

Box 2 The impact of interest rate changes, inflation and exchange rate changes on household and business finances

Economic instability can imply volatility in GDP growth, inflation, interest rates, the exchange rate and other economic variables. The sensitivity of households and businesses to such swings varies according to the nature of their activities and the predominant form of their liabilities. Balance sheets of businesses and households with heavy short-term debt may be particularly vulnerable to changes in short-term borrowing rates. Companies with high foreign-denominated debt, which is not matched by currency revenues, are most sensitive to changes in the exchange rate, while for households and businesses with a large share of inflation-indexed domestic debt the biggest risk is from an unexpected increase in inflation. Analysis of the macroeconomic conditions for financial stability involves anticipating not only the most probable scenario at any time, but also the consequences of potential unexpected negative shocks. The following discussion should be seen in that context.

Households are relatively insensitive to short-term interest rate changes ...

Households are relatively insensitive to short-term interest rate changes. Only around 100 b.kr. of their 760 b.kr. debt at the end of last year consisted of non-indexed loans. A 1% rise in short-term interest rates would therefore add as much as 1 b.kr. to household debt service a year, assuming that the hike is ultimately transmitted across the entire interest rate spectrum for non-indexed loans. Actually, the short-term impact would be smaller, considering the proportion of non-indexed loans which bear fixed interest, but as their share of household debt is small means the difference would be slight. However, short-term interest rates are much more volatile than long-term ones.¹ Over time

1. Naturally it will make a difference whether interest rates increase in excess of inflation, i.e. whether the rise involves a change in real as well as nominal rates. In the long run, higher interest rates should not be detrimental to household or corporate balance sheets if they remain unchanged in real terms. Nonetheless, short-term liquidity could tighten if nominal interest rates rise sharply when access to borrowing is limited, for example due to a deteriorating credit rating. High interest rates and inflation imply faster debt retirement in real terms, which the borrower's cash flow might not be able to sustain

the impact would be transmitted to long-term real interest rates on indexed loans. Here it should be borne in mind that changes in yields on, for example, housing bonds, which carry fixed interest, primarily affect current homebuyers. Since homebuyers have the option of postponing transactions when facing unfavourable interest rate terms, higher yields are less likely to cause a financial shock. Pension funds, on the other hand, generally lend to their members at floating rates defined in terms of a premium on the yield on housing bonds. To some extent the same applies to credit from insurance and leasing companies. Credit of this type and indexed bank lending to households amounted to at least 200 b.kr. at the end of 2002. At a rough estimate, a rise in long-term interest rates by half a percentage point would have the same impact on household sector debt as a 1 percentage point rise in short-term rates, i.e. raise it by 1 b.kr., or the equivalent of 0.14% of disposable income. Over the past 12 months market yields on housing bonds and real interest rates of commercial banks and savings banks have fallen by around 1% and short-term DMB interest rates by some 5 percentage points. Total household debt burden should therefore have eased, all things being equal, by around 7 b.kr., or the equivalent of 1½% of disposable income.²

Given the large-scale investment projects that lie ahead, it is not unreasonable to assume that the fall in interest rates over the past year could at least be reversed. On the other hand, the investment is also likely to fuel disposable income growth and further debt accumulation, initially at least. Thus the impact of a heavier debt service burden might not be felt until the end of the growth episode when the rate of increase in disposable income begins to slow down, especially in the case of a failure to contain inflation which would result in a tighter monetary stance and last over a longer period than would otherwise be needed.

2. Not allowing for any further increase in debt accumulation.

... but shocks could arise if inflation erodes real disposable income

The conceivable increase in debt service caused by higher interest rates can be compared with the impact of higher inflation caused by a lax monetary stance. Let us assume that inflation increases from 2% to 10%, i.e. to broadly the same level as during the last surge. Since the bulk of household borrowing is indexed, debt service would increase by roughly 50 b.kr., which is equivalent to 12% of initial disposable income.³ Households need not experience serious problems as long as disposable income increases at a faster pace than prices, which is likely to be the case during an upswing. However, troubles could mount on the downswing if wage growth does not keep pace with inflation. This scenario is not simply hypothetical, given that real disposable income contracted by 9½% in 1992 and 1993 and household indebtedness has burgeoned since that time. A decline in real wages in the future, for example in a process of adjustment following a high inflation period, would therefore have much more serious consequences for household finances than during the previous episodes, especially considering that real interest rates are likely to be relatively high during disinflation periods. The best way to avoid such a situation is never to allow inflation to get out of control. High interest rates designed to prevent inflation will be easier for households to bear than an episode of temporarily high real interest rates that might be required to bring it back under control.

Exchange rate changes and inflation are in close correlation. Accordingly, exchange rate volatility has a strong effect on household balance sheets – i.e. through indexation of financial obligations and conceivably its effect on real wages. Foreign-denominated household debt is negligible, however.

Some businesses are highly vulnerable to exchange rate changes

Businesses are much more heterogeneous than households in terms of debt composition. Around 40% of the estimated 975 b.kr. total corporate debt at the end of last

year was denominated in foreign currencies. In some sectors this ratio is much higher, for example 80-100% in fisheries, energy production and transportation. Almost 60% of manufacturing industry debt is denominated in foreign currencies and around one-third or more in the service sector. The bulk of revenues of fisheries and transportation companies is either in foreign currencies or subject to foreign competition. It would therefore be natural to regard foreign real interest rates (relative to foreign prices) as the determinant factor of the direct risk affecting these companies' ability to service their foreign debt, while exchange rate risk mostly involves changes in domestic wage costs relative to product prices.⁴ Businesses that do not earn a substantial share of their revenues in foreign currency are much more vulnerable to exchange rate risk. More than one-third of retail sector debt, for example, is denominated in foreign currency. Insofar as the through-pass of exchange rate changes to domestic prices is relatively rapid – perhaps the result of oligopoly or little competition from domestic producers – this risk is perhaps not always as large as it may seem.⁵

Since exchange rate changes affect businesses on both the income and expense side, but to varying extents, the most effective way to assess the overall impact would be on a sector-by-sector basis. For example, the effect of an exchange rate appreciation is likely to be positive for certain service sectors, but negative for fisheries and other export sectors. All things being equal, a 10% appreciation of the króna would cut a typical fisheries company's EBITDA from 20% of turnover to 14%.⁶ Cost structure data for other sectors is less clear and the impact correspondingly difficult to evaluate.

3. Because indexation is compounded to the principal and spread over the duration of the loan, amortisation is more level when measured in terms of real interest rates than nominal interest rates.

4. Assuming that product prices broadly keep pace with foreign price changes.

5. For example, revenues from fuel sales are in krónur, but exchange rate changes are transmitted to domestic prices with a minimal lag. Accordingly, oil companies do not face a significant risk from their foreign borrowing exposures.

6. An estimated 40% of fisheries companies' costs are external in origin and therefore directly affected by the exchange rate. The segmental impact varies, however, with the highest foreign-denominated costs in on-board freezing where the crew's catch shares are linked to sales prices in foreign currencies. The lowest are in saltfish and shrimp processing

In light of the substantial proportion of their debt that is denominated in foreign currencies, Icelandic businesses are no less sensitive to changes in foreign interest rates than in domestic rates. Foreign interest rates were favourable for the Icelandic economy in 2002, as reflected in the sizeable reduction in net interest payments to abroad that year. It is uncertain exactly how much domestic businesses, the financial system and public sector benefited from these low interest rates. The effective interest rate paid by residents to abroad in 2002 was roughly 1½ percentage points lower than on average over the past six years, and lower still in the second half of that year. According to international forecasts these low rates can be expected to revert to a normal level in the next two to three years. A rise of 2 percentage points in foreign interest rates, which may be considered fairly probable in the years to come, would push total business costs in Iceland up by around 9 b.kr., or the equivalent of 0.7% of their extrapolated operating income in 2000.⁷

Businesses are much less sensitive towards

changes in domestic short-term interest rates, but these are likely to be much more volatile. Non-indexed corporate domestic debt can be roughly estimated at 130 b.kr. at the end of last year, or less than 15% of their total stock of debt. An interest rate rise of one percentage point would add around 1.3 b.kr. to their costs. Real interest rate volatility could be substantial. A rise of 4 to 5 percentage points in short-term real interest rates must be conceivable in the case of inadequate fiscal stance. Interest rate changes on such a scale could trigger cost increases equivalent to as much as 2.5% of business operating income.

The share of inflation-indexed liabilities in corporate debt is lower than in the case of household debt. Furthermore, relative changes in wages and prices affect businesses and households in opposite directions. Lower product prices relative to the general price level can have a comparable effect to a drop in real wages. On the other hand, a company's performance is left hardly untouched if its revenues increase in pace with inflation.

7. Estimated total operating costs in 2000 plus the GDP growth until 2002.