

## Financial markets and Central Bank measures<sup>1</sup>

### Alternating calm and gusts in markets

*After a relatively calm period the Icelandic króna appreciated sharply in mid-December. In late January the króna achieved balance until the first days of March when it depreciated somewhat. The Central Bank scaled down its purchases of foreign currency at year-end, as it had announced, but on January 19 the Bank bought a substantial amount off-market on the initiative of one of the market makers. Changes to the rules on minimum reserve requirements in December caused increased swings in the króna market as institutions lost some of the flexibility that high average reserves had previously allowed them. At year-end 2003 the Bank initiated auctions of Certificates of Deposit (CDs) to mop up excess liquidity in the market. Equity prices rose over the last months of 2003 and the first months of this year. Technical changes to the financing of Housing Financing Fund issues were announced at the end of the year. Uncertainty regarding the scope of these changes produced tremors in the market and the yield fluctuated somewhat.*

#### *The króna appreciated and depreciated*

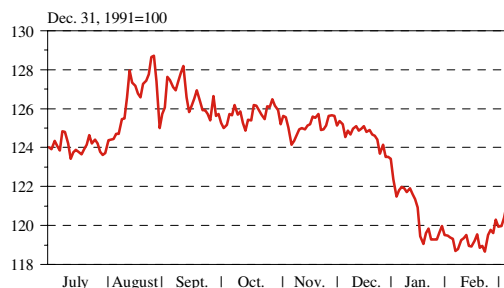
A period of several months' calm in the FX market came to an end in mid-December when the króna started to appreciate. Since October the exchange rate index had hovered around 125 and currency inflows and outflows seemed to be in good balance. A small spike followed the publication of *Monetary Bulletin* in the beginning of November, when the Bank announced that from the beginning of the New Year it would scale down its currency purchases in the domestic FX market by 3/5. On first appearances it could be inferred that the market expected this to cause a permanent appreciation of the króna. This did not turn out to be the case and the króna soon moved to a familiar value. After mid-December the situation changed with more inflows of currency. By the end of the year the exchange rate index had receded to 123.4 and this appreciation was believed to be prompted by year-end-related transactions by companies. Immediately in the New Year a sharp period of

appreciation started and continued until just after mid-January when the exchange rate index came close to a standstill around 119. Large foreign loan transactions, some related to substantial equity trading, were cited as explanations. After January 20, the exchange rate index moved within a tight band around 119. At the beginning of March the króna weakened after speculation about the risk that a fall

Chart 1

#### Exchange rate index of the króna 2003-2004

Daily data, July 1, 2003 - March 3, 2004



Source: Central Bank of Iceland.

1. This article uses data available on March 3, 2004.

in equity prices could spark a depreciation. One result was that investors closed positions and decided to wait for developments to unfold. Fluctuations in the US dollar and euro have occasionally resulted in short-lived speculation with the Icelandic króna, but with no lasting consequences.

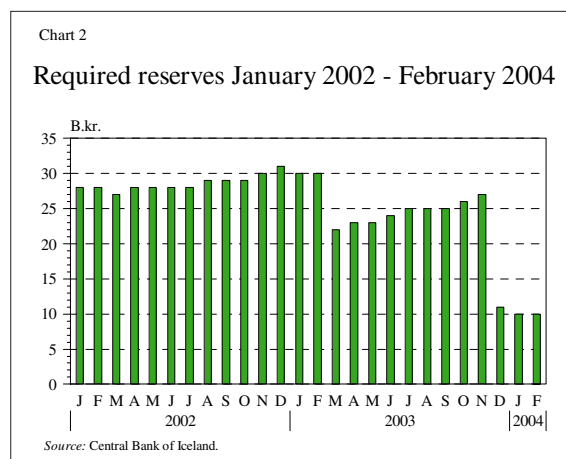
#### *The Central Bank will buy less foreign currency*

In 2003 the Central Bank of Iceland bought foreign currency in the domestic FX market for 43 b.kr. After mid-May the Bank bought 2.5 m. US dollars daily, but since the beginning of 2004 it has bought 2.5 m. USD twice a week. On January 19, the Central Bank received an offer to buy 80 m. USD in a single transaction outside the regular market, which was accepted. At the same time it undertook a currency swap to the amount of 100 m. USD for three months which will delay the effects of the purchase. The purpose of foreign currency purchases is to strengthen the Bank's foreign reserves and these will continue on a regular basis throughout this year. As before the Central Bank is willing to buy or sell currency in large amounts to facilitate a more efficient FX market, since the market may have problems with handling large individual transactions.

#### *Changed rules on minimum reserve requirements resulted in lower reserve deposits*

In the beginning of December the Central Bank adopted new rules on minimum reserve requirements. These rules represent the second phase of a change announced in February 2003 aimed at bringing Iceland's credit institution environment into closer line with other countries, in particular the members of the European Central Bank. Changes took effect for the reserve maintenance period beginning December 21, 2003. The main changes were made to the reserve base, reserve ratio and maturity. Simplification of the reserve base involved adopting the European Central Bank definition under which it is comprised of relatively few credit institution balance sheet items. Deposits, listed bonds issued by the relevant institutions and money market instruments comprise the reserve base under the new rules. The reserve ratio is 2% on the items of the reserve base that have a maturity of two years or less at issue. Formerly, a 1% reserve ratio was required for certain balance sheet items with a maturity of one

year or more, and 3% on other items. It is estimated that this measure lowered the minimum reserve requirement by 15 b.kr. The Bank had previously lowered the ratios from 1.5% and 4% respectively in March 2003, which had already reduced the requirement by 8 b.kr. From February to December the reserve requirement decreased by 19 b.kr., while the reduction had been pre-estimated at 16 b.kr. A larger reserve base, due to growth in credit institutions' balance sheets from February to December, explains the difference between the lower reserve requirement and the combined effect of the two phases when the rules were changed.



#### *Certificates of Deposit mop up liquidity*

Increased liquidity is one side-effect of the Central Bank's currency purchases. Lower reserve requirements have also increased liquidity in the financial system. To counteract this development the market has reduced its use of repos with the Central Bank. Repo use has broadly diminished in line with increased currency purchases and lower reserve requirements. Due to the different positions of individual institutions and measurements of risk, certain barriers have appeared in the intermediation of liquidity. Some credit institutions have had ample liquidity while others have been short. Credit lines that are based on risk assessment have then at times blocked direct lending. In an effort to rectify this situation the Central Bank launched auctions of Certificates of Deposit (CDs) towards the end of the year. CDs are debentures that the Central Bank issues with a predetermined maturity. They mop up excess liquidity and the amount is placed in the Central

## Box 1 Liquidity forecast model

Using a fairly simple model of financial flows, the Central Bank of Iceland has evaluated its need for measures to curb liquidity overflows. The model both takes into account Central Bank operations such as repos, reserve requirements, currency purchases and changes in the volume of notes and coin in circulation, and describes the effects of Treasury actions on liquidity formation. All available information is used and forecasts are made for the period two weeks ahead. Various problems arise when such forecasts are made, e.g. the Bank cannot estimate the exact requirement for reserve funds as it cannot foresee how credit institutions will use the leeway that the system offers. Since the Central Bank is unable to foresee repos in the next

week, it assumes an unchanged position then. To estimate the effects of the Treasury, the Bank uses historical data and monitors its bond auctions and redemptions. Table 1 shows the variables in the model.

To evaluate the requirement for Certificates of Deposit (CDs), the Bank takes the results of repo auctions into account and calculates how much to issue to even out the average two-week difference. It is known that the model is imperfect and both its assumptions and predictions themselves need to be evaluated, but along with other information it can provide the Bank and market participants with valuable indications about the liquidity position.

Table 1 Liquidity forecast model

### *Liquidity forecast model*

+	Base requirement.....
+	Reserve requirements (average).....
-	Treasury.....
+	Transactions between CB and Treasury.....
+	Estimated CB currency purchases.....
+	Notes and coin.....
=	Estimated requirement or surplus .....
+	Repos (outstanding stock).....
=	Difference .....
-	CDs issued.....
=	Difference .....
=	Averaged difference .....

### *Notes*

Negative when requirement
Negative when unfilled reserve requirements
Always positive (based on forecast)
E.g. CB sells currency to Treasury
CB purchases in the interbank market
Daily figures (based on forecast)
Estimate prior to CB operations
Outstanding repo stock after auction
Difference per day
Daily total
Daily total of differences
Average of differences over the next 14 days

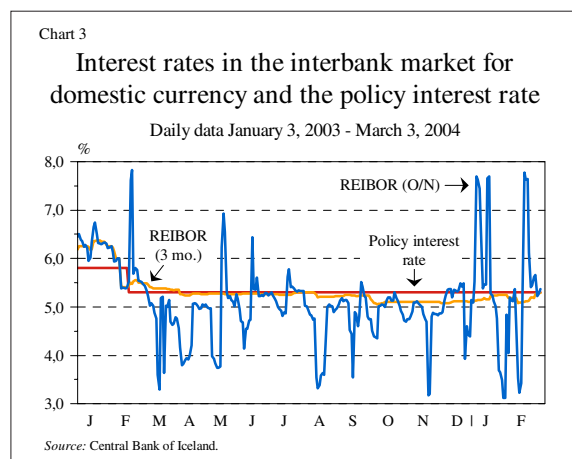
Bank for the duration of the lending period. CDs have mostly been auctioned on a weekly basis by “Dutch auction”.<sup>2</sup> The amount on auction has been broadly based on the results of a liquidity forecasting model that predicts the long or short liquidity

position of the financial system. The liquidity forecasting model is described in Box 1. While providing certain indications, the model is not perfect since some uncertainty always surrounds Treasury transactions, and expectations also play a substantial role. A revision of the rules on transactions by credit institutions subject to minimum reserve requirements is pending with the aim of enhancing the use of Central Bank instruments and market participants will be consulted before any final decisions are made.

2. Under the Dutch auction method, bids are sorted by evaluating them from the viewpoint of the auctioneer; the best bids are accepted first and then the next, and so on until the offered quantity is filled. The last bid that is accepted decides the price of all accepted offers.

### More swings in short-term interest rates in the króna market

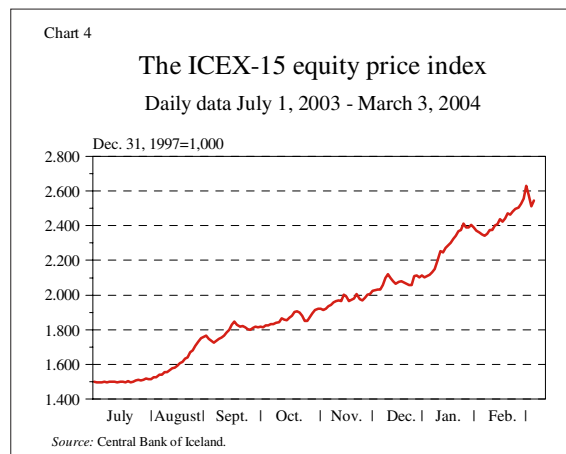
Short-term interest rates in the króna market have recently been fluctuating widely. A plausible explanation is that lower reserve requirements reduce the balancing effects that were in place. Low reserves mean that short-term liquidity cannot be collected by drawing on current accounts, which can later be replenished. Instead, credit institutions have to go into the market for liquidity or use Central Bank facilities. This adds to the importance of the króna market, but can also create pressures, even in the case of relatively small transactions. Towards the end of the reserve maintenance period, financial institutions balance out their individual positions and guard them by raising interest rates as much as they deem possible. Increased experience of the new arrangement is likely to see it change. Interest rates on funds of a longer maturity, e.g. 3 months, have been more stable. The yield curve indicates that the market expects a rise in the Central Bank policy rate to be relatively unlikely in the next few months, and market interest rates head noticeably above the policy rate on a horizon of 9-12 months, while in the middle of last year this occurred over a 3-6-month range.



### Equity prices on the Stock Exchange have been on a roll

The equity market has been vibrant in recent months with a 12-month rise in prices as measured by the ICEX-15 index amounting to almost 86%. From the beginning of this year until March 3, 2004, prices have gone up by more than 21%. Indices of

pharmaceuticals and building and construction companies have gained the most over the past 12 months; during the first two months of this year the building and construction index has added almost 54%.

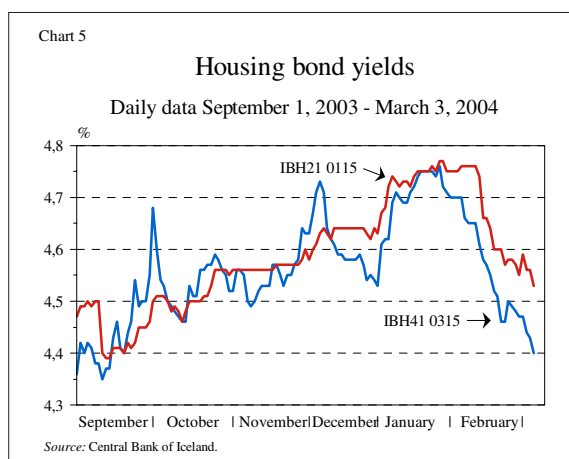


### Changes in Housing Financing Fund bond issuance

Just before the end of 2003 the government approved proposals by a committee that had examined the funding operations of the Housing Financing Fund (HFF). The committee proposed that a new bond category would be issued, known as "HFF bonds". These will be annuities with quarterly payments. At the same time, issuance of housing bonds and housing authority bonds will be discontinued and holders of them given the option to swap them for the new instruments. Due to refinancing risks caused by prepayment of underlying debt to the HFF, the committee recommended staggering these swaps over a longer period. Another proposal was to discontinue disbursement of housing bonds against mortgage bonds, and replace them with cash payments to borrowers at terms determined by the results of prior auctions for financing the loans. These proposals assume that prepayments of mortgages only take place for a commission that will cancel out future interest rate risk for the HFF. Preparations are under way and it is aimed to launch the new arrangement before mid-year.

### Bond yields went up for a while, but receded again

Uncertainty about ideas to raise the ceiling on housing loans to 90% led to some turmoil in the bonds market. Around mid-August the yield on housing bonds with a maturity in 2026 had gone down to 4.45%, and fluctuated in a narrow band until the end of November. Then the yield started to rise but receded again to 4.5% at year-end. When the abovementioned plans for changes in HFF financing were announced, the yield rose sharply and reached 4.62% at the end of January. A turnaround occurred early in February, and at the beginning of March the yield was 4.52%. The yield on Treasury notes picked up after falling last year and peaked in the New Year, but is now hovering around a similar value to the beginning of November, at 6.96% on T-notes maturing in 2007 and 7.4% with a maturity in 2013.



### Interest rate changes by other central banks

After a relatively calm period central banks around the world have started to change their policy rates – in different directions. Table 1 shows the changes, all of them modest and in most cases repeated shortly afterwards. The interest-rate differential between Iceland and abroad (as measured by 3-month treasury bills) widened from 2.65 percentage points to 3.21 percentage points from the beginning of November to March. Measured by interbank market interest rates, the differential widened from 2.72 percentage points to 3.03 percentage points. Local developments explain most of the changes.

Table 1 Changes in central bank policy rates in selected countries, November 2003 - March 2004

Date of change	Central Bank	Change % (policy rates after changes)
Nov. 5, 2003	Reserve Bank of Australia.....	+0.25 (5.0%)
Nov. 6, 2003	Bank of England.....	+0.25 (3.75%)
Dec. 3, 2003	Reserve Bank of Australia.....	+0.25 (5.25%)
Dec. 17, 2003	Norges Bank.....	-0.25 (2.25%)
Jan. 20, 2004	Bank of Canada.....	-0.25 (2.5%)
Jan. 28, 2004	Norges Bank.....	-0.25 (2.0%)
Jan. 29, 2004	Reserve Bank of New Zealand	+0.25 (5.25%)
Feb. 5, 2004	Bank of England.....	+0.25 (4.0%)
Feb. 6, 2004	Sveriges Riksbank.....	-0.25 (2.5%)
March 2, 2004	Bank of Canada.....	-0.25 (2.25%)

## Box 2 Foreign exchange market highlights 2003

### Exchange rate developments

The króna strengthened by 1.20% in 2003, reflecting a 1.19% decrease in the exchange rate index. The exchange rate index was registered at 124.8994 at the end of 2002 and 123.4179 on December 31, 2003. In the course of the year the lowest index value was 117.9764 on May 23 and the highest value 128.7019 on August 26.

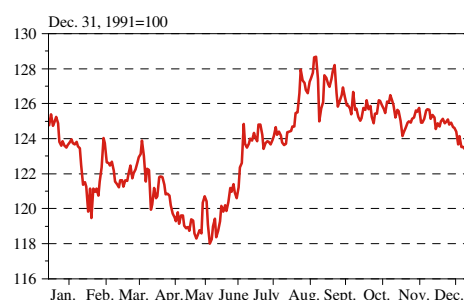
### Turnover and trading

Total turnover in the FX market in 2003 was 1,185 b.kr., an increase of 351 b.kr. from the previous year but 32 b.kr. lower than the record year in 2001. Commissions to market makers were abolished at the beginning of 2003 and market rules were changed, most notably with the deregulation of spreads on market makers' bids. Average daily turnover in the FX market in 2003 was 4,781 m.kr. Considerable fluctuations in monthly turnover were seen (see Table 2). Monthly turnover peaked in September at 146.7 b.kr. and was lowest in January at 69.9 b.kr.

Chart 1

### The exchange rate index 2003

Daily fixing January 3 - December 31, 2003

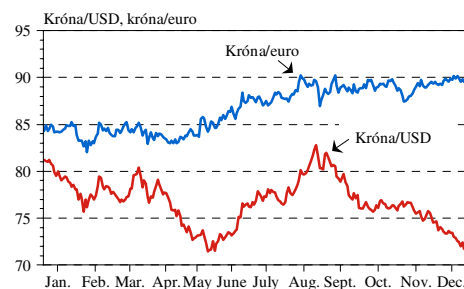


Source: Central Bank of Iceland.

Chart 2

### The exchange rate of USD and euro against the króna 2003

Daily fixing January 3 - December 31, 2003



Source: Central Bank of Iceland.

Table 1 Turnover on FX market and Central Bank trading 1994-2003

	Turnover (m.kr.)	Change from previous year (m.kr.)	Central Bank trading	
			M.kr.	%
1994.....	53,355	.	45,547	85.4
1995.....	54,499	1,145	48,619	89.2
1996.....	80,864	26,365	65,006	80.4
1997.....	162,122	81,258	59,308	36.6
1998.....	401,819	239,696	50,939	12.7
1999.....	467,972	66,153	19,277	4.1
2000.....	768,008	300,037	17,430	2.3
2001.....	1,218,045	450,037	29,538	2.4
2002.....	834,444	-383,601	4,528	0.5
2003.....	1,185,566	351,122	43,208	3.6

Table 2 Monthly and average daily turnover 2003

M.kr.	Total turnover	Daily average
January .....	69,889	3,328
February .....	112,349	5,617
March .....	83,297	3,967
April .....	83,470	4,637
May .....	113,430	5,672
June .....	110,072	5,793
July .....	87,657	3,811
August .....	120,064	6,003
September .....	146,659	6,666
October .....	96,585	4,199
November .....	83,986	4,199
December .....	78,109	3,719
Total .....	1,185,566	.

#### Central Bank transactions in the FX market

The Central Bank began boosting its foreign reserves with currency purchases in the FX market in September 2002. Initially it purchased 1.5 m. US dollars twice weekly. In the beginning of February 2003 these purchases were stepped up to 1.5 m. US dollars every morning. Purchases were stepped up again in May, to 2.5 m. US dollars daily. Currency purchases are made between 09.00 and 09.15 hrs., just before the market opens, on a most favourable bid basis. In addition to its regular purchases, the Bank bought 50 m. US dollars from one market participant in January 2003. Thus the Bank has purchased US dollars to the total equivalent of almost 48 b.kr. since September 2002. Of this figure, just over 43 b.kr. was purchased in 2003.

The Central Bank did not transact in the FX market in 2003, nor did it intervene directly in the market with the aim of influencing the exchange rate of the króna.

#### Market makers

The number of FX market makers decreased from four to three when Kaupþing and Búnaðarbanki merged at the end of May. Around the same time, the market makers unilaterally raised their minimum indicative bid from 1.5 to 2.5 m. US dollars.

Table 3 Exchange rate fluctuations 2000-2003

Computed by fixing the value of the  
króna against USD and euro

<i>Standard deviation (%)</i>	<i>FX index</i>	<i>USD</i>	<i>Euro</i>
2000.....	0.35	0.57	0.50
2001.....	0.72	0.84	0.77
2002.....	0.46	0.56	0.54
2003.....	0.50	0.69	0.56

*Exchange rate volatility*

Interesting developments can be seen in the fluctuations that took place in the exchange rate index (standard deviation in day-on-day changes) and in the US dollar and euro. Volatility has intensified relative to 2002, especially in the exchange rate of the US dollar.