The Icelandic foreign exchange market

Since 1993 the exchange rate of the Icelandic króna has been determined in the interbank foreign exchange market. Market makers maintain trading in the market by placing continuous quotes in US dollars. The exchange rate of the króna varies according to market conditions, and the Central Bank fixes the official exchange rate once a day. Variations occur within the day for reasons including changes in the market makers' foreign positions, which they are obliged to maintain within specific limits. The Central Bank's monetary policy also has an impact on the market.

Role of the forex market

Foreign exchange markets have the role of facilitating and channelling the flow of currency between prospective buyers and sellers of it. Although they are important on account of international trade, only an estimated 10% of transactions in forex markets derives from merchandise trading. The remaining 90% derives from capital transactions. In Iceland's interbank forex market, krónur are traded for US dollars. There would be no need for such a market if there were no international trade or capital movements. Growing liberalisation of foreign trade and deregulation of capital movements between EEA countries at the beginning of 1995 increased the need for a market where financial companies could trade foreign currency for Icelandic.

The market makers' need for currency depends on both their own needs and those of their customers. These customers are businesses needing foreign currency to pay for imported goods or with foreign currency revenues that need converting, financial companies which are not members of the interbank market, pension funds, central and local government and private individuals. Foreign loans taken for construction projects in Iceland are disbursed through commercial banks. Irrespective of whether customers buy or sell currency from or to market makers, all transactions have an effect on their foreign exchange balances and conceivably also on their expectations of future developments. In addition there are speculators who primarily seek to profit from trading in foreign currency. Although speculation can spur movements in the foreign exchange market and even cause unjustified weakening or strengthening of a currency, speculators and other players create a considerable flow in the market.

Before the Icelandic forex market was established there was little reason for currency speculation except when a devaluation was expected. The forex market presented more opportunities for profit. The potential gains are high, but the risk is correspondingly great.

Beginning of the interbank foreign exchange market

Before Iceland's interbank forex market was launched, the Central Bank fixed the daily exchange rate of foreign currencies against the króna on the basis of day-to-day changes in their relative values. The average exchange rate could change from one day to the next in accordance with a government decision (the currency was allowed to slide). On May 28, 1993 interbank market trading in foreign currency began in Iceland. The aim behind setting up the market was to allow the exchange rate to be determined by supply and demand for currency, instead of a unilateral Central Bank decision.

For the first years of the interbank market, the exchange rate was determined at "fixing meetings" held by market participants at the Central Bank just before 11 o'clock every trading day. The exchange rate was fixed on the basis of the latest exchange rate index position, trading conducted at the meeting and relative movements of foreign currencies from the day before. Although they represented a major step

Table 1 Milestones in the history of the Icelandic foreign exchange market

1992	Exchange rate index composed of ECU (18%), USD (76%) and JPY (6%).
May 28, 1993	Interbank foreign exchange market established. Trading was conducted at "fixing meetings" held in the Central Bank.
Sept. 6, 1995	Deviation band extended to 6%. Currency basket composition changed to reflect respective shares in foreign trade.
July 1, 1997	Fixing meetings abolished. Forex market launched, open for trading from 9:15-16:00 on weekdays.
Feb. 14, 2000	Deviation band extended to 9%
March 28, 2001	Central Bank adopts inflation targeting. Deviation band formally abolished.
July 1, 2001	Agreement on commission to market makers.

forward from the earlier arrangement, the fixing meetings also had their flaws. The main drawback was that the market was only active for a few minutes each day. Market participants could trade with each other outside meetings, although this was done on a relatively small scale. The Central Bank was involved in the great majority of transactions in the market for its initial years (Table 2). At the beginning of 1995 capital movements between Iceland and other EEA countries were fully deregulated. Subsequently, the need arose to be able to do business in a visible forex market for longer periods of each trading day than had been possible before. Among other things, this would diversify trading in currency-related products.

Table 2 Turnover in the interbank market for foreign currency and Central Bank participation, May 28, 1993 - June 29, 2001

	Total turnover (m.kr)	*Trading with CB participation (m.kr)*	*Ratio of trading with CB participation (%)*
1993	11,148	8,670	77.8
1994	53,355	45,547	85.4
1995	54,499	48,619	89.2
1996	80,864	65,006	80.4
1997	162,122	59,308	36.6
1998	401,819	50,939	12.7
1999	467,972	19,277	4.1
2000	768,008	17,430	2.3
2001	666,692	14,532	2.2

At the beginning of 1997 the fixing meetings were abolished and an active foreign exchange market was transferred to the commercial banks during their business hours. Market makers at this time were Landsbanki, Íslandsbanki, Búnadarbanki and Icebank, and they were soon joined by Kaupthing. At most they were six, when FBA became a market maker, but their number fell again when it merged with Íslandsbanki in May 2000. Icebank withdrew from market making as of the beginning of September 2000. Firm obligations are imposed on market makers to ensure that the market produces the intended results. The Central Bank has largely withdrawn from the market in recent years, apart from strategic intervention actions, but supervises its activities.

Exchange rate policy and the forex market

From the establishment of the forex market in 1993 until March 27, 2001 Iceland implemented a flexible fixed exchange rate policy. This entailed allowing the official exchange rate index to fluctuate within a specific deviation band in either direction from a given central value which was set at 115.01 points. The Central Bank undertook to maintain the exchange rate of the króna within the deviation band. Initially the index was allowed to fluctuate by 2.25% in either direction from the central value. On September 6, 1995 the deviation band was widened to ± 6% and on February 14, 2000 it was extended further to ± 9%.

On March 27 this year the exchange rate framework was changed. A joint declaration by the government and Central Bank of Iceland abandoned the flexible fixed exchange rate regime and inflation targeting was adopted with a floating exchange rate. The experience of many other countries making a similar transformation has been an increase in both turnover and swings in the foreign exchange market. Also, the exchange rate has generally weakened at first after a currency is floated. In Iceland, the change led to a sharp increase in interbank turnover and a greater depreciation of the exchange rate of the króna than had been expected over a short period.

Main rules of the market

The interbank forex market is a closed market. Current members are four financial companies which also act as market makers, i.e. Búnadarbanki, Íslandsbanki, Kaupthing and Landsbanki. To qualify as a market maker, a player must have an unrestricted operating licence to conduct foreign exchange transactions and undertake the responsibilities and duties of market making with the US dollar against the Icelandic króna, cf. the provisions of the Rules on an Interbank Market in Foreign Currency no. 742 from October 19, 2000. Market makers and the treasury are exclusively entitled to conduct foreign exchange transactions with the Central Bank of Iceland.

The interbank market is open from 9:15 to 16:00 on all business days. Market makers undertake to give guideline quotes for the buying and selling rate for US dollars, to be made on a Reuters screen (or in a comparable information system) where all participants can see each other's quotes. Quotes must be updated at intervals of at least 30 seconds and generally show the price at which market participants are prepared to buy and sell $1.5 million. Other sums are negotiable, but the reference amount is generally used. Interbank market trading is conducted solely in US dollars. Trading may take place in other currencies, subject to the agreement of both parties. The Central Bank must be notified of all trades between market participants amounting to at least $500,000 within 5 minutes of their taking place. Information about interbank market turnover is gathered by the Central Bank.

The spread between quotes for buying and selling is 0.05 kr. under normal market conditions but may be increased to 0.07 kr., cf. the agreement between market makers to that effect. However, market makers may increase the spread to 0.10 kr. if the exchange rate index has changed by more than 1.25% from the opening value for the day, and to 0.20 kr. if the change from the opening value reaches 2%. Market makers have not taken advantage of such authorisation to date.

A market maker who has conducted a trade with another market maker does not need to present a new binding quote to him for 5 minutes. The Central Bank is exempt from this provision and market makers are obliged to present a quote to it if requested to do so.

Trading

The format for interbank trading is that market maker A requests a quote by phone or electronically from one or more market makers. If more than 5 minutes have elapsed since A's last request for a quote, the counterparty is obliged to state a binding buying and selling offer, but in other respects it is left to his discretion whether or not he makes a trade. When A has received the quotes he states whether he chooses to buy or sell $1.5 million (unless another amount is stated) or to opt out. As a rule, quotes generated in this way accord with those on the relevant market maker's Reuters screen. Inconsistencies can occur, however, especially when market makers are engaged in brisk trading and prices are changing rapidly. The most common arrangement is for market makers to "do the rounds" in the market, i.e. trade with all the other participants. If A has bought dollars from the other market makers, they raise their quotes for dollars, and if he has sold dollars they generally lower them. The scale on which quotes change depends on market conditions at any time. Expectations about exchange rate developments, currency inflow and the market makers' foreign exchange balances are decisive factors for their responses to trading in the market. New economic aggregates, news of fish catches and conceivable Central Bank action or inaction are also important. All forex market transactions are settled 2 days after they take place. The interbank forex market is an active one and responses are sometimes very drastic. Unwarranted sharp swings therefore sometimes occur, although as a rule such overshots are soon smoothed out again.

If quotes are raised, the dollar rises at the same time, measured in Icelandic krónur, and the exchange rate index goes up. If quotes fall, fewer krónur are needed to buy one dollar, so the index goes down and the króna strengthens.

Foreign exchange balance

Foreign exchange balance refers to a financial institution's balance between its foreign-denominated assets and liabilities (i.e. the balance of the long position and short position of foreign-denominated asset and liability items, and off-balance sheet items). The foreign exchange balance is regarded as positive if foreign-denominated assets exceed foreign-denominated liabilities, and negative in the opposite case. No market maker may have a net foreign exchange balance in all currencies exceeding the equivalent of 30% of equity at the beginning of the year. If the net position exceeds these limits, the market maker must redress it within three days. A market maker's net position in each respective currency must not exceed 15% of equity, except for US dollars, where the maximum is 20%.

The total foreign exchange balance is stated in Iceland currency. Changes in the exchange rate inherently have an impact on the financial institution's foreign exchange balances. Interbank market trading has a dual effect on foreign exchange balances: Firstly, the market makers' foreign-denominated assets can increase or decrease according to whether they are net sellers or buyers in the market. Secondly, movements in the interbank market determine the exchange rate of the króna and thereby affect all components of the foreign exchange balance. Although market makers may have a net position (assets or liabilities) amounting to 30% of equity, it cannot be taken for granted that they care to take full advantage of the scope they have, except under exceptional circumstances. Each market maker decides for himself, on a case-by-case basis, where to set his limits, and tries to defend that position.

The impact of interbank trading on the foreign exchange balance

If market maker A buys $1.5 million from market maker B in the interbank market, his foreign assets increase by a corresponding amount, while his foreign liabilities remain unchanged. The balance between his foreign assets and liabilities thereby changes too. If A's foreign-denominated liabilities were higher than his foreign-denominated assets (known as being "short" or having a "short position"), he has moved closer to balancing them, and improved his foreign exchange balance. The opposite applies if his foreign assets exceeded his foreign liabilities (known as being "long" or having a "long position"), because after the transaction, the imbalance has increased even more. Conversely, after the transaction the counterparty B has reduced his foreign assets by the amount of $1.5 million.

Official fixing of the exchange rate

On each trading day between 10:45 and 11:00, the Central Bank fixes the official exchange rate against 21 foreign currencies. The official exchange rate index is also fixed at the same time. The fixing is a kind of snapshot of the position in the forex market and presents information about its development. It takes the average quotes for the US dollar presented by the interbank market makers (showing its exchange rate against the króna at that point in time) and the rate of foreign currencies against the dollar, to allow the exchange rate of the króna against foreign currencies to be calculated. A new foreign exchange index reading is calculated on this basis. The index is the weighted average of 9 currencies, relative to their respective shares in Iceland's foreign trade. The exchange rate index measures only changes in foreign currencies, in accordance with their weighting in the basket, against the króna. Table 3 shows the composition of the current exchange rate index.

Table 3 Weights of foreign currency in the exchange rate index currency basket

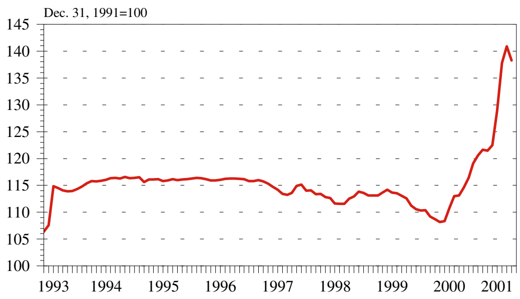
US dollar	26.99%
Euro	31.66%
Pound sterling	14.77%
Swedish krona	4.44%
Norwegian krone	6.08%
Danish krone	8.68%
Swiss franc	1.65%
Canadian dollar	1.36%
Japanese yen	4.37%

The currency basket is reviewed once a year when new data on trade in goods and services are available. The rate thus recorded by the Bank is known as the central rate. Buying and selling rates are calculated as fixed spreads in either direction from the central rate. Although the Central Bank formally records the exchange rate once a day, any party is free to conduct business with any other at whatever exchange rate they agree upon at any time.

Chart 1

Effective exchange rate index of the Icelandic króna

Monthly averages, May 28, 1993 - July 23, 2001



Source: Central Bank of Iceland.

Spirals

Iceland's foreign exchange market is very thin, i.e. turnover is low and there are few players. Under such conditions, a few parties can exert a great impact on market developments and small trades can trigger a sequence of events that would be much less likely to occur in a deeper market with more players and more turnover.

A spiral is formed when very rapid changes take place in the exchange rate of a currency, either upwards or downwards. A negative spiral can form if the market is "short," i.e. currency is in short supply, and someone buys currency in the market, whereupon all the market makers respond by raising their quotes sharply to prevent others from buying it back from them afterwards. What makes this situation so serious is that all the market participants behave the same. Rates can therefore rise very briskly with heavy turnover in the market. This turnover is all based on the "same" dollars which change hands fast and remain with the last buyer at the close of the day. Preconditions for a negative spiral are that market makers are short (i.e. have a negative foreign exchange balance) and want to bring their position closer to balance, and that general pessimism prevails about the position of the currency. A positive spiral is the opposite process.

There are two ways in which a negative spiral can be stopped. One is when capital enters the market to dampen demand and restore calm. Major investors can sell large amounts of currency, either from necessity or because they do not consider the fundamentals to be in place for a further weakening. The Central Bank can also intervene in the market and sell dollars. The other way is if market makers change their standpoint to allow others to buy from them without responding by buying elsewhere to defend their foreign exchange balance. This generally happens if conditions change and market makers regard that the weakening has created an opportunity to profit (i.e. they expect the króna to strengthen again).

Example: Market maker A does a "round" of buying in the interbank market. He and all the other market makers are in a short position (i.e. their liabilities exceed their assets in foreign currency). All the market makers expect the króna to weaken and they have little inflow. A's buying has put the market makers even shorter. B decides to adjust his position by buying a round. C is now $3 million shorter, so he does a round in the market too. After his trading, D does a round. Subsequently, A is left with the same foreign position as before, since he has sold the others $1.5 million each time. The dollar rate has strengthened between the rounds, and each market maker pays more for the dollars when he buys them than when he previously sold them.

The Central Bank's role in the forex market

The Central Bank may trade in the interbank forex market. Table 2 shows that the Bank accounted for a large share of trading for the first years and effectively provided its foundation to begin with. Gradually the Central Bank has withdrawn from the market and left the market makers to keep it active. This produces a price for the króna which best reflects supply and demand. The Central Bank monitors market developments closely and receives daily data from market makers about their positions and other potentially important factors. If trading is brisk, the Bank keeps a very close watch on the market makers' positions and movements in the market. It has a far better overview of the market than the market makers, who only have limited information about each other's positions. In recent times the Central Bank has mainly traded in the forex market when it regards short-term swings as exaggerated or heading that way. It assesses the grounds for intervening in the market on a case-by-case basis. If the Central

Bank sells dollars to market makers, the dollar weakens in Iceland, and the response to the Bank's actions is stronger than when market makers trade with each other. Nonetheless, the impact of intervention varies. If the problem in the market is merely a temporary currency shortage, intervention can halt an unfavourable trend. The Central Bank injects foreign currency into the market and removes Icelandic currency instead. In the event of a more extensive problem the benefits of intervention are likely to prove short-lived. However, it is natural for markets to experience swings since currency outflows and inflows do not always coincide.

Iceland's foreign currency reserve is kept by the Central Bank. The Bank's intervention has a direct effect on the reserve's position, whereby selling dollars depletes it and buying them strengthens it. Intervention also has a much more widespread effect if no other action is taken at the same time. Selling foreign currency removes Icelandic currency from the domestic market (reduces money in circulation) which puts upward pressure on interest rates and generally spurs financial institutions' repurchase agreements with the Central Bank. This impact can be counteracted to a large extent, e.g. the Central Bank can put Icelandic currency into the market through currency swaps with financial institutions or by buying securities in the market, but such measures are generally considered to dampen the effect of intervention.

Changes in market making

Market making ensures that the market is always functional and that products in it will always fetch the market rate. Forex market makers do so by updating their prices at intervals of at least 30 seconds and undertaking to trade if this is requested. Market makers must fulfil their obligations irrespective of whether the economic situation is favourable or unfavourable, or whether they lose or profit by doing so.

When the deviation band was abolished in March, more unease and insecurity was noticed among forex market makers and their customers than ever before in the history of the market. Much greater swings occurred than had been expected, despite the fact that some tremors had been envisaged. Over the first 6 months of 2001 the króna depreciated by 16.4%. Forex market turnover rose substantially in the wake of the changes. Average turnover was 3,072 m.kr. per day last year but ran at 5,334 m.kr. in the first half of 2001. From March 28 to the end of June, average daily turnover was 8,461 m.kr. In June it was decided to review the market framework to examine whether changes could be made to promote greater equilibrium. On the basis of this review it was decided to pay a commission to market makers, on the lines familiar from the Icelandic bond market. The change is in effect from July 1 to the end of the year. It is hoped that it will reduce swings and encourage market makers to take exposures for themselves instead of channelling all trades straight back into the market. The commission is based on rewarding those who make the market, i.e. remunerating a party that makes such an attractive quote that all the others accept it.

Example of a swap: Swaps are a common derivative format in the forex market. Their purpose is to minimise capital expenses resulting from exchange rate changes and the interest rate differential with abroad. They can be used to hedge against losses, but also offer scope for significant profits. When a customer takes a foreign-denominated loan, he sells it to his bank in return for Icelandic currency which he invests in Icelandic bonds. Since interest rates are high in Iceland, and higher than in most of its trading partner countries, the interest on the foreign loan is lower than that on the bond in which he invests. When the loan needs to be amortised the customer sells his Icelandic bonds and buys currency from his bank to do so. If the króna has strengthened in the meantime, the customer will need fewer krónur to buy currency in order to pay off the loan than he received when he took it. Thus the customer makes an exchange rate gain. If the króna has weakened, however, the customer will need more krónur. Yet it is by no means certain that he will lose on the deal. If interest charges for borrowing are lower than the interest revenue from the investment and the cost of the change in exchange rate, the customer will still profit. But if the exchange rate change happens to outweigh the gain from the interest rate differential, he will have lost on the deal.