

Glitnir Research
December 2006

The Icelandic krona

Market report



Highlights

The krona has depreciated considerably this year and will, in our opinion, continue sliding next year. A substantial imbalance in the economy calls for further exchange-rate adjustment. The difference between domestic and foreign short-term interest rates can be expected to narrow as to the Central Bank of Iceland's lowers the policy rate in coming quarters. This will dampen the interest of investors and others in taking an ISK position.

The ISK exchange rate which encourages equilibrium in the economy is, in our opinion, close to the current level. We believe that an exchange rate index of 130 points encourages equilibrium, with the US dollar at around ISK72 and the euro at ISK95. In our opinion, the krona's exchange rate will be around this level towards the end of next year. The dollar now stands at ISK69, the euro at ISK92 and the exchange rate index at around 125 points.

A shallow domestic FX market, great imbalance in the economy, large long ISK positions of foreign entities, and Icelanders' enormous foreign debt are a combination that could, in a short period of time, induce a substantial depreciation of the krona. The risk appetite of international investors has been substantial and the exchange rate of the krona and other high-yielding currencies has benefited from this. In fact, we believe that foreign entities increasingly play a decisive role in the ISK's exchange-rate development, and this view is supported by, for example, the strong correlation between issuance of Eurobonds in ISK, risk premium on Icelandic financial corporations and the krona. If these investors have a change of heart, they can be expected to flee first from a small economy where the FX market is shallow. The resilience of the economy along with a krona exchange rate which seems, unlike a year ago, close to equilibrium, should suffice to turn such depreciation around in a relatively short time and without considerable damage to the financial system or the economy as a whole.

The current ISK exchange rate close to the level which encourages long-term equilibrium and high interest rate differential along with an outlook for a soft landing in the economy with a short-dated period of stagnation create a certain possibility that the krona will not fall next year but, on the contrary, appreciate. Such development would, however, be out of step with the adjustment needed for the economy following the recent period of overheating and especially in light of great imbalances. Even so, the krona's appreciation can by no means be ruled out.

For those who are prepared to take considerable risk, a position in the krona is an attractive option in light of a wide interest margin, the current ISK level and the medium term economic outlook. In particular, a further short-term depreciation of the krona would present an opportunity. However, a long position in the krona is risky because of the economy's substantial imbalance.



Glitnir Research
8 December 2006

THE ICELANDIC KRONA

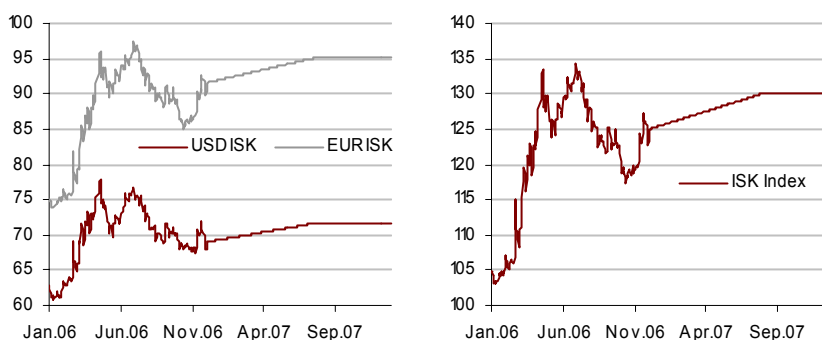
| | | |
|--|--|----|
| Authors: Ingólfur Bender, Ingvar Arnarson and Jón Bjarki Bentsson | The Icelandic krona | 2 |
| Responsible Editor.: Ingólfur Bender research@glitnir.is | Where is the krona headed in the short term? | 3 |
| | Recent ISK developments | 4 |
| | The ISK exchange rate affects the economy | 5 |
| | Equilibrium: the euro at ISK95 and the US dollar at ISK72 | 5 |
| | Uncertainty about further FDI | 6 |
| | The interest rate differential has probably peaked | 6 |
| | Pricing the ISK | 7 |
| | Interest-rate equilibrium and forward exchange rate | 8 |
| | The influence of foreign investors | 10 |
| | Long positions in ISK could decrease in the near term | 12 |
| | Appendix I: The correlation of ISK to high-yielding currencies | 16 |
| | Appendix II: Main economic indicators | 18 |
| | Appendix III: Economic indicators in December | 19 |

All estimations and analyses presented here are the opinion of Glitnir Research at the moment they were written and can change without notice. Glitnir hf. and its staff are not responsible for transactions based on the information and opinions here put forth. Readers are urged to seek expert advice in making decisions on market investments

The Icelandic krona

We believe the krona will depreciate next year. There is still considerable external imbalance in the economy and the interest differential to foreign interest rates is likely to narrow somewhat in coming quarters. This creates downward pressure on the krona's exchange rate. The uncertainty of course works both ways, but in light of the circumstances it seems to lean more towards the krona's depreciation in the medium term.

1. figure: Forecast of exchange rates for the euro and dollar against the krona, based on spot cross rates



Forecast for 2007

| | EUR | USD | ISK |
|----|-----|-----|-----|
| Q1 | 93 | 70 | 127 |
| Q2 | 94 | 71 | 128 |
| Q3 | 95 | 72 | 130 |
| Q4 | 95 | 72 | 130 |
| 07 | 94 | 71 | 129 |

Averages
Based on cross rates
8/12/06

Main uncertainty factors in the krona's exchange-rate development:

Appreciation factors

- Investors' risk-seeking (dominant)
- Interest rate differential (has peaked)
- Further issuance of ISK Eurobonds (uncertain)
- Foreign long ISK positions (continuing)
- Real exchange rate close to equilibrium
- Power-intensive industry developments (uncertain)

Depreciation factors

- Investors' risk-aversion (not prevalent)
- Current account deficit (has peaked)
- Maturities of ISK Eurobonds (no uncertainty)
- ISK long positions closed (question of time)
- High indebtedness of the economy
- Inflation higher than in trading countries.

Risk appetite of great importance

The risk-seeking of international investors has supported high-yielding currencies in recent years and the exchange rate of the ISK has clearly benefited from this, as foreign entities have increasingly been gaining prominence in the Icelandic FX market. If these investors have a change of heart, the krona's exchange rate could be significantly affected as investors try to close their positions. However, there are no sure signs that investors will change their minds in the near term and their risk-seeking might even increase further. Those of the high-yielding currencies most likely to be hardest hit are those with shallow FX markets, such as the krona.

The interest rate differential versus the current account deficit

A substantial interest differential to foreign interest rates currently offsets an enormous current account deficit. We deem likely that the Central Bank will raise its policy rate by 0.25 percentage points on 21 December. On the other hand, the Bank is likely to start reducing its rate just before mid-next year and we expect the Bank's policy rate to have reached 11.5% at year-end 2007. The outlook is for a rise in interest rates in many of our trading countries. There are therefore strong indications that the interest rate differential has peaked and will narrow in coming quarters. The current account deficit is record-breaking yet again this year and is headed for 22-25% of GDP. The ratio is abnormally high and the deficit clearly works strongly against the krona's exchange rate at present.

ISK positions of international investors of critical importance

The issuance of Eurobonds in ISK has been quiet for a while. It is uncertain whether and to what extent the issuance will continue. However there is no uncertainty about ISK167 billion maturing next year, ISK81 billion thereof in September. The maturities of the Eurobonds are likely to encourage depreciation of the krona and, in a foresighted FX market, this should happen some time before the maturity dates. Foreign long positions in the krona are now of considerable extent and a very large uncertainty factor in the FX market. International investors own about ISK50 billion in government

bonds and about ISK100 billion in HFF bonds. Forward long positions in the krona among the banks' customers amount to almost ISK500 billion, a large part thereof belonging to international investors. There is no doubt that if a significant share of those international investors reduce their ISK exposure, the krona could retreat significantly.

Equilibrium or dizzy imbalance?

The krona's real exchange rate is currently close to its historical long-term equilibrium. In light of this fact and the great interest differential, many could be tempted to take a position in the krona. However, it is important to realise that even though the real exchange rate is close to the level which ensures equilibrium in the economy in the long term, there is great imbalance in the economy. In order to bring down the current account deficit in a short period of time, the real exchange rate needs to decline considerably more. However, adjustment to equilibrium does not necessarily take place in a short time and a time-consuming adjustment is well thinkable. The current real exchange rate encourages external equilibrium in the long term. On the other hand, the Icelandic economy is heavily indebted and therefore sensitive to shocks of various types. Net national debt amounts to about 110% of expected GDP this year and no country within OECD is more indebted than Iceland by this measure.

Further FDI around the corner?

Much discussion is currently taking place about possible power-intensive industry developments which are currently under consideration. Three options are mainly being discussed, their overall cost along with the cost of power generation amounting to about ISK420 billion, if all three were to go ahead. However, the progress of these developments is subject to significant uncertainty and further build-up in the aluminium industry could prove gradual in coming years, thus having a moderate impact on the krona.

Purchasing power parity in danger?

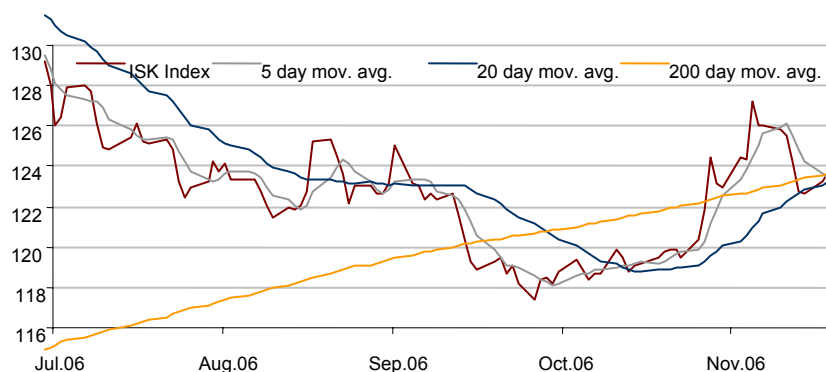
Inflation in Iceland has exceeded inflation in main trading countries and if this continues, such development should create downward pressure on the ISK in the long term. In coming months, however, there will be low inflation due to government measures in the run-up to elections. Underlying inflation will nonetheless remain considerable and an increase in measured inflation is to be expected in the latter half of the year. However, it currently seems that inflation will prove within acceptable limits in coming quarters and therefore not threaten the krona's long-term exchange rate, but of course there is prevailing uncertainty in these matters.

Where is the krona headed in the short term?

The trade weighted exchange rate index (ISK index) has fluctuated recently and does not point in a definite direction. It seems the index has reached a similar range as the one in August and September. The ISK index could therefore fluctuate in the range of 122 to 126 points in the very near term. If the index breaks through this range, it can be expected to shift even further in the said direction. It is uncertain what will happen in the end. Even so, it seems more likely that the exchange rate index will keep rising than falling in the near term, if the current trend is anything to go by.

Exchange rate index could fluctuate in the range of 122-126 points in coming days

2. figure: The krona's exchange rate in recent months



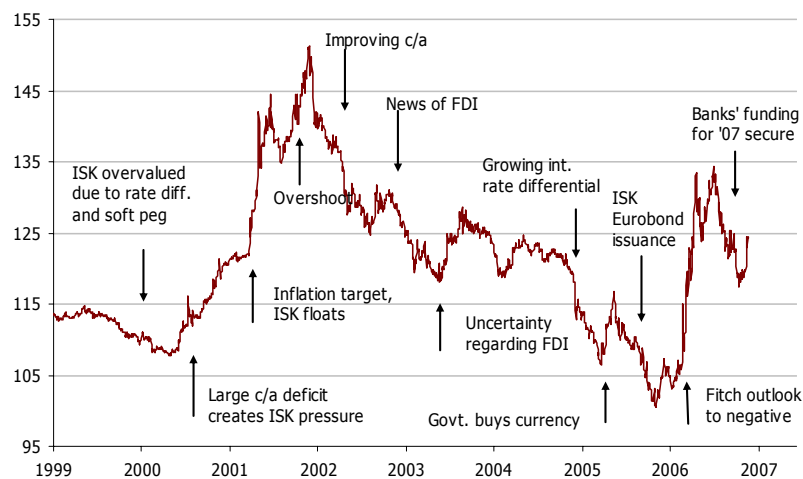
It should also be noted that since this spring the krona has, broadly speaking, remained in the index range of 120-130. It seems to have wide support as it draws closer to the upper limit of this range, but, conversely, downward pressure increases rapidly when the upper limit is broken, as happened in October. However, the development is dependent on many factors such as the issuance of Eurobonds in ISK, the exchange-rate development of other high-yielding currencies and policy-rate decisions. The actions of foreign investors are of great importance in this context.

Recent ISK developments

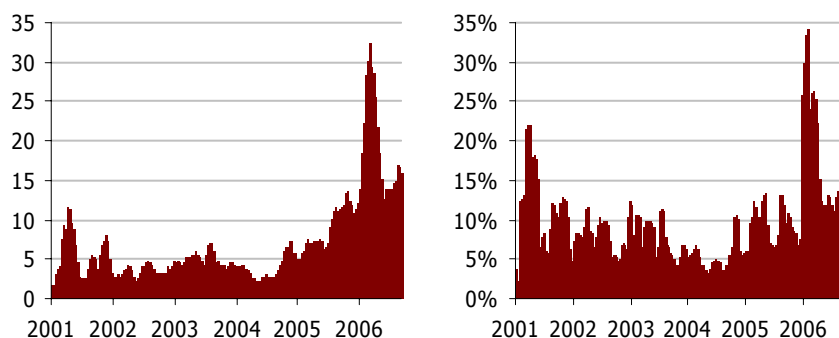
Uncertainty about the banks' refinancing and foreign criticisms about the economy led to sharp and substantial depreciation of the ISK in the first half of the year. However, the krona's exchange rate recovered to a considerable extent as uncertainty in these matters subsided. The krona's exchange-rate volatility has subsided significantly in the second half of the year and currency turnover in the interbank market has also fallen sharply compared to when activity was at its highest. FX market turnover has increased substantially in recent quarters with the advent of foreign investors, and positions in or against the krona have proliferated. The krona's potential exchange-rate volatility has therefore increased sharply.

The krona's exchange rate has been highly volatile and the FX market has matured

3. figure: The krona's exchange rate in recent years



4. figure: Daily FX turnover in interbank market (left panel, 30 day average, ISK bn) and the krona's exchange-rate volatility (right panel, annual basis, 21-day window)



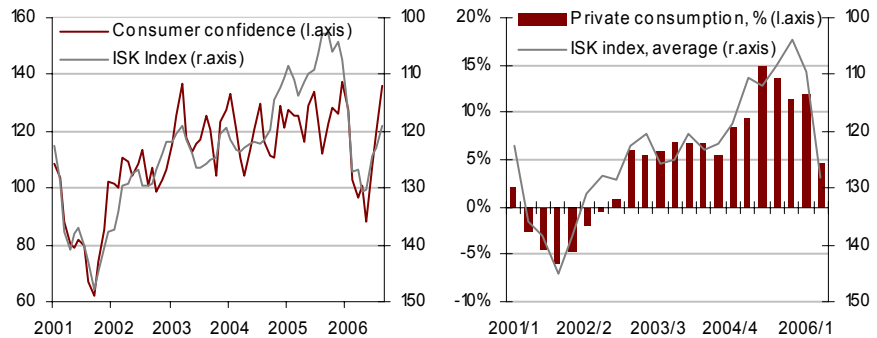
International investors are less concerned than before about the stability of the Icelandic financial system and this is reflected in a lower price of the banks' credit default swaps (CDS). On the other hand, the current account deficit seems set for breaking a new record by measuring over 20% of GDP this year. Although power-intensive industry developments are partly responsible for the deficit, it seems the majority of it can be traced to a high level of private consumption and low national savings. The krona's depreciation exacerbates the deficit in the short term, but serves to lower it in the long term. Large-scale industry developments have peaked and there are strong indications that the rapid economic growth which has characterised recent years will slow down considerably next year. The current account deficit should narrow simultaneously.

Increased faith in the financial system supports the krona but the c/a deficit works against it

The ISK exchange rate affects the economy

The krona's exchange rate is the factor that most strongly determines the position of the economy and most accurately reflects underlying currents. Consumers' expectations follow the exchange rate as does private consumption growth and imports of consumption goods. The causality is difficult to pin down at each time, but the correlation is obvious as is illustrated in the figures below.

5. figure: The krona's exchange rate, consumer expectations and private consumption



The ISK exchange rate is a key figure in the Icelandic economy...

...and there is a clear correlation between expectations and private consumption

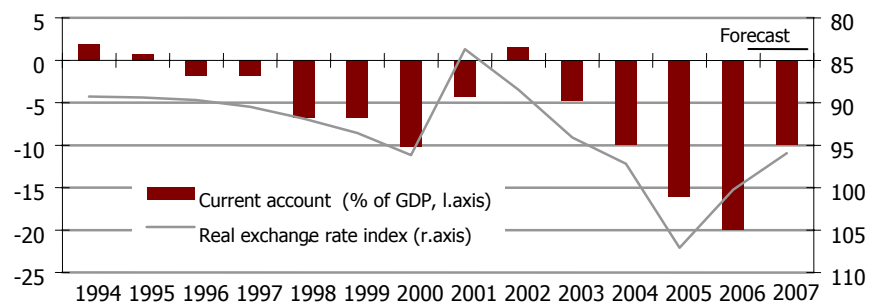
The krona's depreciation in the first half of the year dampened expectations and slowed down private consumption growth and imports. What happens next is determined by the interaction of various factors, not least the actions of foreign investors who have taken long ISK positions at high interest rates in Iceland.

Equilibrium: the euro at ISK95 and the US dollar at ISK72

The real exchange rate has played a key role in long-term forecasts for the exchange-rate development of the krona and other currencies. It gives indications as to whether a currency's nominal rate needs to fall or rise in order for the economy to gain equilibrium. However, this involves estimating which exchange rate matches economic equilibrium. The method has proved a useful tool when forecasting exchange rates around the world and in Iceland the exchange rate has proved to eventually seek this equilibrium.

The real exchange rate gives an indication of the pressure on a currency's nominal exchange rate

6. figure: C/a deficit and ISK's real exchange rate, based on prices



Great external imbalance points to further depreciation of the krona...

Great external imbalance in the economy, apparent for example in the considerable current account deficit, indicates that the krona will depreciate further. It is clear that this year's current account deficit will be larger than ever before. Based on our estimate of this year's GDP, the deficit is already 18.5% of GDP and is likely to prove in the range of 22-25% of GDP when figures for the entire year are available. Although a large share of the deficit is caused by extensive investments and therefore not a cause for worry if they prove profitable, it has to be admitted that a considerable part of it is caused by high a private consumption level and low national savings. This part of the deficit calls for a correction and creates downward pressure on the krona's exchange rate if nothing else changes. In our opinion, the lion's share of this correction of the krona has materialised following the exchange-rate development of recent months which will eventually show up in a narrowing of the current account deficit. However, we believe more is needed to bring the current account deficit down to an acceptable level. We believe the ISK index needs to reach about 130 points to attain this equilibrium, but it is now just over 125.

...and we believe that an exchange rate index of 130 encourages equilibrium

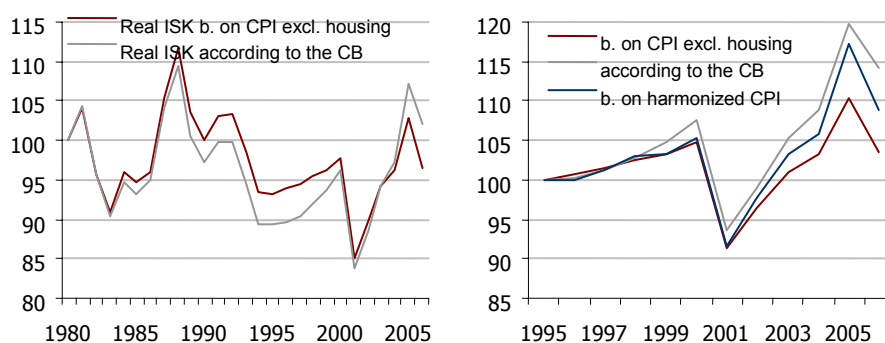
What does this mean in lay terms? The dollar now stands at ISK69 and the euro at just below ISK92. In order to encourage equilibrium in the economy the dollar should be about ISK72 and the euro just above ISK95, in our opinion, assuming an unchanged cross rate between them. This implies almost a 4% depreciation from the current position and that the abovementioned real exchange rate needs to fall by almost another 3% in addition to the 13% which it has fallen by since November last year.

This equals dollar at ISK72 and euro at ISK95

One thing that affects the estimate mentioned above is that the krona's real exchange rate as measured by relative prices seems to have been partly overestimated in recent years. The CPI is used in the calculation and this has caused a certain bias as house prices in Iceland have spiked sharply in recent years. House prices are usually not included in indices for foreign prices although renting costs are often included. A sharp rise in the price of housing in Iceland in recent years has therefore resulted in an overestimate of the krona's real exchange rate when using relative prices. The exchange rate was indisputably very high last year and far from balanced. On the other hand, if the krona's real exchange rate is reestimated with a CPI excluding house prices, or if the Harmonized Index of Consumer Prices (HICP) is used for Iceland and its main trading countries, then the current real exchange rate seems close to its long-term equilibrium.

The real exchange rate of the krona may have been overestimated based on relative prices

7. figure: ISK's real exchange rate based on relative prices (11980=100 lt. but 1995=100 rt.)



It should of course be duly noted that there is great uncertainty in the estimation of the equilibrium exchange rate, i.e. the exchange rate which matches equilibrium in the national economy. A number of studies indicate that this equilibrium varies from one period to the next and moves with changes in the economy, which have been significant in Iceland in recent years. The globalisation of the Icelandic economy is of great importance in this context. The estimate above should be viewed in this light.

Uncertainty about further FDI

One of the uncertainty factors which could, to a considerable extent, determine exchange-rate development and economic development in general in coming quarters are further aluminium smelter developments. Aluminium companies have expressed great interest in constructing new smelters or expanding existing ones in operation in Iceland, but no decisions have been made as yet. If a decision is made next year to undertake such developments on a large scale, e.g. in 2008, the resulting shift in expectations will significantly support the krona's exchange rate as soon as such a decision is made public, as was the case in 2003. However, it should be kept in mind that further build-up in the aluminium industry in Iceland could prove gradual and the impact on the krona and economic growth accordingly moderate. For example, the construction of a smelter near Húsavík and related power generation should not by itself have a crucial impact on the krona's exchange rate in view of current plans for spreading such developments over an extensive period.

Aluminium smelter developments could affect the krona significantly, but are subject to high uncertainty

The interest rate differential has probably peaked

There are strong indications the interest rate differential to foreign interest rates has reached its peak. The Central Bank did not raise its policy rate following a rate decision meeting at the beginning of November after regular hikes for two and a half years. Economic growth will slow considerably next year on the completion of power-intensive industry developments and expected slowdown in private consumption growth. Inflation expectations have also fallen sharply and the Central Bank takes this into consideration. The Bank will therefore probably not raise its policy rate further unless the krona

The interest rate differential is likely to narrow next year

suddenly slips considerably in the near term. Very likely, the Bank will not start lowering the rate until imbalance in the economy has clearly abated. The policy rate might therefore not be decreased for a long while yet, even though the Central Bank wants to be forward-looking. Yield curves in main trading countries are on average relatively flat and implied interest rates therefore indicate insignificant changes in the interest rate on average in coming quarters. On the whole, yield curves therefore imply that the foreign interest rate differential will be nearly unchanged in the next few months, but fall in the second half of next year with a further decrease in the medium term.

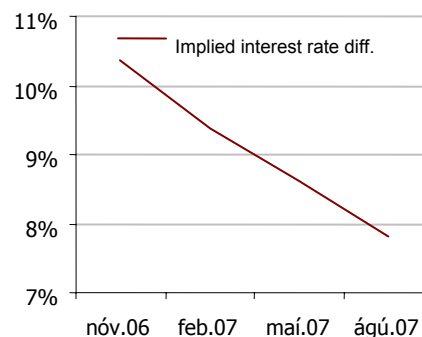
8. figure: Term structure of interest rates in Iceland and main trading countries.

| | Weights | 1M | 2M | 3M | 6M | 9M | 1Y | 2Y | 4Y | 6Y | 8Y |
|----------------------------|---------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| ISK | | <i>14.4</i> | <i>14.4</i> | <i>14.4</i> | <i>14.3</i> | <i>14.1</i> | <i>13.9</i> | <i>11.5</i> | <i>7.6</i> | <i>8.6</i> | <i>6.9</i> |
| USD | 23.0% | 5.2 | 5.3 | 5.3 | 5.3 | 5.2 | 5.2 | 4.7 | 4.6 | 4.5 | 4.6 |
| GBP | 12.1% | 5.1 | 5.2 | 5.2 | 5.3 | 5.3 | 5.4 | 5.0 | 4.9 | 4.7 | 4.6 |
| CAD | 1.1% | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | 3.9 | 3.9 | 3.9 | 4.0 |
| DKK | 8.1% | 3.7 | 3.7 | 3.8 | 3.9 | 4.0 | 4.0 | 3.7 | 3.6 | 3.6 | 3.7 |
| NOK | 6.0% | 3.6 | 3.7 | 3.7 | 3.9 | 4.0 | 4.2 | 4.0 | 4.1 | 4.1 | 4.9 |
| SEK | 3.9% | 3.0 | 3.1 | 3.1 | 3.3 | 3.5 | 3.6 | 3.5 | 3.5 | 3.6 | 3.6 |
| CHF | 1.2% | 1.8 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 |
| EUR | 41.1% | 3.5 | 3.6 | 3.6 | 3.7 | 3.8 | 3.8 | 3.6 | 3.6 | 3.7 | 3.7 |
| JPY | 3.4% | 0.3 | 0.4 | 0.5 | 0.5 | 0.6 | 0.7 | 0.8 | 1.1 | 1.3 | 1.5 |
| Basket rate | | 4.0 | 4.1 | 4.1 | 4.2 | 4.2 | 4.2 | 4.0 | 3.9 | 3.9 | 4.0 |
| Interest rate diff. | | 10.5 | 10.4 | 10.4 | 10.1 | 9.9 | 9.6 | 7.5 | 3.6 | 4.1 | 2.9 |
| Forward | | | | | | | | | | | |
| ISK index | | 125.3 | 126.4 | 127.5 | 128.5 | 131.5 | 134.3 | 136.9 | 144.1 | 143.8 | 156.1 |

Date 28.11.2006

9. figure: Expected development of 3-month interest rates according to implied interest rates

| | Weights | Nov.06 | Feb.07 | May.07 | Aug.07 |
|---------------------|---------|--------------|--------------|--------------|--------------|
| ISK | | <i>14.4%</i> | <i>13.6%</i> | <i>12.8%</i> | <i>12.0%</i> |
| USD | 23.0% | 5.3% | 5.2% | 5.0% | 4.8% |
| GBP | 12.1% | 5.2% | 5.3% | 5.3% | 5.3% |
| CAD | 1.1% | 4.3% | 4.2% | 4.1% | 4.1% |
| DKK | 8.1% | 3.8% | 4.0% | 4.0% | 4.0% |
| NOK | 6.0% | 3.7% | 4.0% | 4.3% | 4.5% |
| SEK | 3.9% | 3.1% | 3.5% | 3.7% | 3.8% |
| CHF | 1.2% | 1.9% | 2.1% | 2.2% | 2.3% |
| EUR | 41.1% | 3.6% | 3.8% | 3.9% | 3.9% |
| JPY | 3.4% | 0.5% | 0.6% | 0.8% | 0.9% |
| Basket rate | | 4.1% | 4.2% | 4.2% | 4.2% |
| Differential | | 10.4% | 9.4% | 8.6% | 7.8% |



Pricing the ISK

In the medium term, the equilibrium value of the krona is close to an exchange rate index of 130 points in our opinion, given the correlation between the current account deficit and real exchange rate. In the long term, the equilibrium value should fall by the difference between inflation in Iceland and in main trading countries. In the short term, the krona's exchange rate can however deviate significantly from the equilibrium in either direction, depending on the interest rate differential investors' confidence and unexpected shocks that influence supply or demand in the market.

It is possible to discount the equilibrium exchange rate with the interest-rate differential, given assumptions for when equilibrium can be expected. This yields an arbitrage free krona today, given the said assumptions. We believe the exchange rate index will seek 130 points in the second half of next year when the economy cools further. The exchange rate index should stand at around 119 points today based on that assumption. However, there is scope for differing opinions on where the krona's equilibrium lies, both regarding pricing and timing, and, of course, great uncertainty is involved. The table above shows different examples of this.

The ISK exchange rate can deviate far from long-term equilibrium

10. figure: The table shows the krona's arbitrage free exchange rate index today based on different assumptions of equilibrium exchange rate* and when it is achieved, given the interest rate differential today.

| ISK equilibrium | Aug.07 | Nov.07 | Nov.08 | Nov.10 | Nov.12 |
|-----------------|--------|--------|--------|--------|--------|
| 110 | 102.6 | 100.7 | 95.7 | 95.9 | 87.4 |
| 115 | 107.3 | 105.3 | 100.0 | 100.2 | 91.4 |
| 120 | 112.0 | 109.8 | 104.4 | 104.6 | 95.3 |
| 125 | 116.6 | 114.4 | 108.7 | 108.9 | 99.3 |
| 130 | 121.3 | 119.0 | 113.1 | 113.3 | 103.3 |
| 135 | 126.0 | 123.6 | 117.4 | 117.7 | 107.3 |
| 140 | 130.6 | 128.1 | 121.8 | 122.0 | 111.2 |
| 145 | 135.3 | 132.7 | 126.1 | 126.4 | 115.2 |
| 150 | 139.9 | 137.3 | 130.5 | 130.7 | 119.2 |

Equilibrium ISK refers to an ISK index level that gives a real exchange rate that produces a balance on the current account

28.11.2006



An arbitrage-free ISK exchange rate index can be estimated by discounting the equilibrium exchange rate

Assumptions for equilibrium value and timing of equilibrium largely determine where fair value of the krona lies today

If 130 points signify equilibrium and such equilibrium is expected to be reached in November next year, it pays to take a one-year long position in the krona when the exchange rate index is above 119 points, based on the current interest-rate differential.

If 140 points imply equilibrium and such equilibrium is expected to be reached at year-end 2010, then it pays to take a three-year long position in the krona when the exchange rate index is above 122 points, based on the current interest-rate differential.

If 135 points indicate equilibrium and such equilibrium is expected to be reached in August next year, then it is not worth taking a long position in the krona for nine months unless the exchange rate index is above 126 points.

11. figure: Main currencies at various levels of the krona's exchange rate index.

| ISK Index | 110 | 115 | 120 | 125 | 130 | 135 | 140 |
|-----------|-------|-------|-------|-------|-------|-------|-------|
| USD | 61.2 | 63.9 | 66.7 | 69.5 | 72.3 | 75.1 | 77.9 |
| GPB | 119 | 125 | 130 | 135 | 141 | 146 | 152 |
| CAD | 54.2 | 56.6 | 59.1 | 61.5 | 64.0 | 66.5 | 68.9 |
| DKK | 10.8 | 11.3 | 11.8 | 12.3 | 12.8 | 13.3 | 13.8 |
| NOK | 9.7 | 10.1 | 10.6 | 11.0 | 11.5 | 11.9 | 12.3 |
| SEK | 8.9 | 9.3 | 9.7 | 10.1 | 10.5 | 10.9 | 11.3 |
| CHF | 50.8 | 53.1 | 55.4 | 57.7 | 60.0 | 62.3 | 64.6 |
| EUR | 80.6 | 84.2 | 87.9 | 91.5 | 95.2 | 98.9 | 102.5 |
| JPY | 0.527 | 0.551 | 0.575 | 0.599 | 0.623 | 0.647 | 0.671 |

Based on cross rates 28.11.2006

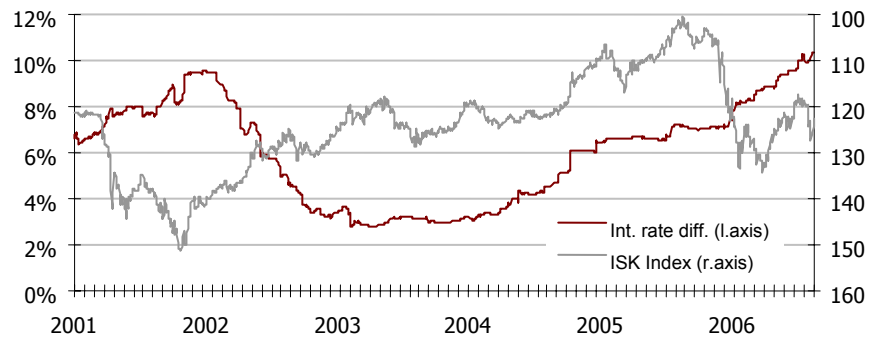
Interest-rate equilibrium and forward exchange rate

The theory of uncovered interest rate parity (UIP) is often used as a basis for medium term forecasts of exchange-rate development. The essence of the theory is that interest rate differential between currency areas will entail corresponding changes in the exchange rate. If, for example, interest rates are higher in Iceland than in the Euro Area the theory assumes that the krona's exchange rate against the euro will fall so that investors are equally well off investing their capital in either currency. If this were not so, investors would move their capital to where returns were higher, taking expected changes in the exchange rate into account, until changes had occurred in the interest rate differential and/or expected exchange-rate movements. This means that simultaneous to a change in the interest-rate differential, a corresponding change should occur in the cross rate of currencies when assuming some sort of long-term equilibrium in the exchange rate. The theory is thus often paired with real exchange rate theories such as the theory of purchasing power parity (PPP). The problem is, however, that empirical tests of UIP, using data from various countries and periods, have often rejected it in its simplest form. Although attempts have been made to improve the theory with an estimation of a risk premium and various

The theory of uncovered interest rate parity is often used in forecasting although studies of it show mixed results

deviations from the assumption of efficient markets, results are mixed at best¹.

12. figure: Development of the exchange rate index and trade weighted 3-month interest rate differential

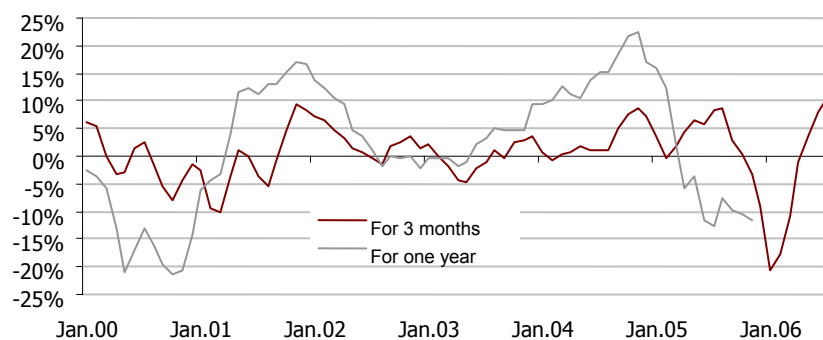


The interest rate differential between Iceland and trading countries has been substantial in recent quarters...

..but investors seem to subtract the risk premium from the interest margin

Interest rates in Iceland have been higher than in main trading countries since the krona was first floated in spring 2001. The krona's exchange-rate volatility has been substantial during this time and it has not always been possible to see a clear correlation between the development of the krona and interest rate differential as illustrated in Figure 13. In fact, the period from 2004 to 2005 where the krona appreciated parallel to increasing interest rate differential can be explained according to UIP. When market players have believed in certain exchange-rate equilibrium, widening of the interest differential has served to raise the exchange rate until they were in the same position as before, based on expected adjustment to the exchange-rate equilibrium. This explanation is of course not true for this year. It is possible to conclude that investors deduct a risk premium from the interest rate differential when they compare investments in Iceland with investments in main trading countries. The said risk premium seems to vary between being fairly moderate and very high, as seems to have been the case in the first half of this year. One possible way to approximate this risk premium using the credit default swaps (CDS) of Icelandic banks as a proxy is discussed further below, but data on the relevant CDS spreads is only available a little over a year back.

13. figure: The difference in forward exchange rate of EUR/ISK according to UIP and subsequent development.



Investors were better off with the krona than the euro for most of recent quarters...

From a simple UIP, it is possible to calculate a forward exchange rate based on the spot exchange rate and the interest rate differential for a certain time length. It is interesting to examine how well such forward exchange rate has served as an indicator of actual exchange rate development and whether investors have been better off by utilising the interest rate differential or by going against it. Figure 13 shows a simple comparison of the forward EUR/ISK exchange rate according to UIP at each time and subsequent development of the cross-rate in the relevant period. The position of the curves in January 2001, for example, shows proportional difference between the euro's 3-month and one-year forward exchange rates forecast by the UIP, and the real position of the exchange rate in April 2001 and January 2002. The figure implies that investors were better off with one-year return in the Icelandic money market than the European one more or less from mid-2001 until the beginning of 2005 when combined interest rate differential and exchange rate gains peaked at over 20%. Things then took a turn

¹ Sarno, L. and Taylor, M.P. (2005) *The Economics of Exchange Rates*, Cambridge University Press, p.34

...but unfavourable currency changes rapidly erase the profit from the interest differential

Foreign investors have played a large role in the ISK exchange rate development recently

Issuance of foreign Eurobonds in ISK equals a quarter of GDP...

...and there is a correlation between issuance and the development of the ISK exchange rate.

for the worse and since last spring investors have been better off in the European moneymarket for one year as the krona's depreciation towards the end of last winter did more than erase the gains from the interest rate differential.

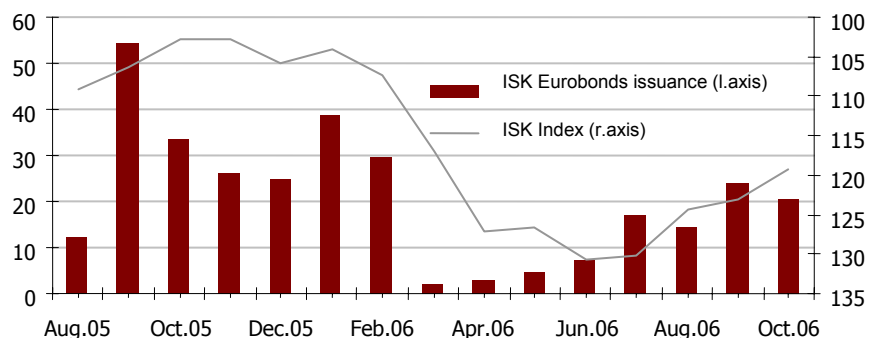
The scenario pictured above may in fact explain the interest of foreign investors in buying Eurobonds in ISK in the fall of 2005 when the opinion that the krona would slip considerably had become quite prevalent in Iceland. Those who disagreed, however, based their opinion on the previous development where both interest rate differential and exchange rate movements had underpinned the view that it was preferable to finance investments in Iceland in euros. On the other hand, the experience of recent months shows us that changes in the exchange rate rapidly erase profits, a reminder that there is considerable risk involved in financing investments in a certain currency with foreign currency.

The influence of foreign investors

Foreign investors have lately become more and more prominent in the FX market for ISK and in fact, we think they played a crucial role in the exchange-rate development of the krona in recent quarters. As an example, the root of the sharp depreciation of the krona which occurred at the end of winter lay in the flight of some of the foreign investors who had been utilising the interest rate differential between Iceland and countries with low-yielding currencies. A change by the rating agency Fitch on the outlook for the Republic of Iceland's credit rating from stable to negative, in addition to adverse reports by foreign analysts, caused the fear of ISK depreciation to outweigh the rate differential in investors' minds. In the summer, however, foreign investors regained confidence in Iceland and this contributed generously to an ISK appreciation which characterised the third quarter. On the other hand, the situation has deteriorated somewhat in recent weeks, both regarding the krona's exchange rate and the world's faith in Iceland as an investment option.

Foreign issuance of Eurobonds in ISK has grown fast since it first became noticeable in late August 2005. Half a year later, total issuance of Eurobonds in ISK amounted to over ISK220 billion but following negative sentiment abroad and the krona's depreciation issuance subtracted significantly. However, a turnaround occurred at mid-year both in exchange rate development and the issuance of ISK Eurobonds, which revived after mid-July. From from that time till after mid-October, ISK Eurobonds worth ISK73 billion were issued, and, even though bonds worth ISK53 billion excluding interest payments matured in the autumn, the total number of outstanding Eurobonds in ISK has risen. It is now over ISK260 billion, equalling almost a quarter of GDP this year. Since mid-October, however, only one foreign issuance of Eurobonds in ISK has taken place and there are various indications that this market has become saturated for the time being.

14. figure: Foreign issuance of Eurobonds in ISK (ISK, bn) and ISK exchange rate index per month

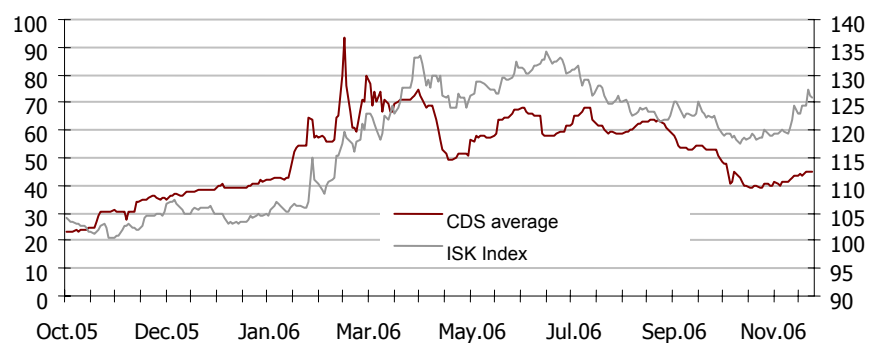


It seems clear that the issuance of ISK Eurobonds has had a considerable effect on the krona's exchange-rate development and Figure 14 shows how the issuance and the development of the exchange-rate index move in tandem. In our *Market Outlook* issued in December last year we published an estimate of the short-term impact of ISK Eurobond issuance. It stated that for each billion of ISK Eurobonds issued, one might expect about 0.1% appreciation of the krona by the end of the following day. At that time it was impossible to examine the long-term effect due to a short history. There are now, however, 15 months since the issuance began so more data is available.

The banks' credit default swaps are an interesting measure of foreign market players' faith in the domestic financial system

The faith of foreign market players in the krona and the prospects of Icelandic financial markets is reflected in the issuance of Eurobonds in ISK. However, it is worthwhile to endeavour to measure this confidence in some way that is not so dependent on variables such as interest rate differential and scope for swaps in Iceland, as those variables strongly affect the volume of ISK Eurobond issuance. The chosen variable was the average price of the credit default swaps (CDS) of Iceland's three commercial banks: Kaupthing Bank, Landsbanki and Glitnir. The three banks together form over 60% of the overall value of corporations on ICEX Main List and the future development of the business sector in Iceland should also be reflected in their growth. Since autumn 2005, the price formation of the banks' credit default swaps has been relatively active. We also believe we have seen strong correlation between development in the pricing of banks' CDS and the views expressed in foreign analyses and writings on the Icelandic economy at each time. In short, a rise in the price of CDS means that the market believes there is increased risk of a default and a fall in the price similarly reflects increased confidence in the banks' ability to make payments on their foreign debt.

15. figure: The average price of the banks' 5-year credit default swaps in basis points (lt. axis) and the ISK index (rt. axis)



There is a strong relationship between ISK exchange rate development and the price of the Icelandic banks' credit default swaps

As shown in Figure 15, there is a strong connection between development of the krona's exchange rate and the price of CDS for the banks' 5-year senior debt. It should be noted that the spread in price between the CDS of the three banks has increased significantly in the period. The difference is now over 20 points (0.2 percentage points) between the highest and lowest price but was less than 10 points a year ago. Although a short time has passed since the pricing of the Icelandic banks' default credit swaps became active, it can not be ignored how similar the movements in these two variables have been in the past year. Some simple regression analysis reveals that the CDS's explanatory power for the krona's exchange-rate movements is very high, be it for monthly, weekly or daily changes. Together, the issuance of Eurobonds in ISK and movements in CDS prices explain more than half of monthly exchange-rate changes and almost 40% of weekly changes in the exchange rate (based on) which can be considered high for an estimate of exchange-rate movements. An analysis of daily changes in the ISK index, where changes in the interest rate differential between Iceland and the trading countries were used as an explanatory variable in addition to the variables mentioned above, gave the coefficient of determination (adjusted R^2) at 18% which has to seem rather high in light of how noisy the krona's movements are at such high frequency.

The issuance of Eurobonds in ISK and price changes of credit default swaps provide a high combined degree of explanatory power for the ISK exchange rate

16. figure: Regression analysis, daily data, period 1.9.2005 to 20.11.2006. Dependent variable is daily percentage changes in the ISK index

| | coeff | std. dev. | t-value | p-value |
|--------------------------------|--------|-----------|---------|---------|
| Constant | 0.159 | 0.064 | 2.458 | 0.014 |
| Eurobonds | -0.041 | 0.019 | -2.133 | 0.034 |
| Eurobonds(-1) | -0.049 | 0.016 | -2.994 | 0.003 |
| Changes in CDS | 0.107 | 0.025 | 4.323 | 0.001 |
| Changes in CDS(-1) | 0.085 | 0.043 | 1.988 | 0.000 |
| Changes in rate diff. | -0.229 | 0.066 | -3.484 | 0.048 |
| $R^2=0.18$ Adjusted $R^2=0.17$ | | | | |

An estimate using regression analysis indicates that for each billion of ISK Eurobonds issued, the krona appreciates by 0.1% a day later...

The impact of issuance of ISK Eurobonds on daily changes in the exchange rate still seem to follow a pattern similar to the one revealed by our estimate in December. According to an estimated equation where daily changes in the ISK index are explained by the issuance of Eurobonds in ISK, CDS-price changes and changes in the 3-month trade weighted interest rate differential, the krona can be

...and that a rise in CDS by 1 point corresponds to a 0.2% depreciation of the krona a day later

expected to appreciate by 0.09% by the next day after the issuance of each billion Eurobonds in ISK. A Wald test does not reject the theory that the influence is in fact a 0.1% rise as indicated by our previous estimate. The short-term effect from a rise in CDS on the ISK is also considerable according to the abovementioned equation. The krona, for example, depreciates by almost 0.2% a day later for each point the CDS rises. A wider interest rate differential also supports the krona's exchange rate in the short term according to the estimate. A one percentage-point widening of the interest rate differential causes the krona to appreciate by 2.4% the same day.

17. figure: Regression analysis, weekly data, period 1.9.2005 to 20.11.2006. Dependent variable is weekly percentage changes in the ISK index

| | coeff | std. dev. | t-value | p-value |
|--------------------------------|--------|-----------|---------|---------|
| Dummy var. | 0.470 | 0.214 | 2.199 | 0.032 |
| Eurobonds(-1) | -0.045 | 0.022 | -2.027 | 0.047 |
| Changes in CDS | 0.182 | 0.035 | 5.167 | 0.000 |
| Changes in CDS(-3) | 0.110 | 0.035 | 3.119 | 0.003 |
| Changes in CDS(-5) | 0.098 | 0.035 | 2.793 | 0.007 |
| $R^2=0.40$ Adjusted $R^2=0.37$ | | | | |

For each billion of ISK Eurobonds issued in a particular week the krona appreciates by 0.05%...

The estimation of weekly data indicates that for each billion issued of Eurobonds in ISK in a particular week, the krona appreciates by the following week by 0.05%. The overall impact of a one-point rise in the CDS is depreciation of the krona by 0.4% which materialises over five weeks according to the estimate mentioned above. It turned out that changes in the interest rate differential did not have a significant impact on the krona's exchange rate in this estimate. Instead of a constant, a dummy variable was defined having the value 0 until the end of March, but 1 thereafter. This change somewhat increased the equation's explanatory power, and can be interpreted as indicating that before the krona's depreciation there was no trend in weekly exchange-rate changes but after things started to cool down in spring the trend was for depreciation. It is interesting that the influence of CDS seems stronger in this estimate than when looking at daily changes, while the impact of ISK Eurobond issuance fades.

..and for each point the CDS rises within a week the krona depreciates by 0.4% over the next 5 weeks.

An estimate based on monthly data tells a similar story. There the result is that a billion of Eurobonds issued in ISK causes the krona to appreciate by 0.14% within the same month, but for each point the CDS rises the krona depreciates by 0.3% within the same month. The theory that the impact of a CDS-rise is in fact 0.4% depreciation is, however, not rejected at a 95% significance level and there is therefore conformity between this estimate and the impact using weekly data. It should be noted that very few measurements (16) lie behind the monthly estimate and that as the frequency falls, the probability of interactive effects between variables increases. This estimate has therefore to be taken with a large grain of salt even if all coefficients proved statistically significant at the 95% level.

It seems that CDS and ISK Eurobonds influence exchange rate development rather than vice versa

It should be remembered that a simple regression analysis does not confirm cause and effect but only correlation. With view of this, VAR models were also estimated where the three variables (exchange-rate changes, issuance of Eurobonds in ISK and CDS changes) influenced each other within certain limits. The outcome there is in fact similar to that of one-equation models and, in addition, statistical tests on VAR models indicated that the impact of the exchange rate index on the other two variables is not significant and neither is the reciprocal impact between the CDS price and issuance of Eurobonds in ISK. It can therefore be concluded that a one-equation model where the dependent variable is the krona's exchange rate is fairly successful in capturing the relationship between those figures, at least when estimating daily and weekly changes. However, there is a reason to reiterate that the data only covers a relatively short period and it will be very interesting to ascertain whether the relationships discussed above will hold as time progresses.

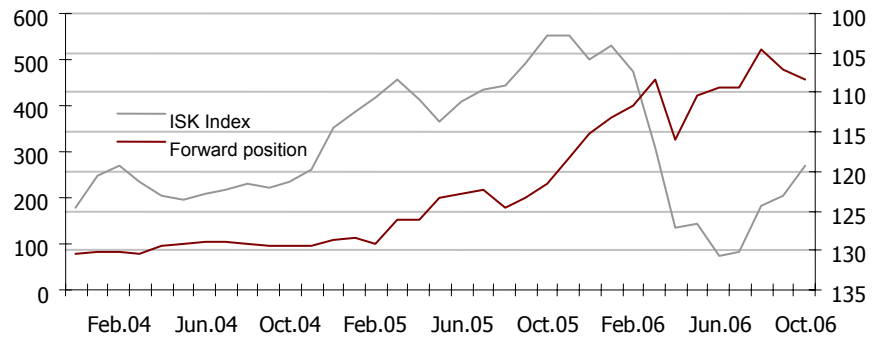
Foreign entities own ISK49 billion in government bonds and over ISK100 billion in HFF bonds in addition to a large position in the money market

Long positions in ISK could decrease in the near term

Long positions in the krona by foreign investors are not limited to foreign issuance of ISK Eurobonds. For example, the holding of foreign entities in treasury notes in ISK amounted to almost ISK49 billion at the end of October according to information from the National Debt Management Agency (NDMA) which equals about 46% of the bonds' total value. The amount of government guaranteed HFF bonds held by foreigners is harder to pin down. The total value of HFF bonds is now about ISK430 billion and roughly a quarter thereof, or over ISK100 billion, is held by foreigners in our estimation. In addition to the ISK Eurobond issuance, foreign investors have also to a considerable extent traded in the Icelandic

moneymarket. It therefore seems clear that the total position of foreign investors in ISK amounts to several hundred billions when adding up foreign ISK Eurobonds, holdings in government guaranteed bonds and deposits in the moneymarket. In addition, we believe that the share of relatively volatile funds, or "hot money", in these positions has recently been growing.

18. figure: The banks' forward currency position (lt. axis, ISK bn) and the ISK exchange rate index (rt. axis)



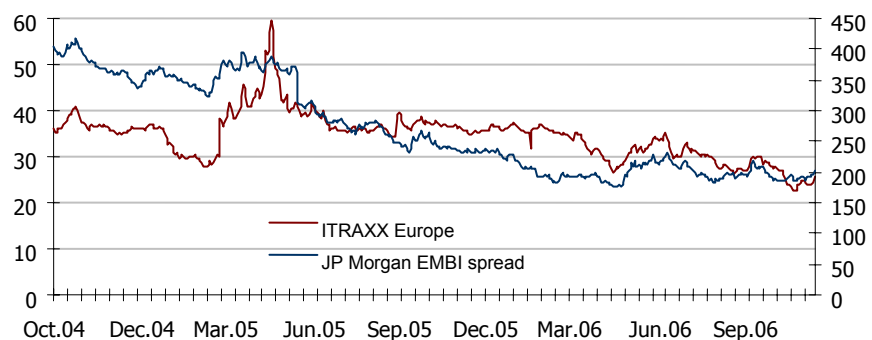
The banks' customers hold a forward net long position in the krona amounting to well over four hundred billion

Figures from the Central Bank on the banks' currency balance indicate that the banks' customers now hold forward ISK positions for well over four hundred billion. The figure further indicated that the banks' net position in foreign currency is positive by ISK91 billion at the end of October, i.e. that currency holdings exceeded currency debts by this amount. The net position can also be viewed as a sum of spot position, forward position and the position of the banks' options. In recent years the spot position has usually been negative and that of net foreign positions positive. This reflects the position of the banks' customers who have usually had a corresponding forward long ISK position, i.e. a negative forward position in currency. This position of the banks' customers has grown rapidly in recent quarters and is now almost five times higher than it was two years ago. A large part of those customers can be expected to be foreign investors. Actually, the position suffered a setback alongside the krona's depreciation in the first months of the year, but since spring it has climbed again. This large position in the krona in fact increases the risk of exchange-rate volatility if customers' confidence in the currency changes and they decide to close their positions on a significant scale.

Main influencing factors in taking an ISK position are the foreign interest rate differential and the risk appetite of international investors

The development of this long position in the krona will significantly affect the exchange rate in coming quarters. The main determinants there are the foreign interest rate differential, especially to those trading countries where interest rates are the lowest, and the risk appetite of international investors. Iceland has been a very popular destination for carry trades recently as interest rates in Iceland have been among the highest known in developed economies. In addition, access to capital abroad has been easy, interest rates relatively low and demand for high return therefore substantial.

19. figure: Development of the ITRAXX index for CDS of European corporates (lt. axis) and premium on EM debt according to EMBI index of JP Morgan (points, rt. axis)

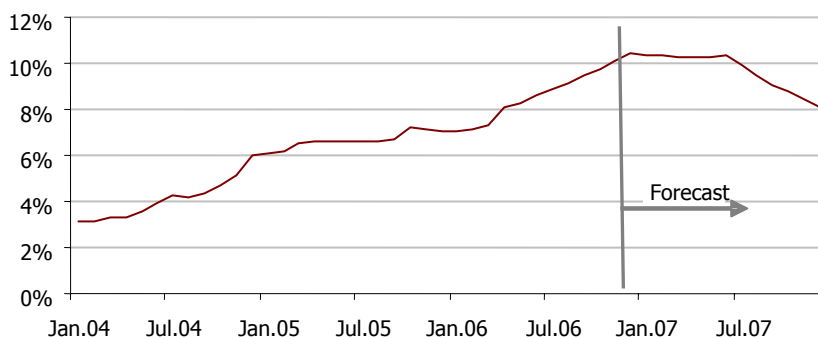


Risk has seldom been priced as low as now

In fact, risk has probably never been priced as low as in recent months. This is reflected, for example, in the price of credit default swaps. Indices for credit default swaps, or CDS, at European corporates reached a record low at the end of October, but have actually risen slightly since then. A dwindling

premium on the debt of emerging market countries tells a similar story. Capital markets have sailed a calm sea in recent quarters and the demand for high returns mentioned above has increased demand for risky investment options to the extent that it has significantly lowered the risk premium in global markets. However, conditions can suddenly change as happened in spring around the time when the blow which Iceland suffered was at its worst. Investors' risk aversion then increased quite suddenly following the depreciation of the krona and other high-yielding currencies, but their courage grew steadily again in the first half of the summer.

20. figure: Trade-weighted interest rate differential based on policy rate in Iceland and main trading countries along with forecast based on Glitnir Research's policy-rate forecast (Iceland) and Reuters consensus forecast (trading countries)

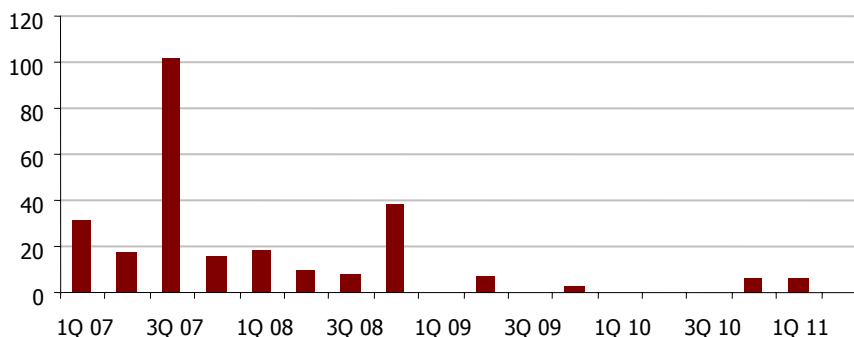


The interest rate differential has increased fast recently but the outlook is currently for a narrowing margin...

...which could reduce foreign investors' interest in taking an ISK position

The interest rate differential has increased considerably this year but it now looks as if the differential between interest rates in Iceland and main trading countries might narrow. Interest rates are believed to be set to rise somewhat in the near term in those of Iceland's main trading countries that have the lowest interest rate level. A 0.25 percentage-point rise in the policy rate is for example expected by mid-next year in the Euro area and some 0.5 percentage points in Switzerland. Foreign analysts also expect a 0.5 percentage-point rise in the policy rate in Japan in the next 12 months. However, the decline in the policy rate which we forecast in Iceland next year will prove more important in our view, and we assume the policy rate will decline by over 2 percentage points and stand at around 11.5% towards the end of next year. The interest margin will narrow from 10% to 7.5% next year if the forecast materialises. This will probably dampen somewhat the interest of foreign investors in taking, or holding, long positions in the krona to utilise the interest rate differential, especially if the outlook in the second half of the year is for a continued narrowing of the interest rate differential. However, it should be remembered that their interest is unlikely to fade gradually, but, more likely, groups of investors have a certain minimum interest rate differential in mind where they no longer believe it is worth the risk and effort to have a long position in the krona.

21. figure: The maturity profile of foreign Eurobonds in ISK, excluding interest payments (ISK, bn)



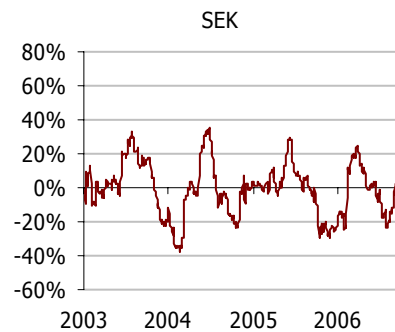
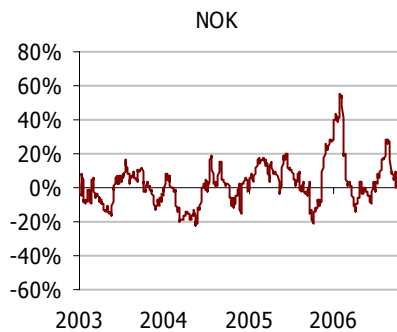
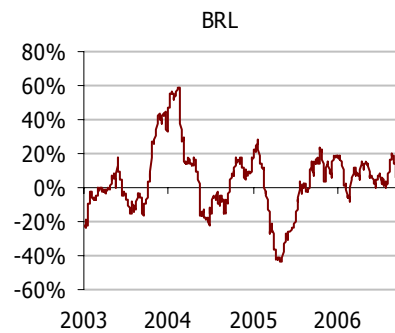
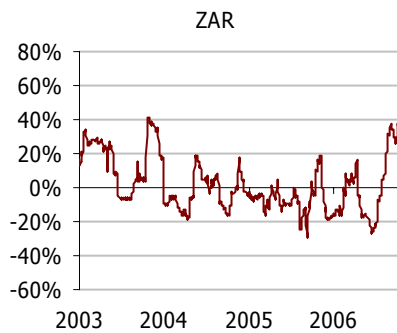
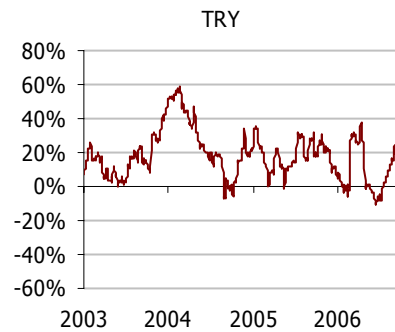
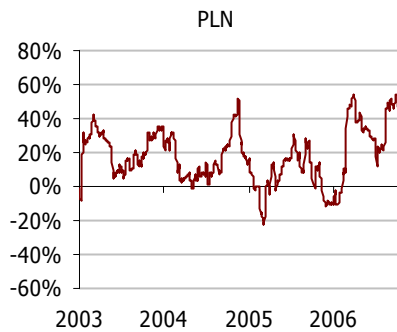
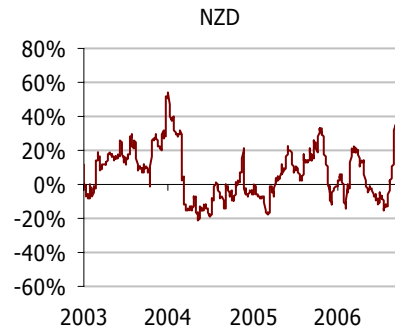
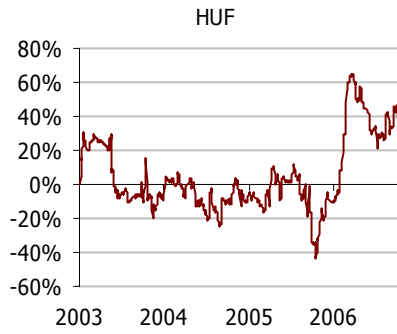
A large part of outstanding ISK Eurobonds matures next year, ISK82.5 billion thereof in September

Of almost ISK263 billion now outstanding in foreign ISK Eurobonds, almost ISK167 billion mature next year, plus interest. ISK82.5 billion thereof will mature in September which is by far the largest month in coming quarters as regards maturity dates. The maturity dates of ISK Eurobonds this autumn did not significantly affect the ISK exchange rate except for an increase in exchange-rate volatility around the largest maturity dates. We believe this can be explained by the fact that issuance of new bonds more

than offset the amount maturing, i.e. there was net issuance in the second half of the year. There may not be as strong an interest in issuing new Eurobonds in ISK when the larger maturity dates this year draw near, especially if interest rates will then have started to decline significantly. If there is no new issuance which outweighs the outflow due to the maturity dates, it is clear that substantial downward pressure will be created in the autumn of next year due to Eurobonds in ISK.

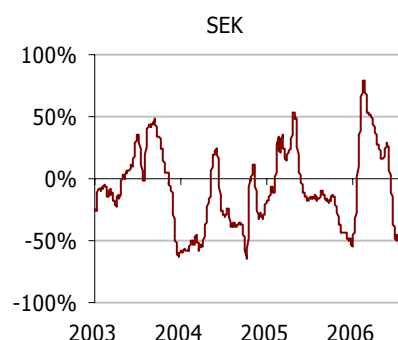
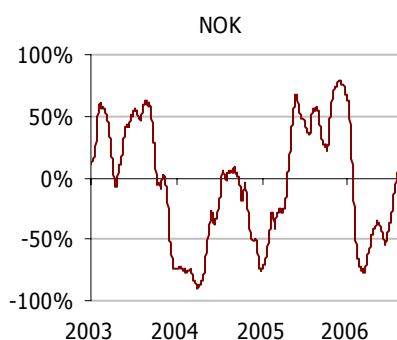
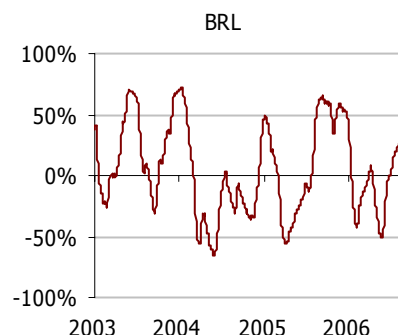
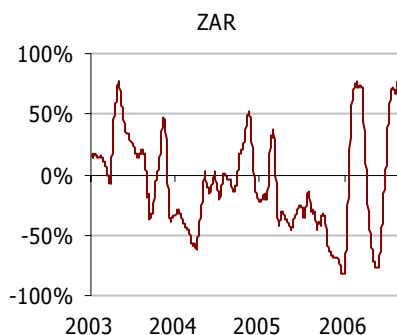
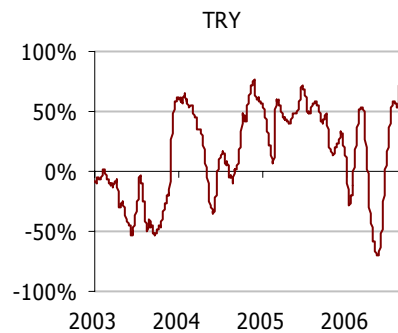
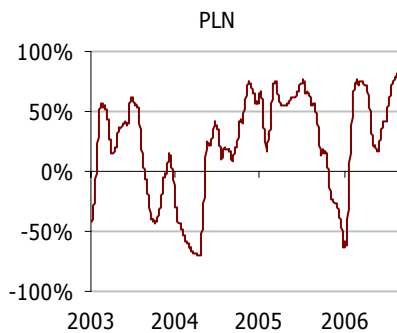
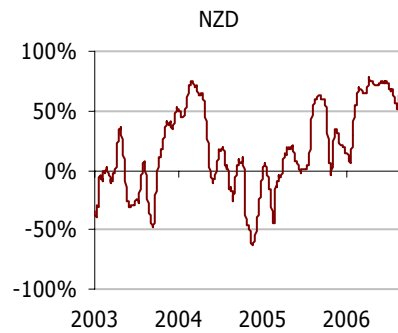
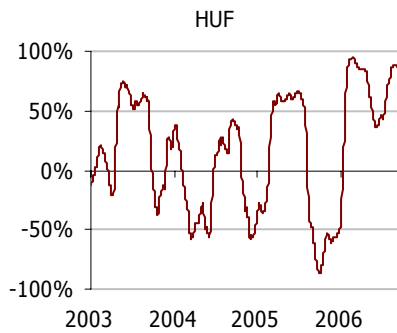
Appendix I: The correlation of ISK to high-yielding currencies

The correlation of weekly changes in the exchange rate (90-day window). The EUR cross rate is used for all currencies.

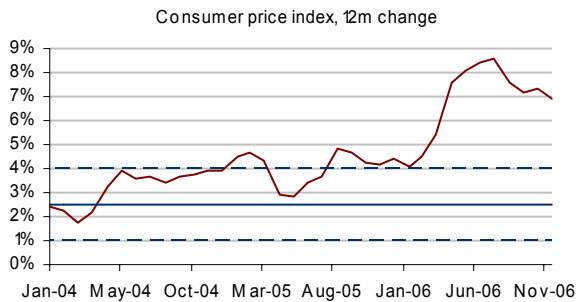


Cont. Appendix I: The correlation of ISK to high-yielding currencies

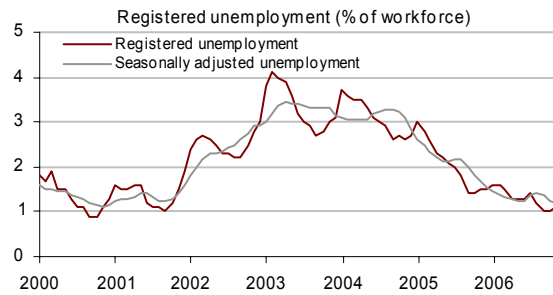
The correlation of 30-day changes in the exchange rate (90-day window). The EUR cross rate is used for all currencies.



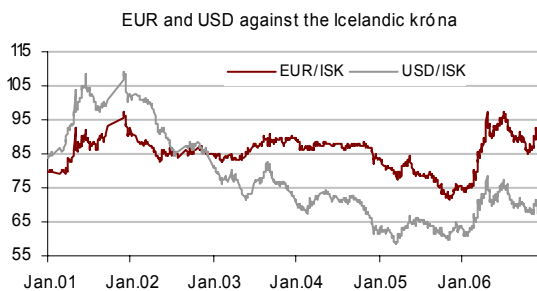
Appendix II: Main economic indicators



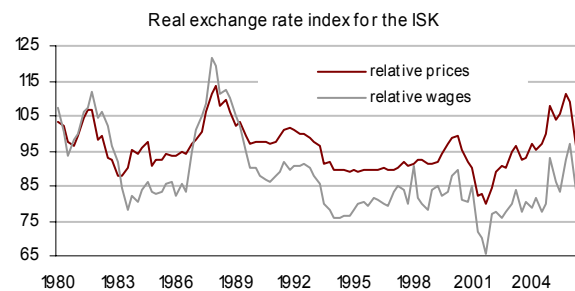
Inflation measured 7.3% in November and it seems set to fall and measure 7.0% in December. Glitnir Research forecasts 6.9% inflation on average this year and 2.5% inflation in 2007.



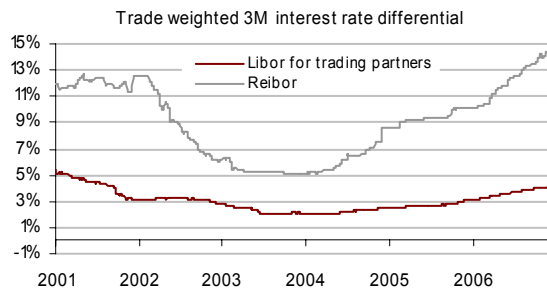
Unemployment measured 1.0% of workforce in November, remaining stable from the previous month. Unemployment can be expected to measure 1.0% to 1.3% in December.



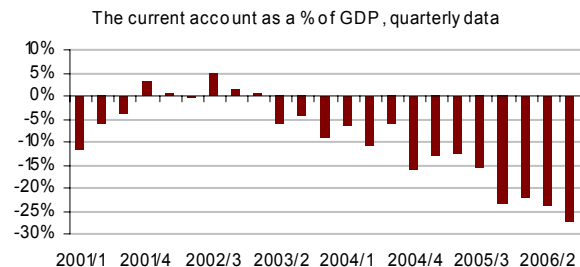
The krona has depreciated rapidly in recent weeks after having peaked last autumn. Glitnir Research forecasts further moderate depreciation and high volatility for the coming months.



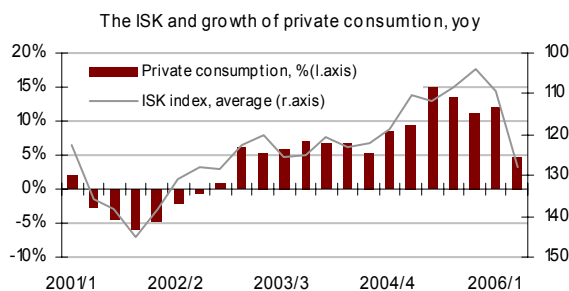
The real exchange rate was high last year but has fallen this year parallel to the krona's depreciation. The real exchange rate is currently not far away from its long-term equilibrium



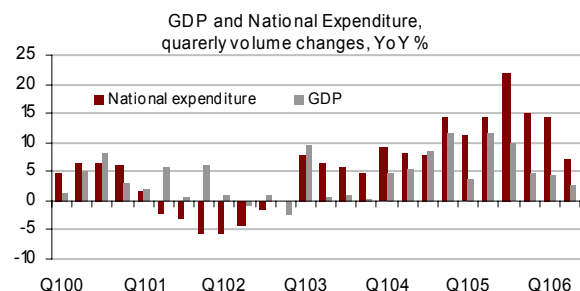
Interest rate differential, based on a 3-month interbank rates, has increased considerably parallel to a rise in policy rate. Trade-weighted interest differential now measures over 10% and will stay at similar levels in coming months.



The c/a deficit was ISK81 billion in Q3 2006 and last year it amounted to 16.5% of GDP. This year the c/a deficit will likely prove 22-25% of GDP but will halve next year in our view.



Private consumption has grown enormously in recent quarters due to increased purchasing power, rising house prices, the krona's high exchange rate and favourable credit terms. Glitnir Research believes growth in consumption will slow considerably this year and consumption contract in 2007.



National expenditure increased by almost 15% last year. However, a high foreign trade deficit reduced economic growth which proved 7.5% last year. Economic growth will probably prove considerably lower this year and reduce next year.

Appendix III: Economic indicators in December

| Time of publication | Economic indicator (period) | Publisher | Glitnir Research's comment |
|----------------------------|---|---------------------------------|---|
| 8 December at 4pm | Currency balance of banks (November 06) | Central Bank of Iceland | |
| 12 December at 9am | Consumer price index (December 06) | Statistics Iceland | We forecast 0.1% rise Uncertainty more towards a rise. |
| 13 December at 12 noon | Unemployment (November 06) | The Directorate of Labour (VMS) | 1% in October. VMS forecasts 1-1.3% |
| 13 December at 9am | GDP (Q3) | Statistics Iceland | Low economic growth from previous year likely and possibly a contraction between quarters. |
| 16-17 December | Housing price index (November 06) | Land Registry of Iceland | Fell by 2.2% in October |
| 21 December at 9am | Wage index (November 06) | Statistics Iceland | Increased by 0.5% in October 12m change then 11% |
| 21 December at 9am | The Central Bank's interest-rate decision | Central Bank of Iceland | Dependent on the krona. Policy rate unchanged if the exchange rate changes insignificantly in the interim. Rate hike if the krona depreciates substantially, e.g. ISK index > 128 |
| 22 December at 9am | Public finances (Q3) | Statistics Iceland | |
| 27 December at 10am | Gallup index of consumer confidence | | |
| 29 December at 9am | Foreign trade (November 06) | Statistics Iceland | Preliminary figures indicate an ISK13 bn. deficit in November |