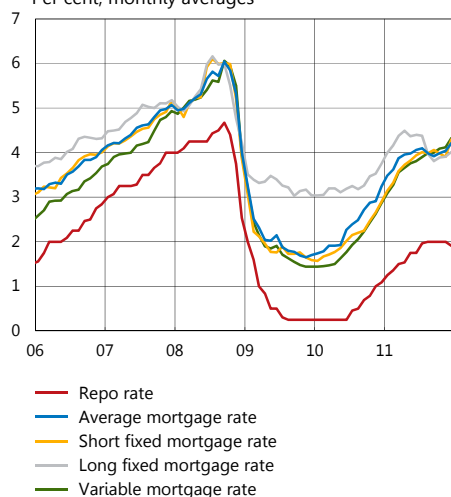


## ■ The relationship between the repo rate and interest rates for households and companies

**Figure A17. Rates for new mortgage agreements for households and the repo rate**  
Per cent, monthly averages



Note. Variable mortgage rate refers to fixed terms of up to and including three months, short fixed mortgage rate refers to fixed terms longer than three months and up to and including one year and long fixed mortgage rate refers to fixed terms longer than one year and up to and including five years. The final observation refers to December 2011.

Sources: Statistics Sweden and the Riksbank

**The gap between households' variable mortgage rate and the repo rate has increased over the last year. This is partly because the banks' funding costs have increased, and partly because the banks have increased their margins on mortgages. But there are many more interest rates than the variable mortgage rate that are significant to the economy, for example mortgage rates with longer maturities and lending rates to companies. These interest rates have not increased as much as the variable mortgage rate. The attitude monetary policy should take towards increases in various lending rates depends on how these, together with other relevant factors, influence inflation and resource utilisation.**

When the Riksbank adjusts the repo rate, this change spreads to other interest rates. The repo rate has a direct effect on the interest rate with the shortest maturity, the so-called overnight rate on the interbank market. This is the interest rate the banks apply when they lend to and borrow from each other from one day to the next. Changes in the overnight rate then spread to interest rates with higher credit risks and longer maturities. In the end, the adjustment has spread to the interest rates at which households and companies borrow from financial institutions. How much of the original adjustment of the repo rate impacts households' and companies' interest rates varies over time.

Since 2008, various risk premiums for financial assets have increased and, in general, they are now at higher levels than they were before the financial crisis broke out. This has led to an expansion of the gaps between interest rates including credit and liquidity risks – such as interest rates applying to companies and households – and what are known as risk-free interest rates – such as the repo rate. For the banks, this has meant that their funding costs have increased. But the increase in variable interest rates cannot just be explained by rising risk premiums – the banks have also increased their margins. For households, this has contributed to variable mortgage rates increasing by just over 1.4 percentage points in 2011, which is more than the repo rate has been raised during the same period.<sup>30</sup> At the same time, mortgage rates with long fixed-interest periods have only risen by just over 0.2 percentage points. The average mortgage rate faced by households has thus not increased to the same extent as the interest rate for the shortest variable-rate mortgages (see Figure A17).

### **Average mortgage rates are increasing**

Households can choose to take mortgages with various fixed-interest periods. In 2008–2010, about 70 per cent of new mortgages were at variable interest rates. This proportion has decreased over the last year. At present, the proportion of new mortgages at variable interest rates is about 50 per cent. Of the new loans with fixed interest rates, just over

<sup>30</sup> The repo rate was raised by 0.75 percentage points in the first six months of 2011 and remained unchanged until the end of the year, when it was lowered by 0.25 percentage points.

half have fixed-rate terms of up to three years, while the others have longer fixed-rate terms. At present, the proportions of new mortgages with variable and fixed interest rates correspond with the historical averages (see Figure A18).

To measure how the average interest rate paid by households has changed, two different measures can be used: the average interest rate on new loans or the average interest rate for the entire mortgage stock. The first alternative is the interest rate that households pay on average for new or renegotiated mortgage loans.<sup>31</sup> The second alternative is the average interest rate on all loans for housing purposes. Interest rates for new agreements influence the extent to which households choose to sign new mortgages and at which fixed-interest periods, while the average interest rate for the entire mortgage stock influences households' overall scope for consumption. At present, the average interest rate for new agreements and the average interest rate for the entire mortgage stock are on approximately the same level. Over the last year, these average interest rates have increased by almost one percentage point, which is to say by slightly more than the repo rate (see Figure A19).

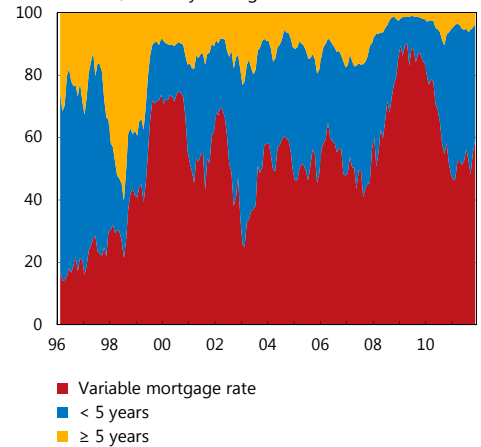
The interest rates paid by households can be divided roughly up into three parts: a risk-free part linked to the repo rate's current level and expected development; a supplement related to further funding costs for the banks; and, finally, a margin. After a short description of the Swedish mortgage stock's funding, the background of this addition is illustrated in the next section with a short mortgage rate as an example.

**Swedish mortgages – the banks' funding**

When a bank issues a mortgage, it needs to fund this loan. Normally, mortgage loans to Swedish households have a maturity of around 40 years, while households' interest rates are fixed for much shorter periods.<sup>32</sup> Although around half of the banks' lending volume has a short fixed-interest period, their funding must have much longer maturities than this. Otherwise the banks would have to turn to the capital markets to renew their funding, which could create risks in periods of financial stress. The Swedish banks primarily use what are known as covered bonds to fund mortgage loans.<sup>33</sup> On average, the maturity of these bonds is around 3 years.

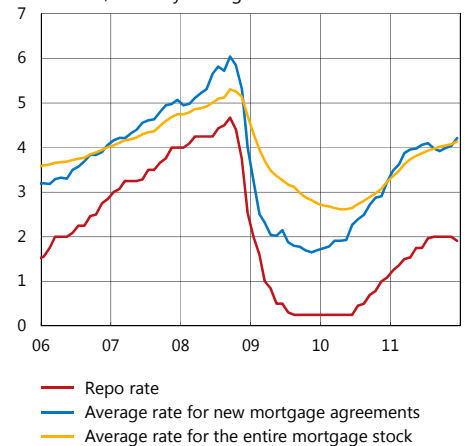
How does the funding of mortgage lending look in practice? In November 2011, the banks' mortgage lending to Swedish households amounted to about 2 100 billion kronor. At the same time, the outstanding stock of secured bonds was about 1 900 billion kronor, meaning that these are thereby funding the larger part of the banks' mortgage lending. About 75 per cent of the secured bonds are issued in Swedish kronor, while 25 per cent are issued in other currencies, primarily euro. Issues in foreign currency are converted to kronor via swaps to fund Swedish mortgages. The remaining part of the mortgage stock, about

**Figure A18. Breakdown of households' new mortgages**  
Per cent, monthly averages



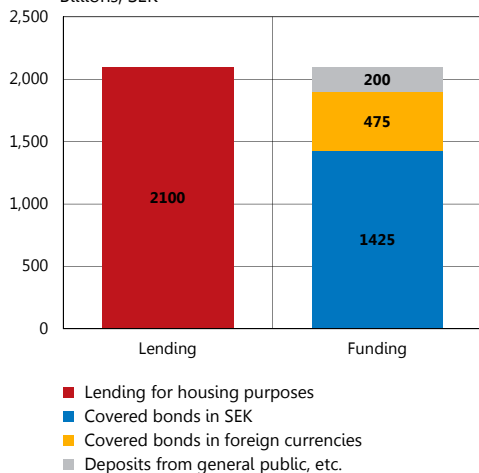
Note. Mortgage institutions' new loans to households per fixed-rate term. The final observation refers to December 2011.  
Source: Statistics Sweden

**Figure A19. Average mortgage rates for households**  
Per cent, monthly averages



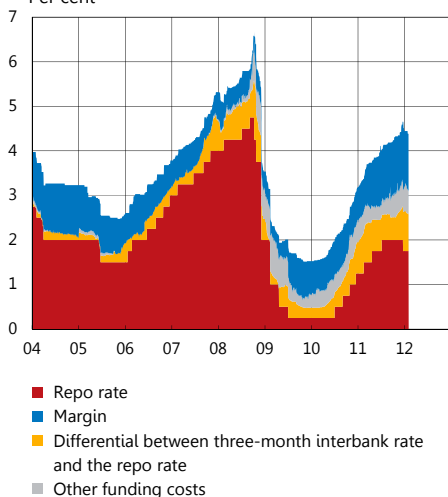
Note. The final observation refers to December 2011.  
Sources: Statistics Sweden and the Riksbank

<sup>31</sup> The average fixed-interest period for households' new mortgage loans since 2005 has been 1.4 years.  
<sup>32</sup> The repayment period, however, can be significantly longer, up to 100 years. For more information, see "The Swedish mortgage market and bank lending", Finansinspektionen, 2010.  
<sup>33</sup> A secured bond is guaranteed by the bank that issues it. In addition, the bond is guaranteed by specific assets (usually mortgage loans) that pass to the holder of the bond in the event that the bank fails.

**Figure A20. Funding of Sweden's mortgage stock**  
Billions, SEK

Note. November 2011.

Sources: Statistics Sweden and the Riksbank

**Figure A21. Division of three-month mortgage rate**  
Per cent

Note. Refers to average of three-month listed mortgage rates from banks and mortgage institutions. Listed mortgage rates are the rates published by Nordea, SBAB, SEB, Swedbank Hypotek and Stadshypotek, for example in the daily press. In this example, the margin consists of other costs associated with mortgages and a profit margin.

Sources: Reuters EcoWin and the Riksbank

200 billion kronor, is funded through deposits with the banks and other means (see Figure A20).<sup>34</sup>

So what costs arise when a bank funds a variable-interest rate mortgage? Basically, this means that the bank issues long-term bond loans at a fixed interest rate, but wants to convert these so that it is paying a short-term variable market rate that better matches the interest rate its customers pay for the variable-interest rate loan. To do this, it carries out a series of financial transactions with the aid of a so-called swap contracts, in which the bank finally pays a three-month interbank rate plus a supplement.<sup>35</sup> The interbank rate thus forms an important reference rate when the banks are deciding the interest rate for a variable-interest rate mortgage, but it does not reflect the bank's total funding cost.

Figure A21 shows as an example how a three-month listed mortgage rate can be divided up into funding costs, that is, the repo rate (red), the bank's additional funding costs (yellow and grey) and its margin (blue).<sup>36</sup> The total of the red and yellow fields is a three-month interbank rate. The grey field corresponds to the cost over and above the interbank rate that the banks pay to issue long-term bond loans with fixed interest rate flows and to convert these to short fixed-interest periods.

The blue field in the figure illustrates the banks' margin. This margin must also cover other costs that arise for the bank in conjunction with the mortgage, such as administrative costs and the cost of maintaining a reserve of liquid assets, for example. Somewhat simplified, it could be said that the margin remaining after deductions for these costs forms the bank's profit.

### Several factors are influencing mortgage rates

The increased gap arising between the repo rate and the short-term lending rate over the last year is due partly to the higher funding costs faced by the banks and partly to the banks' increased margins. A comparison with the period before 2008 shows that the banks' funding costs, above and beyond the repo rate, are now higher. This increase in funding costs is due to several factors. The increased unease over the monetary union over the last year has led to higher risk premiums, which has contributed to rising interbank rates in Sweden too. Part of this increase is thus due to the financial crisis and will probably not remain after the market situation stabilises in the future. At the same time, it is not likely that the risk premiums will return to the low levels we saw before the financial crisis broke out. There is a lot to suggest that the pricing of credit and liquidity risks was too low back then. One example

<sup>34</sup> The banks can also fund the remaining part of the mortgage stock by issuing certificates and debenture loans, and by borrowing on the interbank market.

<sup>35</sup> To safeguard long-term funding, the bank can issue bonds with long-term maturities (about two to five years) that it then converts to short fixed-rate terms with the aid of swap contracts. This allows the bank to secure its own borrowing over a longer period, at the same time as the fixed-rate term for the bank's funding cost becomes the same as that for the banking customer's mortgage. The banks convert their fixed interest rate flow to a variable interest rate flow by entering into a so-called interest-rate swap. This is a bilateral agreement to exchange a specific interest rate in return for another interest rate for a predetermined period according to specific conditions.

<sup>36</sup> A listed mortgage rate is the banks' official lending rate. As a rule, this listed rate is slightly higher than the actual interest rate that the households get for their new agreements. At present, the difference averages about 0.2 percentage points.

is that prior to 2008 it hardly cost the banks anything extra above the interbank rate to convert long-term loans into short-term maturities. This probably reflected, for instance, the fact that the risk of a bank going bankrupt was seen to be negligible. Today there is greater risk awareness. This thus implies that risk premiums will not return to the low levels that prevailed before the financial crisis broke out.

According to the division in Figure A21, margins have increased recently, which should be seen in the light of the fact that the conditions governing competition on the mortgage market have changed. Competition increased in the years prior to the crisis, which squeezed the margins on the mortgage market. However, competition weakened in connection with the turbulence that arose on the financial markets in 2008 and the margins increased again and have remained at high levels since then. When the Basel III Accord comes into force, the banks will have to hold more capital and liquid funds. In the short term, this may have contributed to higher funding costs. But in the long term, stricter regulations should benefit the economy by providing more stable financial markets and this should be reflected in a gradual fall in risk premiums and lower return requirements for the banking sector as a whole.

All in all, the current differential between variable mortgage rates and the repo rate will probably remain at an elevated level for a while but then begin to fall somewhat.

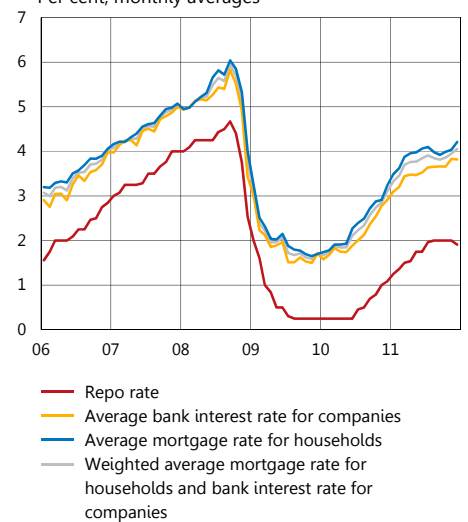
### Corporate rates rising less than mortgage rates

The interest rates that households have to pay play an important role for saving and consumption, but the interest rates paid by companies are also significant to the development of the economy as a whole.

The companies meet a range of interest rates as they can choose to fund their operations on the bond market and with bank loans. However, it is mainly the large companies that can turn to the bond market for funding. For small and medium-sized companies, bank loans are the most important source of funding. The companies can also get funding by using inter-company loans or, for example, from the Swedish Export Credit Corporation. The average interest rate that companies pay on bank loans has increased by 0.9 percentage points over the last 12 months, which is slightly more than the repo rate (see Figure A22). However, the average interest rates that companies pay for new loans have not increased as much as the corresponding rates for household mortgages.

Figure A22 also shows the combined average interest rate that the households and companies together pay for new bank loans. These measures capture a number of the interest rates that affect the economy.

**Figure A22. Average mortgage rates for households and bank interest rates for companies on new agreements, and the repo rate**  
Per cent, monthly averages



Note. In the grey line, the households' average interest rate is weighted by the percentage of loans to households, and the companies' average interest rate is weighted by the percentage of loans to companies. In December, the percentage of loans to households and companies amounted to 60 and 40 per cent, respectively. The final observation refers to December 2011.

Sources: Statistics Sweden and the Riksbank

**Higher lending rates reduce demand in the economy and are taken into account in the forecasts**

Lending rates to households and companies are an important part of the monetary policy transmission mechanism from the repo rate to the economy at large. In recent years, the differences between these lending rates and the repo rate have increased, and this affects the forecasts. Lending to households and companies usually declines when lending rates are increased, thus reducing the general level of demand in the economy. The Riksbank, for example, continually calculates how the disposable incomes of the households are affected by different lending rates. A rising mortgage rate, all else being equal, gives households less scope for consumption, lower GDP growth, a weaker development of the labour market and lower cost pressures. Housing investment and corporate investment are also affected. All of this is taken into account in the forecasts of developments in the Swedish economy.

It is not possible, however, to give a general rule of thumb for how the repo rate should be adapted to higher lending rates. The primary aims of monetary policy are to stabilise inflation around the inflation target and to stabilise resource utilisation around its normal level. An overall assessment of the outlook for inflation and resource utilisation, which are affected by a number of factors, including movements in lending rates, is made in connection with every monetary policy decision. It is therefore not possible to say how monetary policy should react solely on the basis of the fact that mortgage rates are relatively high in relation to the repo rate.