to policyholders. The traffic light is a supervisory tool that places the capital buffer held by an insurance company (assets minus liabilities) in relation to a calculated capital requirement that depends on the insurance company's exposure to various risks.

[91] Hilander, I. (2014), Short-term funding in foreign currency by major Swedish banks and their use of the short-term currency swap market, *Economic Review*, 2014:1. Sveriges Riksbank.

requirements. In these regulations greater incentives for longer hedging could be built in.

Measures of this nature could mean that actors build up greater safety margins during normal times to face periods of financial stress.