Karolina Ekholm: Monetary policy and the exchange rate

Speech by Ms Karolina Ekholm, Deputy Governor of the Sveriges Riksbank, at a meeting, Stockolm, 12 January 2010.

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I intend to begin today by talking about the background to the monetary policy decision made by the Executive Board of the Riksbank on 15 December last year and how I viewed the economic situation. The main part of my speech will focus on the Riksbank's assessment of the krona exchange rate. I intend to discuss the role played by the exchange rate in a small, open economy like Sweden's, and the difficulties in forecasting the exchange rate.

The current situation and the monetary policy decision

As you probably know, the Executive Board decided at our meeting on 15 December to hold both the repo rate and the forecast for the repo rate unchanged in relation to the previous monetary policy meeting in October. I shall not go into details regarding the forecasts on which our decision was based, but I will focus on some specific questions that have been important for the stance I took.

The world economy has improved recently, and this benefits developments in the Swedish economy. Our most recent assessment contains an upward revision to the forecasts for GDP and employment, both in Sweden and abroad.

However, I see a number of risks relating to international developments in the period ahead. Emerging markets in Asia and Latin America are now showing fairly good growth, while growth in the industrial nations in Europe and North America remains low. The fact that different parts of the world economy are developing fairly differently creates problems that have significance for monetary policy.

The low short-term interest rates and good access to liquidity in Europe and North America make it attractive to borrow in the short term to invest in assets with a high expected yield. There have been reports of large capital inflows to several of the emerging markets. These inflows tend to push up asset prices – for instance, house prices and share prices – in several Asian countries.

At the same time, the experiences gained from the financial crisis over the past year and during the Asian crisis of the 1990s indicate that these flows can change direction abruptly, which creates a risk of substantial falls in asset prices in the future.

It is difficult to say what the consequences of the capital flows we are now seeing will be for the development of the world economy in the period ahead, but there is a risk that imbalances will be generated. Development in the economies that are now growing fairly quickly may be affected in the future either by tendencies towards asset bubbles or appreciating currencies, which would have a negative impact on their competitiveness. In the case of the future development of industrial nations in Europe and North America, we can expect that it will be negatively affected by the need to consolidate government finances, which have suffered greatly during the recession. All in all, this entails certain risks to developments abroad in the period ahead.

With regard to the Executive Board's monetary policy decisions, one question is why we have not revised up the interest rate path now that economic activity appears to have improved and conditions in the financial markets are beginning to normalise. The forecasts made in December, like those in October, contain revisions that have a counteracting effect when it comes to our decision. On the one hand there has been some upward revision to the forecasts for Swedish GDP and resource utilisation, which would indicate a need for a

somewhat tighter monetary policy. But at the same time there has been a downward revision of the forecast for inflation, which would indicate a need for more expansionary monetary policy. The question then is what the net effect of these counteracting tendencies will be in terms of what is a well-balanced monetary policy. My opinion is that they in principle counteract one another and that there was thus justification for maintaining the interest rate path that we have had since the monetary policy decision in July.

There are a number of factors behind the downward revision of the inflation forecast, including a new assessment of the development of the Swedish krona. I will go on to explain the background to the Riksbank's general assessment that the krona is expected to appreciate in the coming period. This is an assessment I agree with. But in the most recent forecast made in December, the appreciation is expected to be greater than was forecast in October. There are a number of factors behind this new assessment, including the assumption that international interest rates will be slightly lower than was previously thought. I did not give so much importance to this particular revision of the krona forecast in the monetary policy decision made in December. Inflation in Sweden is on the whole expected to be lower in the future than was anticipated in October, partly because of lower inflation abroad.

The effects of the exchange rate on the economy

Let me now leave the recent monetary policy decision and move on to a question that is always topical for the Riksbank; namely developments in the exchange rate. I thought I would begin by talking about why exchange rate developments are important and then discuss the forecasts for the exchange rate.

Why are developments in the exchange rate important to a central bank? The answer is that developments in the exchange rate can have major effects on developments in both inflation and the real economy.

The krona depreciated by around 15 per cent in a very short space of time during the financial crisis. What effects can this have on Sweden's economy?

The effects of the exchange rate on inflation

One of the most important effects of changes in the exchange rate, and particularly important for a central bank with an inflation target, is how inflation is affected. We have seen that the nominal exchange rate of the krona depreciated by around 15 per cent over a short space of time in connection with the financial crisis. One way of trying to estimate how this affects inflation is to study pricing behaviour at company level. Let us assume that a company imports a product into Sweden. To make the example more concrete, let us assume that it imports cheese from France. When the krona weakens against the euro, the importing company has to decide how this will affect the price charged in kronor. Let us assume that the krona depreciates 15 per cent against the euro. The importing company probably has an agreement to buy the cheese for a particular price in euro. This means that the cheese will now cost the importer 15 per cent more in kronor. How much of this cost increase should then be passed on to the consumer price? In the long run, if the krona depreciation continues, the importer can perhaps negotiate a slightly lower purchase price in euro. However, the importer must initially choose between raising the price in kronor to compensate for the higher purchase price and reducing the company's own margins.

Let us assume that the price Swedish cheese importer has to pay is set at 10 euro per kilo, and that the price set for customers in shops in Sweden is 120 kronor. The exchange rate is

initially 10 kronor/euro. The purchase price thus corresponds to 100 kronor per kilo. The Swedish importer thus has a profit margin of 20 per cent of the purchase price.[1]

If the krona depreciates by 15 per cent, to 11.5 kronor per euro, the import price in kronor is 15 per cent higher, or 115 kronor per kilo. To retain a profit margin of 20 per cent of the purchase price, the price offered to customers in Sweden also needs to be raised by 15 per cent, from 120 kronor to 138 kronor per kilo. In this case the pass-through of the exchange rate to the price of the cheese will be complete, as both the exchange rate and the price of the cheese change by 15 per cent. However, this can be expected to lead to lower sales, as consumers may choose to buy, for instance, Swedish cheese instead of French. It is therefore not necessarily the most profitable pricing strategy.

Another alternative for the importer is to hold the price in kronor completely unchanged. Empirical studies indicate that companies only change the price of goods once or so a year, on average.[2] This could be due to various costs linked to changing the price, for example, printing new price-lists. It could also be due to a fear of losing market shares if the price is raised.[3] If the prices are not changed at all, the effect of the weaker SEK/EUR exchange rate will be that the profit margins for the Swedish cheese importer fall.[4] In this case, sales can be maintained, but profits will fall.

The company can also choose something in between these two cases, that is, raise the selling price by between 0 and 15 per cent. The outcome of this will depend on several different factors, such as the currency in which the purchase price is set, to what extent similar substitutes whose purchase price is not affected are available and whether the change in the exchange rate is expected to be lasting or temporary. These factors affect the pass-through of the exchange rate to inflation.

What effects can a change in the exchange rate be expected to have on the economy as a whole? The pass-through of the nominal exchange rate on prices is a large area for research. In particular, researchers have studied how much a change in the nominal exchange rate will affect import prices.[5] The results of the different studies differ somewhat, but the overall assessment based on research in this field is that a change in the exchange rate in the short term leads to a change that is half as great in import prices.

The research has also shown that the pass-through of exchange rate changes on consumer prices is much less than on import prices.[6] The most obvious explanation for this is that import prices do not constitute the entire consumer price index (CPI), only around one third of it.[7] The fact that the percentage is so low is partly due to several domestic factors (transports, various types of service, and so on) affecting the final price for imported goods charged to the consumer.[8] As the example of the cheese importer showed, there may also

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1 This example does not claim to offer a correct description of the Swedish cheese market, but merely serves as an illustration of the effects of changes in the exchange rate on inflation.

2 See, for example, Apel, Friberg and Hallsten (2004).

3 What is known as pricing to market is a reflection of this: in the example we use it would mean that the French exporter determines different prices for different export markets, such as Sweden. This could lead to a reduced tendency to change the price in Sweden as a result of exchange rate fluctuations.

4 The new profit margin will be (120–115)/115, which is just over 4 per cent of the purchase price.

5 Goldberg and Knetter (1997) summarise the results of the research. Adolfson (2004) also provides an excellent survey, together with new results.

6 See, for example, McCarthy (2000) and Bachetta and van Wincoop (2003).

7 However, there are some complications with dividing CPI into import prices and other prices. See Hansson and Johansson (2007).

8 See Burnstein, Eichenbaum and Rebelo (2002).

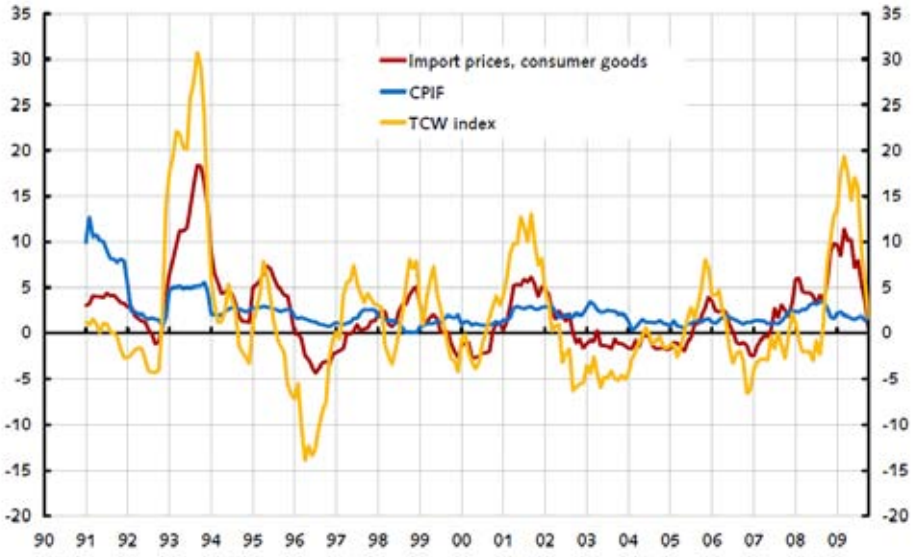
be various strategic reasons for not allowing import price increases to have a complete pass-through to consumers.

Figure 1 illustrates some of the conclusions regarding the pass-through of the exchange rate. It shows the nominal exchange rate together with import and consumer prices in Sweden. We can see that import prices for consumer goods clearly co-vary with the nominal exchange rate, although there is no perfect correlation. It would thus appear that changes in the exchange rate nevertheless have a relatively large effect on these prices.

Figure 1

Consumer prices, import prices of consumer goods and nominal trade-weighted exchange rate (TCW index) in Sweden

Annual percentage change



Note. The import prices refer to consumer goods in the producer sector. Consumer prices are the CPI with a fixed interest rate (CPIF).

Sources: Statistics Sweden and the Riksbank.

We can also see that the relationship with the exchange rate is much weaker for consumer prices than for import prices.

A simple rough estimate can provide an impression of the effects on prices of a 15-per cent depreciation in the krona. Let us assume a pass-through to import prices equivalent to half of the change in the exchange rate. This means that they will rise by 7.5 per cent.[9] If one assumes that these prices constitute 30 per cent of the consumer price index (CPI), this means that consumer prices will rise by just over 2 per cent as a consequence of the change in the exchange rate. According to this rough estimate, the pass-through from the nominal exchange rate on the CPI is thus around 15 per cent.[10] As the exchange rate fluctuates substantially, it may nevertheless entail fairly large effects on inflation, although the calculations in the example can be taken with a pinch of salt.[11]

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9 We assume here that prices of imported goods in the consumer sector rise by 7.5 per cent.

10 A 50-per cent impact on import prices, which comprise around 30 per cent of the CPI, gives a 15-per cent exchange rate pass-through to the CPI.

11 See also the article “The path of the krona and inflation” in IR06:1

The effects of the exchange rate on the real economy

One can usually expect a weakening of the exchange rate to lead to a positive effect on net exports. However, experiences show that it may take time before exchange rate changes have an impact on foreign trade. In the short term, the value of imports adapts in that import prices in kronor rise as a result of the weaker exchange rates. The initial effect of a weaker exchange rate on net exports can thus be negative. However, in the slightly longer term producers and consumers adapt and export and import volumes are affected. When the exchange rate weakens, exports increase while imports decline, as domestically-produced goods and services become relatively cheaper. The effect of a weakening in the exchange rate can thus be that net exports follow what is known as a J curve; first they weaken and then they improve.[12] In the long term one can thus expect a weaker exchange rate to lead to increased net exports, which in turn has a positive effect on total production (GDP).

Overall view is important

Although it may be informative to reflect on the isolated effects of exchange rate changes on the economy, it is difficult to know what causes what. At the same times as the krona weakened in connection with the financial crisis, production fell substantially, partly as a result of a large fall in the demand for exports. It is difficult in this type of scenario to isolate the effects of the weaker krona from the effects of other changes. One solution to this problem is to base the analysis on a theoretical model where everything is linked – what is known as a general equilibrium model. Analyses in the Riksbank's general equilibrium model Ramses imply that the weakening of the krona has had considerable effects on inflation in particular but also on production. Calculations imply that the weakening of the krona contributed to the quarterly growth in GDP being a percentage point or so higher, while inflation was several percentage points higher than it would have been without the weaker krona.[13] The fact that inflation became so much higher would normally have led to a monetary policy response in the form of a higher repo rate. But in the situation we were then experiencing, inflation was falling below zero and thus risked far undershooting the inflation target. During this unusual period the weakening of the krona thus contributed to bringing inflation closer to the target.

Difficult to forecast the krona

Developments in exchange rates are thus important to developments in production and inflation in Sweden. The Riksbank's monetary policy decisions and interest rate path are based on forecasts of economic developments in Sweden over the coming years. In this context, the forecast for the krona is important. However, making good exchange rate forecasts is one of the most difficult aspects of macro economics. Figure 2 shows the Riksbank's forecasts at the beginning of each year since 1996 for the krona's trade-weighted exchange rate measured in terms of the TCW index.[14] We can see that they have not been entirely accurate. The forecasts we have produced for the exchange rate of the krona since the exchange rate was allowed to float have often indicated that the krona would strengthen. Typically, however, this strengthening has only materialised in periods preceded by a substantial weakening of the krona exchange rate, as in the periods 2002–2003 and 2006–2007.

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[12] Rose and Yellen (1989) is a classical study in this field.

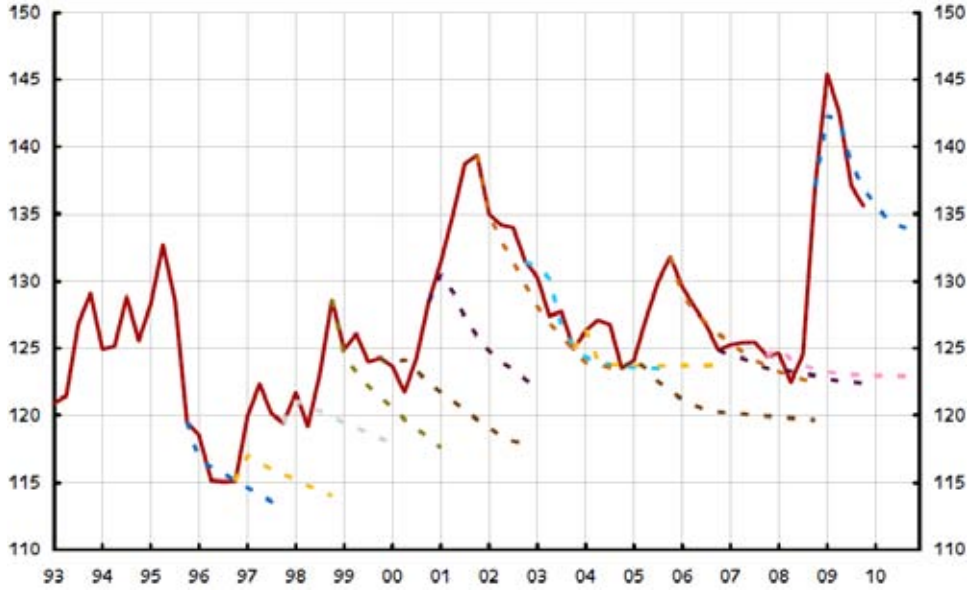
[13] The effects of a weaker krona on the Swedish economy were also described as an alternative scenario in MPR08:3.

[14] The TCW index weighs together the krona exchange rate against other currencies according to the other countries' share of Sweden's foreign trade. The Riksbank's forecasts in the Figure are from the first report (Monetary Policy Report or Inflation Report) of that year, which has usually been published in February.

Figure 2

The Riksbank's forecasts for the krona exchange rate (TCW index)

Index, 18 November 1992=100

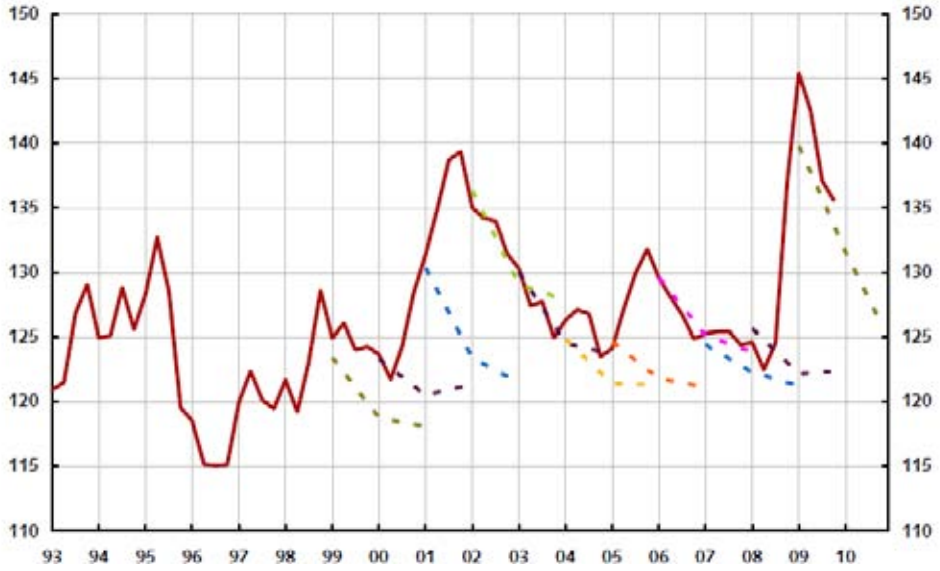


Source: The Riksbank.

Figure 3

Consensus forecasts for the krona exchange rate (approximate TCW index)

Index, 18 November 1992=100



Sources: Consensus Economics and the Riksbank.

However, the Riksbank has certainly not been alone in expecting that the krona will strengthen. Figure 3 shows the forecasts according to “Consensus forecast” for an approximate TCW index.[15] This can be said to represent the average of the other analysts’ forecasts at the same point in time. We can also see that other analysts have predicted that the krona would strengthen more than it actually has.

The difficulties in making forecasts for the nominal exchange rate in the short term are not specific to the krona, but also apply more generally. When assessing various forecasting strategies, it has proved very difficult to make better forecasts than merely taking the most recent outcome for the exchange rate.[16]

At the same time, the exchange rate plays an important role for developments in a small open economy like Sweden’s. It is therefore important to form an impression of developments in the exchange rate to be able to assess future economic developments. How should this be done?

Interest rate differentials and exchange rates – a fragile relationship

One means of doing this is to use interest rate levels in different countries as a basis. Forward rates for exchange rates are set on the basis of differences in interest rates. This can be illustrated by a simplified example: if a one-year interest rate is 2 percentage points lower in Sweden than in the United States, the forward rate one year ahead for the krona against the dollar is 2 per cent stronger than the current exchange rate. In this way the yield is evened out between investments in different currencies.[17]

However, research has shown that forward rates are not good forecasts of future exchange rate developments, particularly in the short term.[18] Contrary to the implications made by forward rates, the exchange rate often strengthens for currencies with relatively high interest rates.[19] The so-called carry trade, which arises when investors borrow money from countries with low interest rates and invest it in countries with high interest rates, is based on this phenomenon and can be said to be direct speculation against forward rates. One then "hopes” that the exchange rate will either remain stable or that the currency of the country with a high interest rate appreciates. One example of such speculation has been borrowing in Japan, where the interest rate has been low for a long time, and investing in Australia or New Zealand, where the interest rate has been much higher. However, this has been proved to be a risky strategy. Financial crises have on numerous occasions led to a severe decline

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15 Consensus forecasts are the average of forecasts made by a number of different analysts and reported monthly by Consensus Economics. The forecasts shown are from the month of February in the respective years. The survey does not include forecasts for the TCW index. Instead, the forecasts for the SEK/EUR rate and the implied forecasts (cross rates) for the krona against the USD, GDP JPY and NOK have been used. These currencies correspond to approximately 95 per cent of the TCW index. The forecasts for the respective currencies entail a percentage change in relation to the current exchange rate at the time of the survey. These percentage changes have then been weighed together using TCW weights to a percentage change in the TCW index compared with the value of the index at the date of the survey.

16 A classical study of this is Meese and Rogoff (1983). See also Cheung, Chinn and Pasqual (2005).

17 This is known as covered interest parity, and means that the forward rate in relation to the current exchange rate corresponds to the interest rate differential between the countries. The reasoning is as follows: If one exchanges kronor for dollars, invests in a US one-year bond and then in one year’s time exchanges them back to kronor according to the current forward rate, the investment contains no exchange rate risk. The yield is therefore the same as that given by investing in a Swedish one-year bond. Uncovered interest parity means that the interest rate differential corresponds to an equally large *expected* change in the exchange rate. In our example this means that one exchanges the money for kronor in one year’s time at the *current* exchange rate, which entails an exchange rate risk.

18 See, for example, Froot and Thaler (1990).

19 This phenomenon has been called the forward premium puzzle.

in the carry trade, for instance, in connection with the Asian crisis in 1997–98, when "high interest rate currencies" in Asia weakened drastically against the dollar and the yen, and the carry positions had to be settled quickly. During the recent crisis the currencies in "high interest rate countries" such as Australia and New Zealand weakened substantially against "low interest rate countries" such as Japan and the United States, which once again led to a speedy settlement of carry positions.

One contributory factor to the inflows of capital to the emerging markets in Asia and Latin America, as I mentioned earlier, is the relatively low interest rate levels in the "old" industrial nations in North America and Europe. The low interest rates in, for example, the United States, make it profitable to borrow dollars in order to invest in other currencies that provide a higher return at given exchange rates. Several of the countries that are now experiencing capital inflows are unwilling to allow their currencies to appreciate against the US dollar despite the fact that the inflows are creating appreciation pressures. This is understandable in the light of experiences from, for instance, the Asian crisis. Exchange rates can be come highly volatile if they are completely adapted to highly volatile capital flows. But at the same time, the unwillingness to allow the exchange rate to appreciate probably strengthens tendencies towards capital inflows, as it enables speculation in carry trade, as I described earlier.

Let me now leave the "speculative" element of the foreign exchange market and talk about the more long-term development of the exchange rate. While it is admittedly difficult to forecast developments in the short term, there are some research results that can be used as a starting point for assessing developments further ahead. The Riksbank's forecasts have primarily been based on these results.[20]

Nominal and real exchange rates

While the nominal exchange rate shows the number of Swedish kronor per unit of foreign currency, the real exchange rate shows the relationship between Swedish and foreign price levels. Put simply, one can say that the real exchange rate shows how much a given basket of goods costs in Sweden in relation to abroad when the price of the basket of goods is expressed in the same currency. The real exchange rate can change either through the nominal exchange rate changing or by inflation differing between countries. A stronger krona real exchange rate can thus be attained either through a stronger nominal exchange rate or through a faster increase in the price level in Sweden than in other countries. We can use the Economist's Big Mac index as an example. This index shows how much a Big Mac costs in different countries in the same currency. In 2001 the krona exchange rate against the dollar was at its weakest level so far and oscillated between 10 and 11 kronor. In the United States a Big Mac then cost 2.60 dollars, which corresponded to 26.70 kronor. In Sweden a Big Mac cost 24 kronor. A Big Mac was thus around 10 per cent more expensive in the United States than in Sweden, in Swedish kronor. At the beginning of 2008 the krona had appreciated so much that a dollar cost 6 kronor. In the United States a Big Mac cost 3.60 dollars then, which corresponded to 21.30 kronor, while in Sweden a Big Mac cost 38 kronor. Now a Big Mac was instead more than 40 per cent cheaper in the United States than in Sweden, in Swedish kronor. In terms of a Big Mac, the real exchange rate had thus strengthened considerably, both as a result of the nominal krona rate strengthening against the dollar and as a result of the price level rising more quickly in Sweden.[21]

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[20] See also Lagerwall and Nessén (2009).

[21] The price in the United States has increased from 2.60 to 3.60 dollars, which corresponds to almost 40 per cent, while the price in Sweden has increased from 24 to 38 kronor, which corresponds to almost 60 per cent. One usually defines the real krona exchange rate as ExP*/P, where E is the nominal exchange rate (for example, the number of kronor per dollar), P* is the price level abroad and P is the price level in Sweden. It thus shows the price level in kronor abroad in relation to that in Sweden. An appreciation in the krona's real

Figure 4 shows the nominal and real trade-weighted krona rate since 1970. It is this trade-weighted krona rate that the Riksbank tries to analyse and forecast. If one looks at the period with a floating exchange rate (since November 1992), one can draw the conclusion that the nominal and real exchange rates are strongly correlated. This is because exchange rates, which translate prices into a common currency, change quickly, while price levels change slowly. Nominal exchange rates are determined at the trading counters daily, while it takes time to change prices.

Figure 4

Nominal and real TCW-weighted exchange rates

Index, 18 November 1992=100

Note. Broken lines represent the Riksbank's forecasts. The real exchange rate has been calculated using Swedish and TCW-weighted CPI. Sources: Statistics Sweden and the Riksbank.

How do we compare the impact from the nominal exchange rate on inflation, which I took up earlier, with Figure 4, which shows a strong correlation between the nominal and real exchange rates? According to the earlier example, only around 15 per cent of a nominal exchange rate change "spills over" into domestic inflation. This means that 85 per cent of the nominal exchange rate change does not have any effect on inflation and that the real exchange rate is thus affected by 85 per cent of the change in the nominal exchange rate. There is thus a strong, but not complete, correlation in the short term between the nominal and real exchange rates.

Purchasing power parity and the very long run

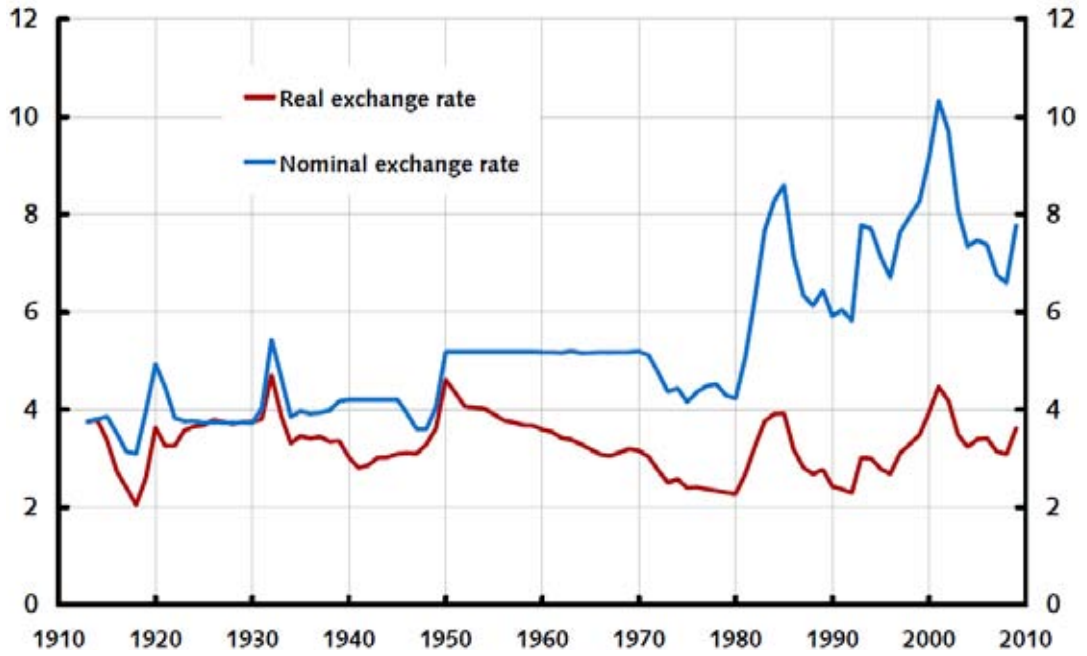
According to the theory of relative purchasing power parity, the relative price of a basked of goods shall be constant over time and the real exchange rate thus should not show any particular trend. However, as the real exchange rate measured in terms of a Big Mac shows,

exchange rate thus means that it *falls*. In the example the real exchange rate has gone from 26.7/24=1.11 till 38/21.3=0.56.

the real SEK/USD exchange rate has shown substantial fluctuations.[22] At the same time, it is actually difficult to distinguish any special trend in the real exchange rate in the very long run.

Figure 5

Nominal and real exchange rates, SEK/USD, 1913–2009



Note. The real exchange rate has been calculated using the CPI for Sweden and the United States. The real exchange rate has been equated to the nominal for 1913.

Sources: The Bureau of Labor Statistics, Statistics Sweden and the Riksbank.

Figure 5 shows the nominal and real krona exchange rate against the US dollar during a period of almost 100 years. Here we can see a different pattern from that in Figure 4. In the long term the nominal krona rate against the dollar has weakened, but this has been compensated by inflation being higher in Sweden than in the United States, so that the real exchange rate is in principle the same at the end of the period as at the beginning of the period. This is consistent with the research results; over very long periods of time, real exchange rates appear to "level off" and not show any special trend. In the very long run the theory of relative purchasing power parity thus appears to apply.[23] If the real exchange rate does not have any trend, it will return to its average in the long run.

There are thus results in the academic research indicating that real exchange rates fulfil relative purchasing power parity in the very long run.[24] However, these results have little value for those trying to forecast exchange rate developments in the short and medium term. As I mentioned earlier, it is moreover the trade-weighted krona exchange rate that the Riksbank tries to forecast. Figure 5 showed only the development of the krona against the dollar. If we return to Figure 4, we can see that the real trade-weighted krona rate shows

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[22] Interestingly, there is research indicating that price differences for a Big Mac between countries even out over time in accordance with relative purchasing power parity. See, for example, Cumby (1996) and Parsley and Wei (2007).

[23] See, for example, Froot and Rogoff (1995) and Rogoff (1996) for a scientific survey of the research into purchasing power parity.

[24] See, for example, Taylor (2002)

large variations over fairly long periods.[25] The krona is much weaker in real terms at the end of the period than at the beginning of the period. What is the reason for this? It is largely due to developments in Sweden's real economy in relation to other countries. The Riksbank's forecasts for the exchange rate are based on changes in the real exchange rate reflecting differences in growth in relation to other countries and being consistent with foreign trade, being balanced in the long run.

Relative growth and the current account explain changes in the real exchange rate

Countries that have a higher GDP growth than their trading partners usually have a stronger real exchange rate.[26] The real trade-weighted krona rate has been on average 30 per cent weaker during the period since 1993 than it was in the 1970s. Figure 6 shows Sweden's GDP in relation to TCW-weighted GDP abroad.

We can see that Swedish GDP in relation to other countries fell heavily from the 1970s until the beginning of the 1990s. The Riksbank's assessment is that the weakened exchange rate from the 1970s to the 1990s is linked to lower growth in Sweden than abroad. As we can see in Figure 6, Sweden has over the past 15 years recovered some of the relative GDP level and had higher growth than other countries. This tendency is expected to continue over the coming years, which would in this case imply a stronger real exchange rate.

One factor that is often discussed in connection with the exchange rate is the development of the current account. The current account mainly consists of the difference between exports and imports of goods and services, that is, net exports. A positive current account means that the economy as a whole produces more than is used. This surplus represents savings used to invest in foreign assets rather than domestic assets. A surplus on the current account thus means a situation where domestic saving exceeds domestic investment.

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[25] Unfortunately, there are no really long time series for the trade-weighted development of the krona, partly because of problems with breaks in the time series due to the world wars regarding, for instance, the nominal exchange rate and CPI in Germany, which has historically been Sweden's most important trading partner.

[26] The most common explanation for this is what is known as the Balassa-Samuelson effect. Put simply, this effect arises because countries with high growth tend to have high productivity growth in the goods sector, which results in price increases in the service sector, where productivity growth is lower. Thus, countries with high growth typically experience a strengthening of their real exchange rate. For a description of this effect with empirical results, see Lothian and Taylor (2008).

Figure 6

Swedish GDP in relation to abroad

Index: 1970=100

Note. The series in the Figure shows the ratio between Sweden's GDP and the TCW-weighted GDP for countries abroad. The broken line represents the Riksbank's forecast.

Sources: National sources, Statistics Sweden and the Riksbank.

Figure 7 shows developments in Sweden's current account and in the real exchange rate in Sweden. As we can see, there is a clear correlation. The devaluation at the end of the 1970s and the beginning of the 1980s only led to short-term surpluses in trade. The devaluation was instead followed by higher inflation in Sweden than abroad, which led to an appreciation in the real exchange rate. The deficit in international trade returned. However, when the krona was allowed to float in November 1992, the real exchange rate immediately weakened by almost 25 per cent and has since then remained weak. Sweden has for the most part had large surpluses in foreign trade since then.

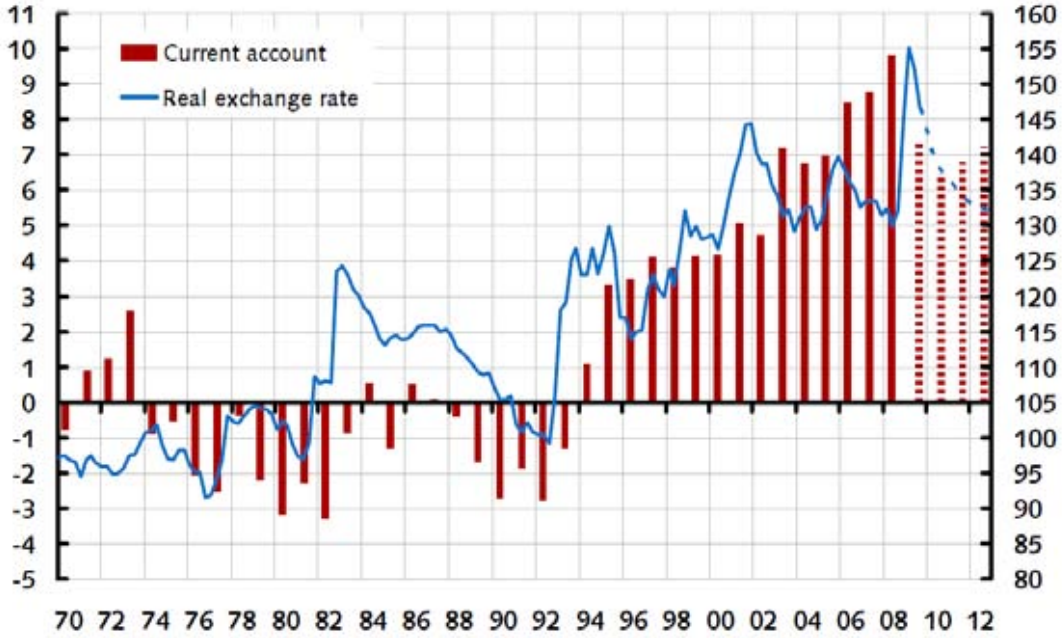
How should we then view future developments? Our assessment is that the surplus on the current account will decline from almost 10 per cent in 2008 to around 7 per cent at the end of the forecast period (see Figure 7). An important factor in this assessment is that households are expected to reduce their saving in the future. During the financial crisis, confidence indicators showed that households had a very pessimistic view, which probably led to an increase in precautionary saving. As the economy recovers and households' confidence is restored, which economic survey data now indicates, it is reasonable to expect that saving will fall.

As we saw in Figure 7, a reduction in the surplus on the current account is usually connected to a real strengthening of the exchange rate.

Figure 7

Sweden's current account and real exchange rate

Per cent of GDP and index, 18 November 1992=100



Note. Striped bars and broken lines represent the Riksbank's forecasts.

Sources: Statistics Sweden and the Riksbank.

Many indications that krona will continue to appreciate

Let me now summarise the Riksbank's assessment of the more long-term developments in the exchange rate. Our assessment is that the surplus on the current account will decline over the coming years, and this is linked to a stronger real exchange rate. In recent years, growth has been relatively high in Sweden compared with other countries, and our assessment is that this tendency will continue. There are thus good arguments why the real exchange rate should strengthen in the coming period. The real exchange rate can strengthen not merely through an appreciation in the nominal exchange rate, but also by inflation being higher in Sweden than in other countries. However, we have no reason to believe that inflation in Sweden will differ substantially from that of other countries over the coming years. The change in the real and nominal exchange rate could therefore be expected to be roughly the same size (see Figure 3).

In addition to the more long-term driving forces that I have taken up, there is a further factor pointing to a stronger krona in the coming period. The severe weakening of the krona as a result of the financial crisis was probably linked to the financial turmoil that arose. As the financial markets have begun to normalise, the krona has strengthened, and there is reason to believe it will continue to strengthen if the normalisation continues. But at the same time, renewed unrest could lead to further periods with a weaker krona exchange rate. The assessment of the development of the exchange rate during the coming period is, as always, very uncertain.

Concluding remarks

The development of the exchange rate is very important to a small, open economy like Sweden's. The effects of the exchange rate on the economy can be divided up into effects on inflation and effects on the real economy, which are mainly through international trade.

It is very difficult to forecast exchange rates accurately, but there are good reasons, at least in the slightly longer term, to expect the krona to appreciate. At the same time, experiences show that the krona rate is sensitive to the unrest in the financial markets. The conditions in the financial markets have normalised and the krona has strengthened this year. A continued normalisation of the financial markets points to a continued strengthening of the krona. If the unrest increases again the krona may once again weaken in the short term. However, this possibility is not included in the Riksbank's main scenario.

If the krona strengthens in the future, as indicated by our forecasts, one can expect this to subdue GDP growth somewhat and to keep down inflation. Moreover, resource utilisation is low to begin with, and is expected to remain low in the coming period. This justifies the expansionary monetary policy we are now conducting to attain the inflation target and to stabilise resource utilisation.

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