Research

March 21, 2006

Chief Economist Carsten Valgreen, +45 33 44 05 30, cval@danskebank.dk
Senior Analyst Lars Christensen, +45 33 44 05 45, larch@danskebank.dk
Analyst Peter Possing Andersen, +45 33 44 20 67, pa@danskebank.dk
Analyst Rene Kallestrup, +45 33 44 09 35, reka@danskebank.dk

Iceland: Geyser crisis

- On most measures, the small Icelandic economy is the most overheated in the OECD area. Unemployment stands at 1%, wage growth is above 7% and inflation is running above 4% despite a strong ISK. The current account deficit is closing in on 20% of GDP. The Icelandic central bank has been hiking rates substantially in order to cool the economy, and rates are now above 10%. Based on the macro data alone, we think the economy is heading for a recession in 2006-7. GDP could probably dip 5-10% in the next 2 years, and inflation is likely to spike above 10% as the ISK depreciates markedly.

- However, on top of the macro boom, there has been a stunning expansion of debt, leverage and risk-taking that is almost without precedents anywhere in the world. External debt is now nearly 300% of GDP, while short term external debt is just short of 55% of GDP. This is 133% of annual Icelandic export revenues.

- We look at early warning indicators for financial crises and conclude that Iceland looks worse on almost all measures than Thailand did before its crisis in 1997, and only moderately more healthy than Turkey before its 2001 crisis.

- Looking at currency exposure, the banking system is broadly hedged in a direct sense, as foreign currency lending and borrowing are broadly matched. However, as household mortgage debt is primarily inflation indexed, a weakening ISK will indirectly weaken household balance sheets through rising inflation. Inflation-linked mortgage debt stood at 165% of disposable income at end-2004.

- The cost of tapping into the global capital market is rising for the Icelandic banking sector. As they have substantial foreign-denominated debt falling due over the next 18 months, Icelandic banks are facing financial headwinds.

- To be sure, there are some areas where the Icelandic situation is better than the ones Turkey and Thailand faced. The extension of credit has to a large degree (but not entirely) been used to fund foreign equity acquisitions. These assets are probably yielding a positive cash flow that might help fund corporations and, in turn, banks going forward.

- Against this background, we see a substantial risk of a financial crisis developing as an integral part of an Icelandic recession in 2006-7. The banks' funding squeeze will probably force them to reduce lending to domestic players and could force a sell-off of external assets.

Assessing Iceland

A storm building in the North Atlantic

Iceland is not a core part of our research universe. We cover the currency, but we do not publish fixed-frequency forecasts on the economy.

Even so, we have now chosen to make this special report on the economy. There are two reasons. Firstly, we have seen a great surge in interest in Iceland as the boom in the economy has attracted attention. Secondly, recent market jitters suggest that a material change of dynamics is in the air.

We have long been sceptical about the sustainability of the Icelandic boom. And we have not been alone. Reports from the IMF and the OECD, as well as the Financial Stability report from the Sedlabanki (the Icelandic central bank), prepared in 2004 and 2005 all seemed wary of the situation. The imbalances have only grown worse since then.

Many of the conclusions in this paper could have been reached six months ago. However, as always, it is hard to time the turning point from boom to bust in a period of financial exuberance. Recent jitters, the sell-off in the ISK and increasing scepticism about Icelandic risks in global credit markets have convinced us that the time is "now".

This being the case we felt a need to issue a report laying out the facts about the Icelandic boom as we see them.

To be sure, Iceland has good long-term fundamentals. This is an economy with an innovative and well-educated workforce. The economy is quite flexible, entrepreneurial spirit abounds and the political situation is stable. This implies that the economy will weather this storm and emerge rich and well functioning on the other side. However, the recession is coming and it will be tough – as Icelandic recessions usually are.

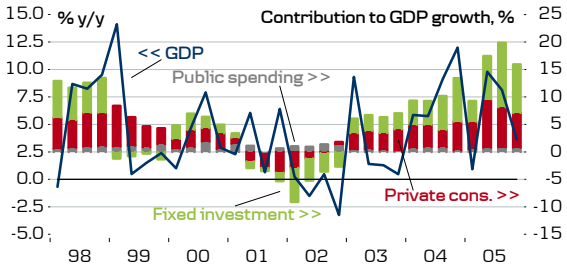
Living on the edge

Hot smelters, hot springs... hot economy

During recent years, the Icelandic economy has steamed ahead. At the moment this small economy is the most overheated in the OECD area, measured in almost all ways.

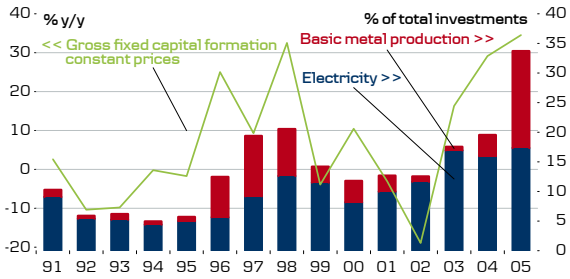
Since 2003 the Icelandic upswing has been driven by exceptionally strong domestic demand, spurred on by both consumer spending and investments (chart below).

Upswing driven by strong domestic demand



Much of the investment boom has been driven by large-scale energy investments and heavy foreign investments in aluminium production. Indirect export of thermal energy through aluminium production is the second most important component of Icelandic exports - next to marine products. It accounts for approximately 20% of total exports. However, even if one subtracts the effect of aluminium investments, growth in fixed investments is running at around 20% y/y.

Energy and metal sectors are driving investments



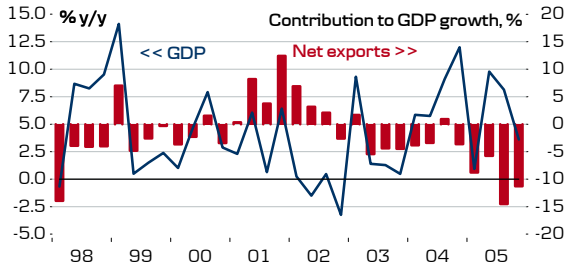
The expansion has a flipside, however. Strong domestic demand has caused a severe deterioration of net exports. While some of this deterioration may be explained by the – temporary – effects of energy and aluminium investments, this is far from the whole story.

The trade deficit is currently running above 10 percent of GDP.

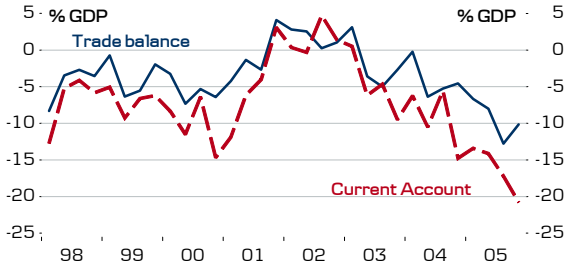
Moreover, the income balance has been deteriorating dramatically as well due to increasing expendi-

ture on interest and dividend payments as foreign debt and investment inflows have increased during recent years. This is reflected in the current account deficit, which currently stands at 20% of GDP.

Net exports have deteriorated...

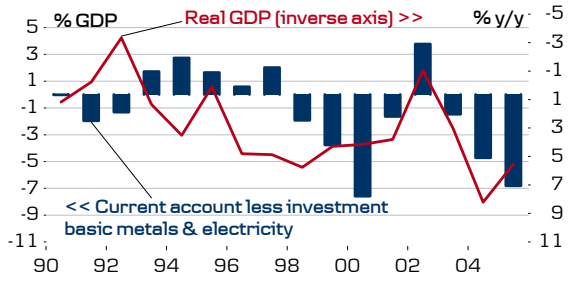


... and external imbalances are widening



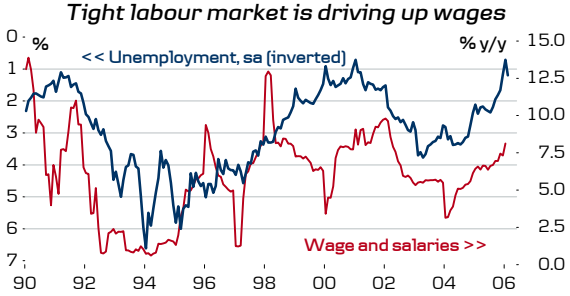
It has often been argued that the large Icelandic current account deficit is primarily due to heavy foreign investment in the aluminium sector. But this is not entirely correct, as the graph below illustrates. In the graph we have deducted total investment in the energy and metal sectors from the current account balance. This shows that, even with this correction, the current account deficit is substantial and among the largest in the world.

Large imbalances even disregarding aluminium



The strong pace of growth has created an extremely tight labour market. The unemployment rate is currently running at around 1%, touching the extreme lows of previous Icelandic cycles. When unemployment reached 1% in 1991 and 2000, deep recessions followed in 1992 and 2001.

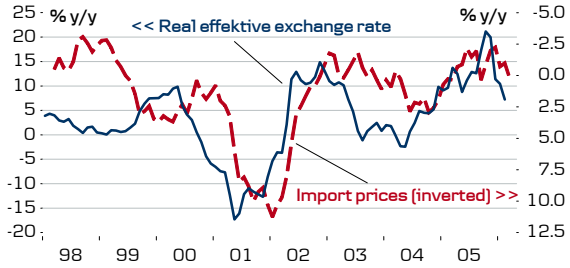
Tight labour market is driving up wages



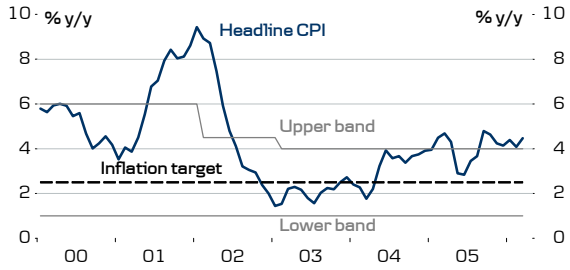
The strained labour market has fuelled wage and price growth during recent years. This drove inflation above the Icelandic central bank, Sedlabanki's, upper inflation band of 4% during 2005 – pretty impressive going.

Note that the ISK has strengthened by more than 20% in real terms since 2004 and that this small economy has an imports-to-GDP ratio of more than 45%. This being the case, the currency's strengthening has actually *dampened* inflation significantly.

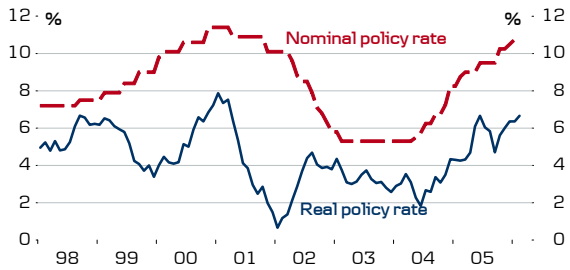
Even though the ISK is extremely strong ...



... inflation is rising above target ...



... which has forced Sedlabanki to hit the brakes

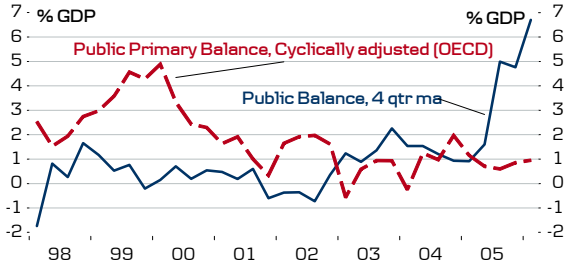


To contain inflationary pressures, the Sedlabanki has been forced to hike its policy rate from 5.3% in

mid-2004 to the current 10.75%. With headline inflation running at 4.5%, this implies that the real rate now exceeds 6% – a rather high level.

In previous periods - in 1998 and 2001 – when the real rate moved above 6% for longer periods of time, the following years saw significant slumps in GDP growth.

Public finances have not been tightened enough



Even though public finances are looking strong, with the budget surplus currently running above 5% of GDP, this is not the full picture. Public revenues have been boosted by the strong growth in the economy and the strength of the labour market. Adjusting for these cyclical factors shows that public finances have not been tightened during recent years (chart above) – in spite of the urgent need for tightening.

The economy is clearly overheating, since the labour market is extremely tight, wage pressures are unsustainable, the inflation rate is among the highest in the OECD area despite an overvalued currency, and the central bank is stamping on the brakes.

Based on these facts alone our judgement would be that the economy is heading for a significant slowdown in 2006/7.

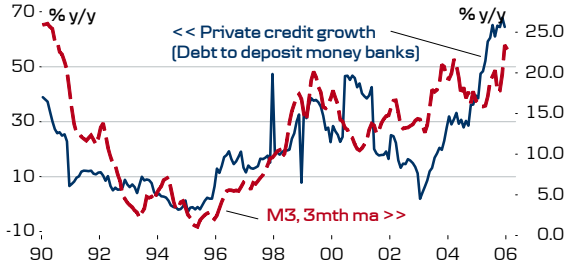
But this is not the full story.

Debt and leverage

Extreme ratios

External debt, foreign currency debt and leverage come on top of the classic macro worries outlined earlier. In the credit system, signs of overheating are abundant. Growth in credit (from Deposit Money Banks) to the private sector has virtually exploded and is currently running at more than 60% y/y.

Credit and money growth is spiking

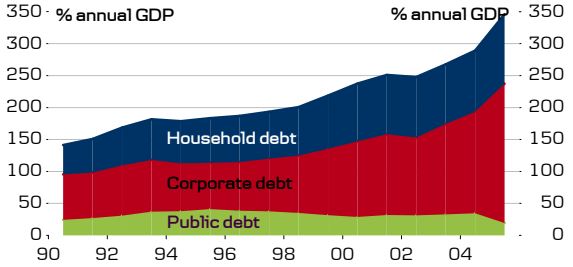


Looking at a broader measure of liquidity, the M3 money stock, confirms this picture. M3 growth has been surging as well during the past couple of years and is up more than 22% y/y. Moreover, M3 has been growing by more than 10% y/y every year since 1998. Evidently non-bank agents have been leveraging extremely fast.

Easy liquidity is inflating asset markets

Liquidity has also fed into assets markets, which have been booming. Since early 2004, the Icelandic stock market has gained almost 300 percent.

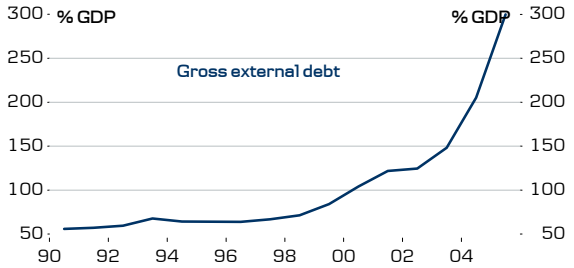
Corporate and household debt is surging



High credit growth is mirrored in debt ratios. Since 1990 total debt as a percentage of annual GDP has more than doubled to 350%. This development has primarily been driven by the corporate and household sectors, which have tripled and doubled debt as a percentage of GDP, respectively.

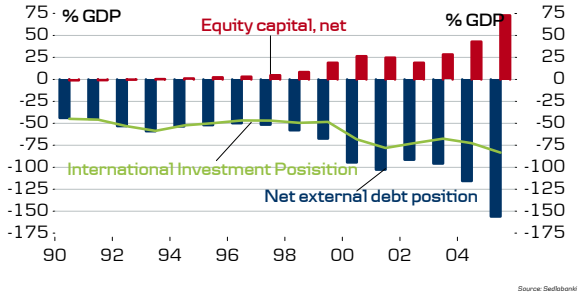
This is also reflected in funding of the debt increase. External debt has risen to nearly 300% of GDP.

External borrowing has exploded



External debt now accounts for more than 80% of total debt. It is probably safe to assume that this debt is almost entirely denominated in foreign currency. The recent boom in corporate debt reflects the aggressive acquisitive expansion of many Icelandic firms in Northern Europe. As a consequence, net equity capital holdings have increased substantially. However, as the chart below indicates, the net external debt position has, nevertheless, deteriorated.

International investment position has deteriorated



Consequently, the Icelandic economy has become increasingly dependent on foreign capital and international terms of lending. Iceland seems not only to be overheating, but also looks very dependent on the willingness-to-lend of global financial markets. This raises the question of whether the economy is facing not just a recession – but also a severe financial crisis.

Table of imbalances

	2005	2004	2003	2002	2001	2000
Current account, % of GDP, Q4 figures	-20,8	-14,8	-9,5	1,4	3,1	-14,7
Total debt, % of GDP , end of period	346,2	289,2	267,6	247,9	251,0	237,6
Gross external debt, % of GDP, end of period	299,9	205,3	148,3	124,6	121,8	104,2
Short term foreign debt, % of FX reserves, end of period	692,0	480,1	462,4	546,1	470,9	389,9
Public balance surplus (last four quarters), % of GDP, end of period	4,8	0,9	2,3	0,4	-0,6	0,5
M3 growth (3 mth moving average), % y/y, end of period	23,4	16,6	19,4	14,3	14,8	10,5
Private credit growth, % y/y , end of period	64,5	39,6	27,7	11,2	16,4	43,9

A textbook financial crisis?

How Iceland compares

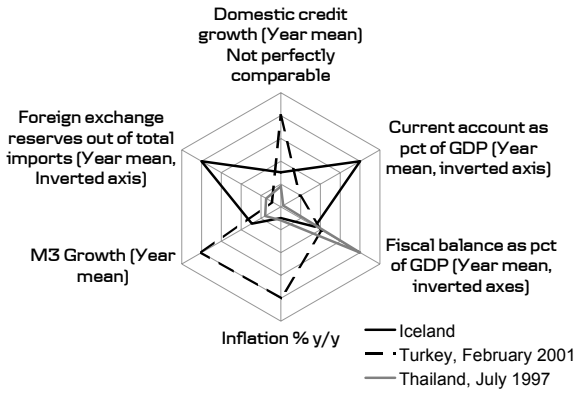
A quick look at the fundamentals of the Icelandic economy clearly shows that the economy is dominated by large imbalances. The natural question is then whether these imbalances are large enough to trigger a financial crisis. To get a more qualified view on this we have looked at a number of indicators which are normally used in the academic literature to study currency and banking crises[1].

We have looked at the following indicators:

- Credit growth
- Current account (% of GDP)
- Public finance surplus (% of GDP)
- Inflation
- M3 growth
- Foreign reserves as a per cent of total imports

By way of comparison we focus on the Thai crisis in 1997 and the Turkish crisis of 2001. These two cases closely resemble the situation in Iceland today. Measured by the key indicators above, the imbalances are even larger than in Thailand in 1997, but not quite as large as in Turkey in 2001, as the spider web diagram below illustrates.

Crisis indicators – worse than Thailand 1997



In fact the only indicator that looks healthier now in Iceland relative to Thailand in 1997 is public finances. However, it should be noted that the apparently strong fiscal position in Iceland can largely be explained by the strong growth and the boom in asset prices, cf. the discussion above.

That being said, the comparison between Iceland, Thailand and Turkey is primarily meant as an illustration of the magnitude of the imbalances in the Icelandic economy. There are obviously differences between the cases.

First of all, the Icelandic krónur is a free floating currency, unlike the Thai baht (1997) and the Turkish lira (in 2001), which naturally reduces the likelihood of an abrupt correction in the currency – though it should be stressed that the krónur has been overvalued.

Secondly, a large part of the credit expansion has been used by the corporate sector to purchase foreign assets, as noted earlier. This should cushion the economy to a greater degree than was the case in Thailand in 1997 and Turkey in 2001. These assets are likely to continue to be (partly) liquid, and foreign asset markets are not likely to be stressed during a possible Icelandic financial crisis.

However, putting these differences aside for a moment, we think that a possible Icelandic crisis could follow much the same lines as in Thailand and Turkey.

A scenario for a hard landing

The discussion above clearly illustrates that the present state of the Icelandic economy necessitates a major correction in not only the Icelandic financial markets, but also in the macro economy. It is hard to imagine that such a correction could be a "soft landing" given the size of the imbalances in the economy.

However, the complexity and extent of the problems in the Icelandic economy make it very difficult to predict the extent and timing of the correction. We have therefore chosen not to make a forecast for the Icelandic economy, but rather to look at one possible – and not unlikely – scenario for how such an economic and financial correction could play out. However, it should be stressed that the correction could be less painful if Icelandic policymakers take the appropriate action to facilitate the correction.

In our scenario we look, in all, at four phases in the correction, based on the experience from the crises mentioned above:

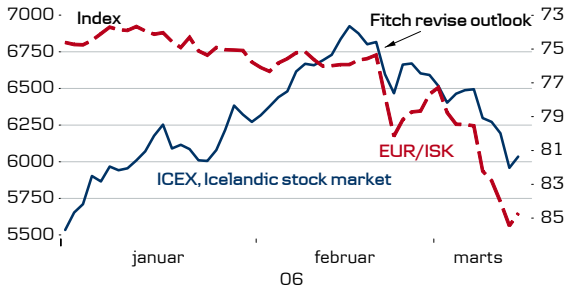
1. Building an unbalanced economy
2. Getting worried
3. Cutting off the oxygen supply
4. A hard landing

[1] For a standard reference in the literature see, for example, Kaminsky, Graciela L., 1999, *"Currency and Banking Crises: The Early Warnings of Distress"*, IMF Working Paper 99/178.

Phase 1 - Building an unbalanced economy
We have already passed this phase in the sense that the imbalances have built up as described above. In terms of the correction, it is enough to note that the imbalances are so large now that a correction in the markets and the economy seems unavoidable.

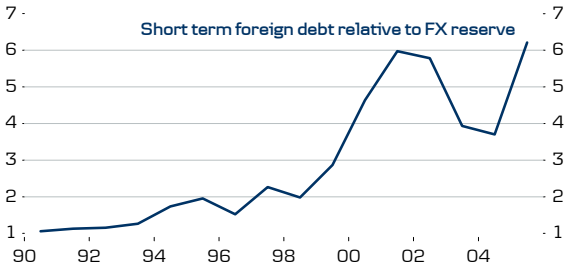
Phase 2 – Getting worried
Phase 2 has already started. This phase was initiated when the rating agency, Fitch, revised its outlook for Iceland's sovereign debt to Negative on February 21 and sparked frantic selling in the Icelandic FX, fixed income and equity markets. Fitch's rating action undoubtedly helped open the market's eyes to the large imbalances in the Icelandic economy.

Fitch sparks market correction



The revised outlook undoubtedly led many creditors to further restrict access to credit for Icelandic borrowers. This has been visible in spreads on Icelandic euro bonds, which have widened significantly.

Heading for a funding crisis?



We don't think this phase has come to an end yet. The banks will not be able to tap the global capital market again until the smoke clears on the economy.

The liquidity strains concern, in particular, debt denominated in foreign currency. The magnitude of the liquidity strains facing the Icelandic economy is illustrated by the fact that short-term debt amounts to six times the total Icelandic foreign exchange reserve and 133% of yearly exports. As a comparison, the short-term debt/reserve ratio for South Korea prior to the Asian crisis in 1997 was around 2½.

The fact that most of the Icelandic debt is held in foreign currency raises concerns about a possible liquidity and funding crisis. The Icelandic central bank's possibility of functioning as a *lender-of-last-resort* is basically limited by the size of the FX reserve. Therefore, the central bank's scope for easing the pains of a possible external lending crisis is rather limited.

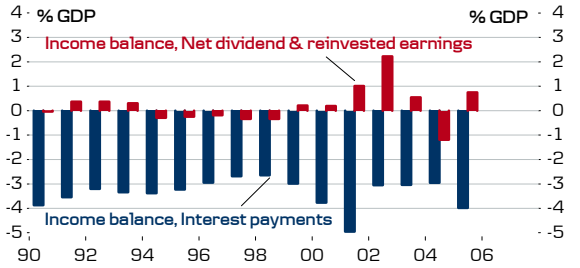
Phase 3 – Cutting off the oxygen supply
As liquidity conditions in the Icelandic economy are expected to get tighter, it is likely that the situation will turn from one of financial jitters into a full-scale financial crisis. Banks will have to reduce their lending to Icelandic companies and households significantly. Hence, a liquidity crisis could spread rapidly from the banking sector to the rest of the economy.

A significant funding and liquidity crisis in the Icelandic banking sector would most likely spark rating downgrades of the major Icelandic banks by the international rating agencies. Initially, this would only increase the wariness of global markets, and Icelandic banks and private entities would face strongly increasing funding costs. This would force the Icelandic banks to tighten lending conditions until cash flows are matched. For the economy this implies a fast and dramatic current account adjustment through domestic demand.

However, one special feature of the Icelandic expansion is that borrowing has been used to such a large extent to fund corporate acquisitions abroad. These assets yield a cash flow and can be sold if necessary. In this respect Iceland is in a better position than Thailand in 1997 and Turkey in 2001.

The question remains, however, of whether the cash flow of these external assets can match the negative cash flow on the external liabilities and instalments going forward. If the net cash flow of foreign assets cannot be made to match the interest and debt falling due, the argument that "expansion has been abroad" does not really help. To assess this aspect of the situation, we looked at net interest payments and equity payments on the Icelandic income account. This serves as a crude measure of net Icelandic external position cash flow, including acquisitions abroad. The running income deficit on this position is 3-4% of GDP.

Big gap between debt costs and equity income



Judging by these data, foreign assets are far from generating a cash flow that can fund debt costs going forward – especially as 55% of GDP in short-term external debt will fall due in the next year.

If Icelandic banks continue to face strongly rising funding costs, the result is likely to be a sale of foreign assets by Icelandic banks and Icelandic corporations.

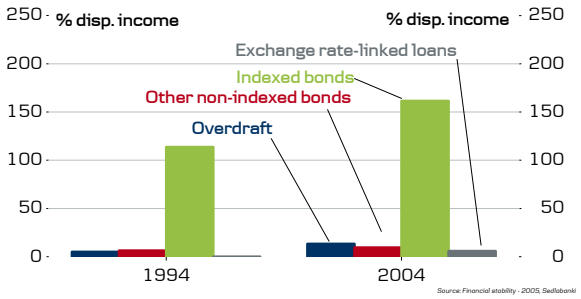
Previous similar crises in other countries have sparked very large market reactions. In Thailand (1997) and Turkey (2001) the currencies weakened by 50-60%. This might seem like an extreme reaction but, as we have noted above, the imbalances in the Icelandic economy are of a similar size. Hence, we would not rule out the possibility that the Icelandic krónur could weaken by a similar degree (note though that the krónur has already weakened by around 20% since the start of the market correction).

Such a depreciation of the krónur would increase inflationary pressures. Inflation would likely spike well above 10% y/y within a relatively short span of time. This would force the Icelandic central bank to tighten monetary policy in order to bring inflation under control again.

The Icelandic banks are generally well hedged against currency moves, as their funding and lending in foreign currency are broadly matched.

That said, the banks may have implicit currency risks that have not been hedged. One special feature of the Icelandic financial system is that the bulk of household borrowing is in inflation-linked mortgages. These mortgages correspond to 165% of disposable income. Hence, households are paying the real rate in ISK on their mortgages. This partly explains why the rather high nominal interest rates have so far done little to halt growth.

Household debt: Inflation linked



Source: Financial stability - 2005, Seðlabanki

On the other hand, the link to the CPI implies that households are indirectly exposed to movements in the ISK, as the ISK is crucial for inflation in such a tiny and very open economy. Should the ISK depreciate substantially as the economy dips into recession, households could find themselves in a serious bind, given that inflation could spike above 10% while wage growth would slow. In this – rather important – sense, the credit quality of households is indirectly linked to the ISK.

Phase 4 – A hard landing

The ramifications of a liquidity crisis are obvious – both the expected significant tightening of monetary policy and the negative wealth effects from the drop in the currency would hit investment and consumption. It is, of course, impossible to predict the size of such a negative correction. However, in Thailand in 1997 and in Turkey 2001, investments plummeted to the tune of 30-40%. Such a fall in investment seems very possible in Iceland as well – especially taking into account the size of the imbalances in the Icelandic economy and the fact that the Icelandic economy has historically been the most volatile economy in the OCED area by far. Furthermore, note that investment dropped by more than 25% in 2001 during the latest Icelandic recession – when imbalances and the leverage of the economy were somewhat less than today.

Private consumption would also suffer. This declined by 10-15% in Thailand in 1997 and in Turkey in 2001. Private consumption weakened by around 5% during the Icelandic recession of 2001. Given the scale of foreign-denominated debt (and the indexation of mortgage debt to inflation), a slide in the currency of, say, 20-30% (and a strong spike in inflation) would erode the net wealth of Icelandic private households – hence, a drop in private consumption of 5-10% is easily imaginable.

Falls in investment and private consumption of these magnitudes mean GDP could drop 5-10%.

Such a drop in GDP would obviously lead to a significant deterioration of public finances in Iceland, and the budget surplus would most likely turn very quickly into a deficit. The direct effect would come through a drop in revenues and higher expenditure (mostly social transfers) as a result of negative growth. However, if the crisis developed into a wider banking sector crisis, it would probably force the government to assume some of the increased debt burden from the banks – as was the case in, for example, the Turkish crisis of 2001 and the Swedish banking crisis of 1992-93.

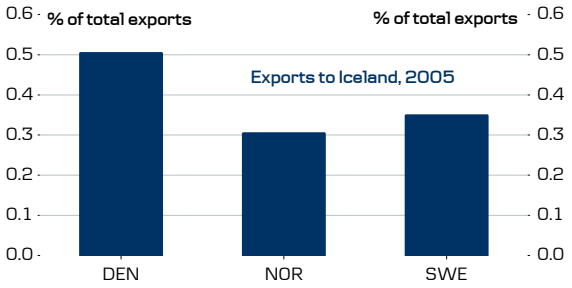
No major contagion

Little effect from a bust in the Icelandic economy

How much will a bust in the Icelandic economy affect the Scandinavian countries? Our view is that the impact will generally be very limited, from both the macroeconomic and financial perspectives.

As the share of exports from the Scandinavian economies going to Iceland is very small, the ramifications of a bust in the Icelandic economy on trading patterns should be rather limited.

Very little impact through trade patterns



However, the financial sector could feel some impact through the Icelandic ownership of Scandinavian assets. If the Icelandic banking and corporate sectors are forced to realise their foreign assets to meet some of their short-term foreign debt obligations, some spill-over could occur in the Scandinavian financial markets. But the impact would be limited to specific assets with Icelandic ownership and is not likely to have any aggregate market impact.

Limited Impact on Emerging Markets

...but focus on quality versus imbalances

The recent sell-off in the Icelandic financial markets has to some extent impacted negatively on, especially, other high-yield markets. However, it should be stressed that the size of foreign investment positions in Icelandic markets is very small compared to the general positions in other high-yield markets. We would therefore not expect any strong spill-over effects on other high-yield markets. Continuing turmoil in the Icelandic markets should, though, act as a further reminder to focus on the quality of high-yield assets.

Therefore, we would expect some spill-over from the Icelandic situation to other markets with similar problems – i.e. especially to countries with large and unsustainable current account deficits. Hungary, in particular, looks like a possible target, and a large negative correction in Iceland could easily trigger further corrections in the already fragile Hungarian markets. Likewise, the New Zealand markets could come under some pressure given the country's large current deficit.

In conclusion, we find it unlikely that a further correction in the Icelandic markets could trigger a broader Emerging Markets crisis, but it could trigger a sell-off in markets with unsustainably large current account deficits.

This report has been prepared by Danske Research, which is part of Danske Markets, a division of Danske Bank. Danske Bank is under supervision by the Danish Financial Supervisory Authority.

Danske Bank has established procedures to prevent conflicts of interest and to ensure the provision of high quality research based on research objectivity and independence. These procedures are documented in the Danske Bank Research Policy. Employees within the Danske Bank Research Departments have been instructed that any request that might impair the objectivity and independence of research shall be referred to Research Management and to the Compliance Officer. Danske Bank Research departments are organised independently from and do not report to other Danske Bank business areas. Research analysts are remunerated in part based on the over-all profitability of Danske Bank, which includes investment banking revenues, but do not receive bonuses or other remuneration linked to specific corporate finance or dept capital transactions.

Danske Bank research reports are prepared in accordance with the Danish Society of Investment Professionals' Ethical rules and the Recommendations of the Danish Securities Dealers Association.

Calculations and presentations in this report are based on standard econometric tools and methodology. Documentation can be obtained from the above named authors upon request.

Major risks connected with recommendations or opinions in this report, including as sensitivity analysis of relevant assumptions, are stated throughout the text.

First date of publication

Please see the front page of this research report.

This publication has been prepared by Danske Bank for information purposes only. It is not an offer or solicitation of any offer to purchase or sell any financial instrument. Whilst reasonable care has been taken to ensure that its contents are not untrue or misleading, no representation is made as to its accuracy or completeness and no liability is accepted for any loss arising from reliance on it. Danske Bank, its affiliates or staff, may perform services for, solicit business from, hold long or short positions in, or otherwise be interested in the investments (including derivatives), of any issuer mentioned herein. Danske Bank's research analysts are not permitted to invest in securities under coverage in their research sector.

This publication is not intended for private customers in the UK or any person in the US. Danske Bank A/S is regulated by the FSA for the conduct of designated investment business in the UK and is a member of the London Stock Exchange.