

Financial companies¹

Strong liquidity and capital adequacy must be maintained

The year 2006 was both favourable and instructive for Icelandic financial companies. The banks' return on equity was very high, their assets swelled and they continued to consolidate their activities both in Iceland and overseas. The main drivers of strong profitability were increased net interest income following rapid credit growth, high income from fees and commissions and substantial trading gains on securities, especially equities. Domestic and foreign lending soared in 2006, while leading indicators imply very satisfactory loan portfolio quality. Delinquency and impairment are at a historical low. At the same time, large exposures have decreased as a proportion of equity capital. Mortgage lending has increased rapidly in the recent term. If adequate returns can be achieved on mortgages, with mortgage collateral levels within moderate limits and fixed interest rate risk kept to a minimum, the growth in mortgage lending will strengthen the banks' position.

Nonetheless, experience has shown that a sudden surge in lending growth, like that in recent years, may eventually lead to greater loan losses. It should be borne in mind that their low levels of provision for impairment as a ratio of lending leave the deposit money banks with less scope to meet such a contingency in the next economic downturn. A large proportion of their lending and forward contracts is secured with collateral in equities. A sizeable amount of the equities listed on Iceland Stock Exchange is probably leveraged, which could prove precarious when the rise in equity prices unwinds. Market risk from the banks' equity exposures, as a proportion of own funds, decreased in 2006, but their foreign exchange positions swelled. In particular, the growth in the banks' foreign currency holdings reflects hedges against the effect of exchange rate movements on their equity position and capital adequacy.

The rapid expansion of the commercial banks in recent years has driven up their foreign currency-denominated borrowing, including market funding. A substantial share of their foreign borrowing matured in 2006 and an even larger proportion will do so in 2007. In the first half of 2006, doubts were raised about their refinancing capacity. The banks responded by tapping new credit markets, taking subordinated loans and targeting deposit-taking. At the end of 2006 the banks had completed their refinancing arrangements for 2007. Heavy foreign currency-denominated funding underlines the importance of credit ratings for the banks. At the end of 2006 their equity position was strong and their equity ratios at the highest level since capital adequacy requirements were introduced. Liquidity was also excellent. Maintaining a strong equity position and ample liquidity are preconditions for the stability of the financial sector.

An instructive year in 2006

Market funding in the spotlight

Rapid expansion in recent years has increased the importance of foreign funding for Iceland's commercial banks and made them more dependent on smooth access to international capital markets. Uncertainties about their market funding loomed at the end of 2005 when their CDS spreads and finance costs in international markets began to rise. A spate of negative reports about the Icelandic economy and banks was published early in 2006 and Fitch Ratings lowered

1. This section discusses the main financial companies from a financial stability perspective. The aggregate consolidated position of the largest commercial bank groups is covered first, then the aggregate position of the largest savings banks.

Table 1 Total assets of the commercial banks' foreign subsidiaries

End of 2006, b.kr.

<i>Kaupthing Bank</i>		<i>Glitnir Bank</i>		<i>Landsbanki</i>	
FI Holding AS (FIH)	1,222	BNbank	557	Landsbanki Luxembourg	303
Kaupthing UK – Group	536	Glitnir-Lux	153	Heritable Bank	122
Kaupthing Bank Luxembourg S.A.	478	Glitnir Bank Norway	67	Kepler Equities	44
Kaupthing Sverige AB	180	Glitnir AB	20	Landsbanki Guernsey Ltd.	17
Kaupthing Finance Ltd.	44	Union	5	Teather & Greenwood	17
Kaupthing Bank Oyj	22	Glitnir Securities	3	LI Investment Ltd.	8
Kaupthing Norge AS	14	Glitnir-Norway	0.4	Merrion	5
Norvestia Oyj	16				
Total assets of foreign subsidiaries	2,512	Total assets of foreign subsidiaries	805	Total assets of foreign subsidiaries	516
Total assets of group	4,055	Total assets of group	2,246	Total assets of group	2,173
Foreign subsidiaries' share	62%	Foreign subsidiaries' share	36%	Foreign subsidiaries' share	24%

Three largest commercial banks. Exchange rate at end of 2006. Excluding foreign branches.

Source: Financial Supervisory Authority (FME).

Iceland's sovereign outlook from stable to negative in February. The króna depreciated as a result, equity prices dropped and doubts arose about the banks' ability to secure funding for maturing loans. The banks responded with improved communication about their activities as well as slowing down their expansion, selling from their equity portfolios and boosting capital adequacy. This turbulence prompted them to ply capital markets elsewhere than in Europe, especially in the US, with a raft of issuance, other borrowing and increased deposit-taking. By the end of 2006 the banks had funded their debt service for 2007 and built up strong liquidity positions. The Central Bank's responses to the shift in the commercial banks' foreign refinancing is discussed in Box 1 on p. 43.

Consolidation of activities

The banks' international expansion and acquisitions of financial companies began only a very few years ago. Acquisitions of foreign financial companies characterised the Icelandic banks' activities in 2004 and 2005. In 2004, Kaupthing Bank acquired the Danish FIH bank to become the largest banking group in Iceland. Highlights in 2005 were Glitnir's acquisition of BNbank of Norway and Kaupthing Bank's acquisition of the UK bank Singer & Friedlander. Landsbanki also acquired three European securities companies in 2005. The main characteristic of 2006 was consolidation of activities both in Iceland and abroad, with less pronounced changes in group structure than in preceding years. The main changes were Glitnir's acquisition of the Norwegian consultancy Union Group in March and the Swedish securities house Fischer Partners in May, and Landsbanki's acquisition of Cheshire in Guernsey. At the end of 2006, almost half of total assets of the largest commercial bank groups were accounted for by foreign subsidiaries, as Table 1 shows.

Changed and more dispersed risks

Expansion outside Iceland and lending by parent companies to non-residents have broadened the commercial banks' income base, so

There was never any need to call upon the Central Bank of Iceland's facilities for commercial banks amidst the uncertainty connected with their capital market funding in the first half of 2006. The financial system was broadly sound and capable of responding on its own to the challenge it faced. Nonetheless, the Central Bank played a diverse role, which essentially took three forms: increased data acquisition, communication of information and contingencies.

Data acquisition focused primarily on close monitoring of the commercial banks' financing, liquidity and risk management. At the same time a close watch was kept on developments in international markets and comments by analysts abroad. An internal working group met regularly to discuss the banks' position from a central banking perspective from November 2005 to November 2006 and the Central Bank's contingency procedures were also revised.

The Central Bank was inundated with requests for information about the Icelandic economy and financial sector from foreign financial companies, investors, analysts, media and international agencies. A continuous dialogue was maintained with the rating agencies. The most hectic time was from February to May last year. *Financial Stability*, which was published in early May 2006, responded to the situation with extended coverage. It strove to respond to market agents' concerns with analysis of most of the potential weaknesses that had been pointed out in the Icelandic financial sector. *Financial Stability 2006* was later deemed to be professional, candid and in line with international best practice.

The most important steps in crisis management were an agreement with Government ministries and the financial supervisory authority, and contingency exercises. In February 2006, a Memorandum of Understanding was signed between the Office of the Prime Minister, Ministry of Finance, Ministry of Commerce, Financial Supervisory Authority (FME) and Central Bank of Iceland, on consultation concerning financial stability and contingency plans.¹ The MoU was one proposal from a task force representing all these institutions which had been engaged for two years on financial system contingencies. Its work was partly modelled on crisis management procedures in other countries. The Central Bank and FME held a joint contingency exercise in January 2006, along similar lines to the exercise in January 2004, addressing the financial markets as a whole. In January 2007 a further exercise was held to test responses to shocks to payment and settlement systems. A joint Nordic financial system contingency exercise is currently being planned in which central banks, financial supervisory authorities and ministries of finance of the five Nordic countries will participate. Finally, mention should be made of measures to strengthen the Central Bank's foreign reserves, which are described in more detail in Box 2 on p. 46.

1. <http://www.sedlabanki.is/lisalib/getfile.aspx?itemid=3668>.

that their risks have changed and are more diverse. Group income from outside Iceland has surged, and so have their foreign assets. At the same time, the three banks' different business structures in other countries also disperses risk. In 2006, 48% of group income originated outside Iceland, compared with 46% in 2005. Credit to non-residents accounted for 61% of total lending to customers at the end of 2006, as against 56% at the end of the previous year.² The proportion of

2. Lending to customers excludes lending to financial companies. A higher figure is produced for the banks' total lending to non-residents if their lending to financial companies is included, see the discussion of total lending to non-residents in the section on lending on p. 48.

Box 1

Central Bank responses to shifts in the commercial banks' capital market funding

foreign income was highest at Kaupthing (53%), and 77% of its lending to customers was to non-residents, as shown in Table 2. A broader income base and more dispersed risks leave the Icelandic banks less vulnerable to domestic shocks, but correspondingly more susceptible to a more diverse range of financial shocks.³

Table 2 Commercial banks' income and lending outside Iceland at the end of 2006, %

	<i>Income from abroad</i>	<i>Lending abroad</i>
Kaupthing Bank	53%	77%
Glitnir	33%	55%
Landsbanki	52%	38%
Total	48%	61%

Largest commercial bank groups.

Income originating outside Iceland as a proportion of total income. Lending to customers outside Iceland as a proportion of total lending to customers.

Sources: Commercial banks' annual reports, Central Bank of Iceland calculations.

Commercial banks' credit ratings

International agencies assess the credit ratings of Iceland's three large commercial banks, i.e. Kaupthing Bank, Glitnir and Landsbanki. Ratings become increasingly important for the banks, the more that they raise funding in the markets, making it critical for financial stability that they maintain strong ratings. The banks' ratings are shown in Tables 3 to 5.⁴

Table 3 Moody's ratings of Icelandic commercial banks

	<i>Announced</i>	<i>Long-term</i>	<i>Short-term</i>	<i>Financial strength</i>
Kaupthing Bank	April 2007	Aa3	P-1	C
Glitnir Bank	April 2007	Aa3	P-1	C
Landsbanki	April 2007	Aa3	P-1	C

Source: Commercial banks' websites.

Table 4 Fitch's ratings of Icelandic commercial banks

	<i>Announced</i>	<i>Long-term</i>	<i>Short-term</i>	<i>Individual</i>	<i>Support</i>
Kaupthing Bank	March 2007	A	F1	B/C	2
Glitnir	March 2007	A	F1	B/C	2
Landsbanki	March 2007	A	F1	B/C	2

Source: Commercial banks' websites.

Table 5 Standard & Poor's ratings of Glitnir

	<i>Announced</i>	<i>Long-term</i>	<i>Short-term</i>
Glitnir Bank	February 2007	A-	A-2

Source: Glitnir website.

- The rapid expansion of the Icelandic banks and a comparison with other Nordic banks were discussed in a report by the Nordic central banks, *Nordic Banking Structures*, published in August 2006. See the Central Bank of Iceland website, www.sedlabanki.is
- Credit ratings of the Icelandic banks were discussed in detail in Appendix 2 to the Financial companies section of *Financial Stability 2006*, p. 69-77.

Main commercial banks⁵

Operating results

Major changes in external environment

The banks' financial statements for 2006 reflected changes in domestic and international financial markets, including the depreciation of the króna. The exchange rate index rose by 23% and the króna weakened correspondingly. Listed domestic equity prices rose by 16% over the year and equity prices in neighbouring countries were buoyant. Inflation in Iceland rose quite sharply and measured 7% over the year.

Record profitability

Profitability was very strong at the largest commercial banks in 2006. At 38%, their combined return on equity has never been higher. The main explanations are increased interest income following a surge in lending, large income from fees and commissions, and substantial gains on portfolios of securities, especially equities. Year-on-year comparisons are complicated by factors including the depreciation of the króna, however.

Interest income soared but interest margin unchanged

Net interest income⁶ is the commercial banks' largest income item. Other main sources of income are net fees and commissions and trading gains. In 2006, net interest income of the largest commercial banks amounted to 131 b.kr. compared with 79 b.kr. in 2005, a 66% increase year-on-year. Although net income grew, the interest margin⁷ remained unchanged from 2005 at 1.9%. In the first half of the year the interest margin increased with higher inflation, reflecting the fact that the banks hold considerable indexed assets net of indexed liabilities. In the second half of the year, a rise in interest rates on non-indexed instruments narrowed the margin. Growth in foreign currency-denominated lending, mortgage loans and lending by foreign subsidiaries has narrowed the spread in recent years.

Sharp growth in fees and commissions and trading gains

Net fees and commissions⁸ grew sharply year-on-year. They increased by 92%, to 92 b.kr. in 2006 from 48 b.kr. in 2005. Proportionally, the greatest growth was in fees and commissions originating outside Iceland. Trading book gains,⁹ especially gains on equities, were also substantial in 2006, rising 47% to 87 b.kr. from 59 b.kr. the year before. Domestic listed equities rose firmly and the banks divested holdings in large companies, both associates and trading book investments. Highlights were Kaupthing's 26 b.kr. gain on the sale of its

5. The main commercial banks comprise Kaupthing Bank, Glitnir and Landsbanki. Consolidated figures are quoted here unless otherwise stated. Discussion of the aggregate position may diverge from that of individual financial companies.

6. Interest income less interest expenses.

7. The ratio of net interest income (interest income less interest expenses) to the average between total assets at the start and end of the year.

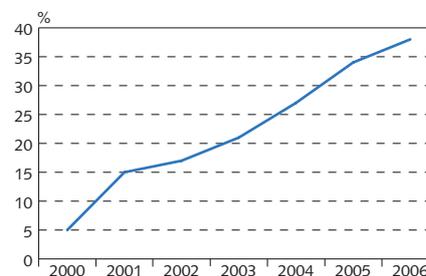
8. Income from fees and commissions net of fees and commission expenses.

9. Including dividends.

Chart 1

Return on equity 2000-2006¹

Profit as a ratio of average capital position less profit

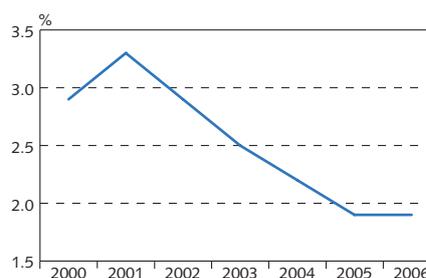


1. Largest commercial banks' consolidated accounts. ROE for 2000-2004 based on earlier accounting methods.
Sources: Commercial banks' annual reports, Central Bank calculations.

Chart 2

Interest margin 2000 - 2006¹

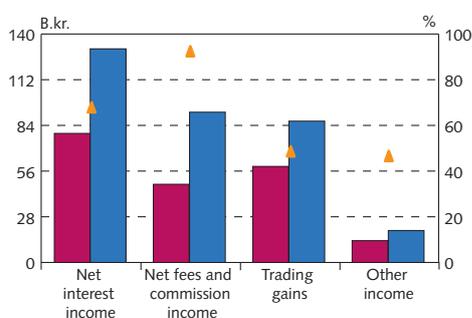
Net interest income as a ratio of the average between total assets at the start and end of the year



1. Largest commercial banks' consolidated accounts. Interest margin for 2000-2004 based on earlier accounting methods.
Sources: Commercial banks' annual reports, Central Bank calculations.

Chart 3

Net operating income 2005 and 2006¹



■ 2005 (left)
■ 2006 (left)
▲ Change between years (right)

1. Largest commercial banks' consolidated accounts.
Sources: Commercial banks' annual reports, Central Bank calculations.

Measures to strengthen the Central Bank's foreign reserves

Box 2

Foreign reserves expanded

The Central Bank of Iceland's foreign reserves were strengthened substantially towards the end of 2006. After lying in the range 65-80 b.kr. for most of the year they were boosted by 90 b.kr. on December 1, 2006. In consultation between the Central Bank and the government, the reserves were boosted with a Republic of Iceland EMTN issue in the amount of €1 billion, the proceeds from which were deposited in the Central Bank.

Reasons

Several factors lay behind the decision to expand the reserves. First, Iceland's financial sector has mushroomed in recent years and the commercial banking sector's assets are now equivalent to eight-fold GDP. At the end of 2000 they were marginally less than GDP. The Central Bank's reserves increased only slightly over the same period. Second, non-residents are now active participants in króna transactions as investors and bond issuers, as well as through trading in the FX, króna and bond markets. Third, the strong fiscal position and favourable financial market climate provided an incentive for taking this action in November 2006. EMTN issuance created a welcome opportunity to promote Iceland to foreign investors. With their growing focus on Iceland, investors have been interested in familiarising themselves with local conditions. Finally, international rating agencies have repeatedly pointed out that the Central Bank's reserves were on the low side.

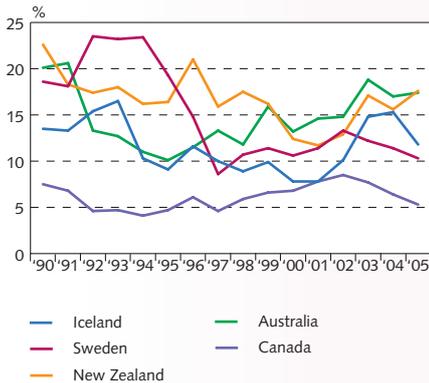
There is no academic consensus on whether a central bank with a floating currency and on an inflation target needs to maintain foreign reserves in the first place. The Central Bank does not target the exchange rate and is under no obligation to intervene in the market. Its main objectives involve price stability and financial stability, i.e. promoting a sound and efficient financial system. After the turbulence experienced in the financial sector and the economy in the first half of 2006, the Central Bank took the view that larger foreign reserves would enhance faith in the Bank's ability to perform its mandatory role and the government's ability to meet its commitments.¹

Such measures pose a risk of moral hazard, if market agents regard the Central Bank's strengthened liquidity as a guarantee for major financial companies. This in turn influences their risk behaviour and the risk assessment of the depositors and securities investors who fund their activities. It is clear that the Central Bank's role as a provider of liquidity for the financial sector is confined to local currency, i.e. the Icelandic króna, and that it may only lend to financial institutions against adequate collateral. Rating agencies and others assume that the government will assist systemically important institutions that encounter difficulties, on the grounds that this would cost the economy less than the financial crisis that might otherwise result. However, neither the Treasury nor the Central Bank issues financial companies with such formal guarantees and have never made declarations to this effect to agencies responsible for Iceland's sovereign and banking sector ratings. Difficulties resulting from greater risk would have lasting reputational consequences for the financial company concerned, and its management. Thus the increased reserves should not give grounds for taking greater risks.

Next steps

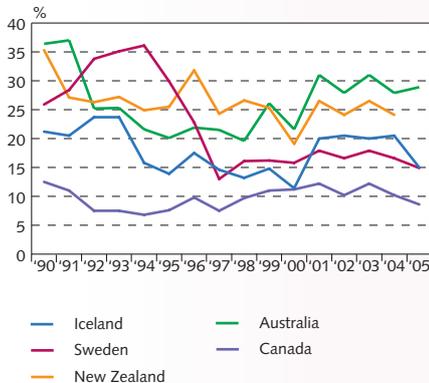
No decisions have been made regarding further strengthening of the Central Bank's foreign reserves. In recent years the Treasury has

Chart 1
Foreign reserves (excl. gold) in weeks of goods imports (cif)



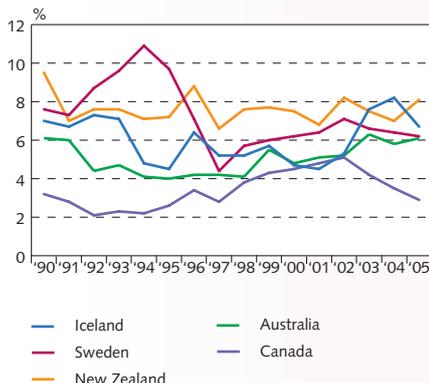
Source: International Monetary Fund.

Chart 2
Foreign reserves as % of goods and services imports



Source: International Monetary Fund.

Chart 3
Foreign reserves as % of GDP



Source: International Monetary Fund.

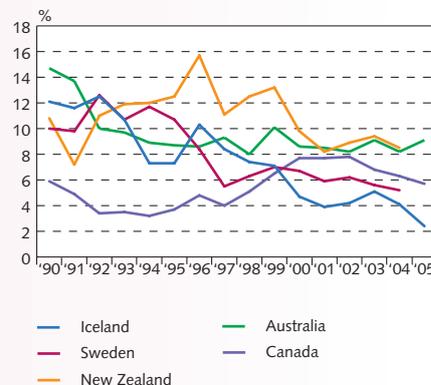
1. See e.g. the address by the Chairman of the Board of Governors at the Central Bank's annual meeting in 2007.

been retiring its foreign debt. Low debt and a healthy economic outlook are instrumental in securing Treasury access to credit if needed. There is no rule on the preferable size of foreign reserves. Developed countries with easy access to international capital markets need smaller reserves than less developed ones with sporadic credit access. In the event of unexpected shocks, reserves are an indication of the authorities' ability to respond. Ample reserves can enhance credibility and reduce uncertainty.

Comparison

Charts 1-4 compare the size of the Central Bank's foreign reserves with those of selected other countries. The countries in the sample all have an independent currency and target the inflation rate: Australia, Canada, New Zealand and Sweden. Iceland's reserves are noticeably on the high side by most measures. They are lowest relative to the external debt of the economy, which in turn reflects in particular the banking sector's meteoric expansion in recent years. Data are from the end of 2005 and show the position before reserves were boosted in December 2006.

Chart 4
Foreign reserves as % of external debt of the economy



Source: International Monetary Fund.

shares in Exista financial services company and Landsbanki's 10 b.kr. gains on the sale of its shares in the Swedish Carnegie investment bank. Equity prices on exchanges in neighbouring countries also rose considerably. Other income¹⁰ also increased substantially year-on-year and totalled 20 b.kr. in 2006.

Impairment ratio continued to fall

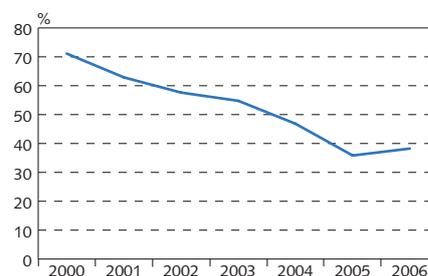
In recent years the cost/income ratio¹¹ of the largest commercial banks has decreased yearly, mainly driven by a surge in operating income. In 2006 the cost/income ratio inched up to 38%.

Impairment on loans and advances¹² for the main commercial banks was 15.8 b.kr. in 2006, compared with a provision of 10.5 b.kr. the year before. The ratio of impairment on loans and advances to net interest income was 12% at end-2006. This was the third consecutive year in which the ratio fell, after years of rising relative to operating income. Low delinquency in recent years has reduced the commercial banks' write-offs.

Acceptable core income

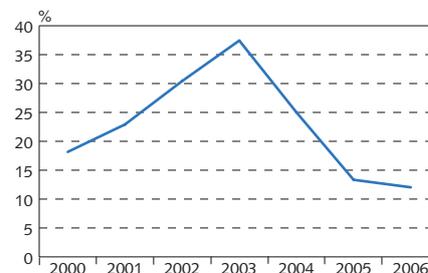
In 2006, trading book gains accounted for more than one-fifth of the largest commercial banks' net operating income. Although position-taking in securities is a part of investment bank activities, gains cannot always be taken for granted. If the banks had shown zero trading book gains in 2006, their profit before tax would have been 24% instead of 44%, and their cost/income ratio would have risen from

Chart 4
Cost/income ratio 2000-2006¹
Operating expenses as a proportion of net operating income



1. Largest commercial banks' consolidated accounts. Cost/income ratio for 2000-2003 based on earlier accounting methods. Sources: Commercial banks' annual reports, Central Bank calculations.

Chart 5
Impairment of loans 2000 - 2006¹
Impairment as a ratio of net interest income



1. Largest commercial banks' consolidated accounts. Impairment and net interest income for 2000-2003 based on earlier accounting method. Sources: Commercial banks' annual reports, Central Bank calculations.

10. Net operating income comprises net interest income, net fees and commissions, trading gains and dividends, and other income. Other income comprises net income on insurance activities, earnings from holdings in associates, gains on sale of disposal groups held for sale and sundry operating income.

11. Operating expenses as a proportion of net operating income.

12. Previously "provisions for loan losses" in the accounting terminology used by Iceland's Financial Supervisory Authority (FME).

38% to 52%.¹³ Thus even with no trading book gains, their profitability in 2006 would have been quite acceptable.

Lending

Large-scale operations in neighbouring countries

The bulk of the commercial banks' assets is in the form of lending. At the end of 2006 their outstanding loan stock totalled 6,438 b.kr., an increase of 62% year-on-year. Due to their strong liquidity in the second half of the year, the banks had a sizeable stock of outstanding loans to financial companies. Lending to customers (i.e. excluding financial companies) thus grew by rather less than total lending, at 46%. It should be underlined that these are consolidated figures, and also that around one-third of the lending growth is explained by the depreciation of the króna.

According to data from the FME, the outstanding stock of lending by the largest commercial bank groups to non-residents at the end of 2006 amounted to 4,968 b.kr., which was 77% of their total lending. The corresponding ratio at the end of 2005 was 63%. Data on foreign lending by the commercial banks' groups show that borrowers in the Nordic countries account for the largest share. The largest lenders there are the Danish FIH Bank, which is part of the Kaupthing Bank group, and BNbank of Norway, which is part of the Glitnir group. A fifth of foreign lending is in the UK, headed by Kaupthing Singer & Friedlander in the Kaupthing Bank group. Considerable amounts have also been lent to Benelux – mainly Luxembourg. In all, 95% of the commercial banks' foreign lending is to northern Europe and North America. Thus the bulk of lending is to stable regions where the general economic situation is good. The quality of loans to customers is discussed in more detail in Appendix 1 on p. 62.

Lending growth still robust

Lending by the commercial banks' parent companies at the end of 2006 amounted to 2,924 b.kr., having grown by 48% year-on-year. Domestic borrowers accounted for 2,120 b.kr. at end-2006 (an increase of 42%) and foreign borrowers 804 b.kr. (up 64%). Loans to domestic businesses grew by 46% last year and to households by 28%. Growth in lending to households, including mortgage loans, has slowed down sharply from the 94% recorded in 2005.

Mortgage lending, loan-to-value ratios and interest rate risk

Increased mortgage lending by the banks will strengthen their position if the returns prove satisfactory, because experience has shown a low rate of delinquency and write-offs on such credit. Delinquency could increase with higher loan-to-value ratios, however. FME data reveal that 16% of mortgage loans by the commercial banks' parent companies at the end of 2006 involved a mortgage-to-value ratio of over 90%. This could be questionable when house prices fall. As a

13. Other income and expenses remaining unchanged. This is a simplified assumption; for example, remuneration in the investment banking sector is partly performance-related, and net fees and commissions are unlikely to remain unchanged during a downturn in the securities market.

Table 6 Total foreign lending by the three largest commercial bank groups

Country/region	End-2006 b.kr.	%
Nordic	2,326	47
UK and Ireland	1,098	22
Benelux	969	20
North America	112	2
Germany	121	2
Other European countries	108	2
Other	234	5
Total	4,968	100

Source: Financial Supervisory Authority (FME).

Table 7 Commercial bank lending

	End of 2005 b.kr.	End of 2006 b.kr.	Increase b.kr.	Increase %
Total lending	1,981	2,924	943	48
Domestic lending	1,490	2,120	630	42
Corporates	1,042	1,522	480	46
Households	420	538	118	28
Foreign lending	491	804	313	64

Parent companies of the three largest commercial banks.

Source: Financial Supervisory Authority (FME).

rule, the commercial banks' mortgage loans are CPI-indexed with a fixed interest rate and a maturity of up to 40 years. So far, the banks have only matched part of their mortgage lending with funding of a similar profile. Thus their fixed interest risk has increased, after being virtually non-existent before 2004. According to data from the FME, the largest commercial banks could have lost 33 b.kr. if market interest rates had risen by 1%, based on their lending book positions at the end of 2006. Measured as a proportion of own funds, the banks' fixed interest risk was 3.6% at the end of 2006, compared with 5% at the end of 2005. In proportional terms, then, their fixed interest risk has diminished year-on-year.

Ongoing growth in foreign currency-denominated lending ...

The outstanding stock of foreign currency-denominated loans by parent commercial banks at the end of 2006 stood at 1,789 b.kr., an increase of 680 b.kr. (61%) year-on-year. Some 57% of foreign

Table 8 Loan-to-value ratio in commercial banks' mortgage lending

	End of 2006 %
LTV ratio 0-50%	20
LTV ratio 50-70%	22
LTV ratio 70-90%	34
LTV ratio 90-100%	8
LTV ratio over 100%	8
LTV ratio unknown	8

Parent companies of the commercial banks.

Source: Financial Supervisory Authority (FME).

currency-denominated lending was to Icelandic residents, broadly unchanged year-on-year. The overwhelming majority of foreign currency-denominated lending to residents is to businesses, which account for 92%, while 6% is to the household sector but has risen from the year before. Foreign currency-denominated lending to households grew by 35 b.kr. (140%) in 2006. Since households generally do not have income in foreign currency, it could be questionable for them to assume debt in other currencies than the króna. Foreign currency-denominated lending by parent commercial banks to non-residents continued to grow in 2006 to 771 b.kr. at the end of the year, an increase of 62% year-on-year.

Table 9 Commercial bank foreign currency-denominated lending

	End of 2005 b.kr.	End of 2006 b.kr.	Increase b.kr.	Increase %
Total foreign currency-denominated lending	1,109	1,789	680	61
Domestic lending	634	1,018	384	61
Corporates	597	936	340	57
Households	25	60	35	140
Foreign lending	474	771	296	62

Parent companies of the three largest commercial banks.

Source: Central Bank of Iceland.

... but the largest share is borrowed by currency earners

The bulk of foreign currency-denominated lending is to borrowers with sizeable incomes in foreign currency.¹⁴ Thus 39% of foreign currency-denominated lending at the end of 2006 was to non-residents, 25% to residents with more than 2/3 of their total revenues in foreign currency and 15% with between 1/3 and 2/3 of their total revenues in foreign currency. This left 21% of lending to residents who earned less than 1/3 of their total revenues in foreign currency.¹⁵ One-third of that group had no income in foreign currency. The share of foreign currency-denominated lending to the borrower group that is most susceptible to a possible depreciation of the króna therefore decreased year-on-year.¹⁶

Table 10 Foreign currency-denominated lending

Foreign currency income or residence	End of 2005 %	End of 2006 %
Foreign currency income <33% of total income, or none	29	21
Foreign currency income 33% to 67% of total income	6	15
Foreign currency income >67% of total income	24	25
Foreign currency-denominated lending to non-residents	41	39
Total	100	100

Foreign currency-denominated lending and derivatives. Parent companies of the three largest commercial banks.

Source: Central Bank of Iceland.

14 Foreign currency-denominated lending and derivatives. Parent companies.

15 This category includes businesses with a strong enough market position to be able to pass on to prices the extra cost resulting from a depreciation of the króna.

16 Ignoring the possibility that borrowers may hedge against currency fluctuations with derivatives.

Delinquency rate stays at a historical low

According to data from the FME, the delinquency rate¹⁷ on lending by the commercial banks at the end of 2006 was 0.7%, unchanged over the year. This is the lowest delinquency rate recorded since regular compilation of data on arrears began at the end of 2000. However, the nominal amount of customers' total arrears with commercial banks increased year-on-year at the end of 2006 to 21 b.kr., from 14 b.kr.¹⁸ Total arrears thus increased by 7 b.kr., or 50%, in the space of a year. Classified by duration, the longest and thereby most serious arrears accounted for 19% of total delinquency at the end of 2006 and were down from the year before. Since new lending is unlikely to end up in arrears immediately, the lagged delinquency rate¹⁹ is considered to give a more representative picture of the trend. Measured in these terms, arrears have also been trending downwards to 1.1% at the end of 2006. Lower ratios of delinquency go hand in hand with the favourable economic climate for businesses and households. Business profitability was strong last year, the employment situation was exceptionally robust and real disposable income increased.

Record low ratio of credit loss allowance accounts

The combined credit loss allowance account of the largest commercial banks amounted to 46 b.kr. at the end of 2006, an increase of 11 b.kr. (31%) from 35 b.kr. at the beginning of the year. Although they increased in nominal terms, credit loss allowance accounts have shrunk relative to lending growth. As a proportion of total outstanding loan stock, the largest commercial banks' credit loss allowance accounts stood at 0.8% at the end of 2006, the lowest ratio ever. They were in the range 2.1-2.7% over the period 2000-2003. Low levels of delinquency are the main explanation for the low position of credit loss allowance accounts.

Leveraged stock purchases

Lending by the largest commercial bank groups against share collateral amounted to 674 b.kr. at the end of 2006, or 12% of their total lending to customers, according to FME data. Some 93% of lending against share collateral had more than 100% margining and 63% more than 150% margining.²⁰ This means that the banks have considerable leeway for meeting a drop in equity prices. The bulk of leveraging (59%) involves equities listed on OMX Nordic Echange in Iceland. At the end of 2006, the equivalent of 29% of market capitalisation of listed equities on OMX in Iceland was used as collateral. The above implies that equity investments on OMX in Iceland are being leveraged on a sizeable scale, which could be questionable when share prices fall.

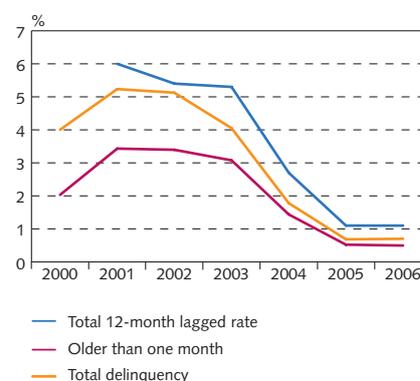
17. Total arrears as a proportion of outstanding loans, including provisions for impairment. Parent companies.

18. Arrears generally decrease in the fourth quarter, due to final write-offs. Arrears within the year may therefore easily exceed the end-of-year figure.

19. Total arrears as a proportion of outstanding loans one year before, including provisions for impairment. Parent companies.

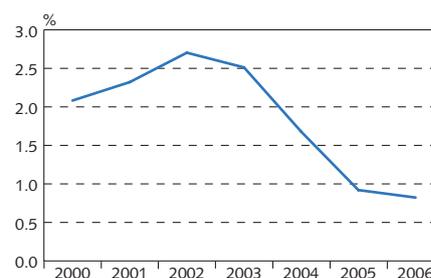
20. Margining indicates the market value of equity collateral for loans in proportion to the loans secured by it. A margining level above 100% indicates that the market value of the shares exceeds that of the loan they secure.

Chart 6
Delinquency rate 2000-2006¹



1. Commercial banks' parent companies
Source: Financial Supervisory Authority (FME).

Chart 7
Credit loss allowance accounts 2000-2006¹
Ratio of total outstanding lending to customers



1. Largest commercial banks' consolidated accounts.
Sources: Commercial banks' annual reports, Central Bank calculations.

Transactions by banks with major shareholders and senior executives

Box 3

Ownership of Icelandic banks has become more concentrated in recent years and large shareholdings have become prominent. In some cases, large shareholders are also clients of the banks concerned or their investment partners. Iceland's financial legislation imposes no restrictions on facilities granted to such parties or financial company executives, over and above those applying to customers in general, for example rules on large exposures. This entails certain risks and it is the role of the Financial Supervisory Authority (FME) to ensure that certain principles concerning equality, conflicts of interests and eligibility are adhered to. The FME has strongly emphasised this aspect of its supervisory role, as discussed in its Annual Report for 2006.

Risks

The potential risks involved in concentrated ownership and business relations are primarily the following:

- Owners enjoy easier access than non-related parties to loan capital or favourable credit terms.
- Owners enjoy greater understanding than non-related parties concerning guarantees or measures in the event of default.
- Investment projects involving owners are not subject to the same scrutiny as projects involving non-related parties.
- Owners receive information on the operations, trading conditions or future policies of customers (or companies) which may be their (or their subsidiaries/associates') competitors in a specific area. Owners also have access to comparable information about the financial company itself.
- Reputation risk, if a foreign rating agency or investors are of the opinion that supervision of these risks is inadequate.

Remedies

The remedies proposed by the legislature in order to avoid the detrimental effects of concentrated ownership and prevent these risks from becoming actual threats are primarily as follows:

- Applications for the acquisition of qualifying holdings in financial undertakings, i.e. 10% or more, must be made to the FME. This is followed by an assessment as to whether the holding may in any way weaken the sound and solid operations of the undertaking. Approvals may be conditional or unconditional.
- The FME monitors eligibility rules, i.e. on the general eligibility of board members and senior executives and also their specific eligibility to handle individual cases. To this end, an eligibility test is performed when such parties assume posts with financial companies, in addition to ongoing supervision of eligibility.
- Large exposures are monitored. Regulations stipulate that no individual or affiliated parties enjoy credit facilities amounting to more than 25% of a credit undertaking's equity.
- Under recent legislation aimed at transposing Basel II, the FME's remit to estimate specific operational risks and their impact on corporate capital requirements has been widened. It is under consideration to view the increased risk that may be entailed by financial company ownership in this context.
- Finally, specific prudential rules apply to ownership links between financially related companies. In such cases, the shareholding is deducted from the equity when calculating minimum equity. Provisions on the above are specified in FME guidelines No. 4/2006.

In addition to the above, the FME ensures that advances to affiliated parties are based on the arm's length principle, i.e. on the same terms as available to comparable non-related parties. The FME monitors this on the basis of the financial companies' own reporting. Furthermore, the FME recommends that external auditors examine such advances, compare them with similar transactions by other customers and present a reasoned opinion on whether the arm's length principle has been observed.

Source: Financial Supervisory Authority (FME).

Decline in ratio of large exposures

According to FME data, total large exposures²¹ of the largest commercial banks amounted to 547 b.kr. at end-2006, the equivalent of 59% of their combined own funds. Between them, the banks had 17 large exposures at the end of 2006. By comparison, total large exposures at the end of 2005 numbered 16 and their value was 377 b.kr., or 76% of own funds. It should be remembered that the swelling of commercial banks' capital in 2006 has naturally reduced their number of large exposures. Since the total amount of large exposures has grown by 170 b.kr. year-on-year, and their number has increased by one, it can be inferred that the largest exposures have been augmented year-on-year. However, the reduction in the ratio of large exposures to capital between the years is an important consideration from the perspective of financial stability.

Marketable securities and foreign currency

Increase in marketable securities portfolios

The largest commercial banks' total marketable securities portfolios, derivatives and shareholdings amounted to 1,489 b.kr. at the end of 2006, an increase of 350 b.kr., or 31% year-on-year. The bulk of the marketable securities portfolio is in the form of bonds.

Growth in foreign exchange positions

Market and currency risk of the largest commercial banks, measured according to FME rules on capital adequacy of financial undertakings, amounted to 753 b.kr. at the end of 2006 and grew by 253 b.kr. year-on-year. As before, equity exposures were the main item in the risk base.²² The equity risk base stood at 275 b.kr. at the end of 2006, but rose by only 4% over the year. The bond risk base increased somewhat over 2006 to 239 b.kr. at the end of the year, which must be viewed to some extent in the context of the banks' strong liquidity position then. The largest banks boosted their foreign exchange

21. An exposure (lending, securities holding, share, guarantee granted, etc.) incurred by a financial undertaking to a client or a group of connected clients, the value of which amounts to 10% or more of the own funds of the undertaking.

22. Risk base represents the risk connected with a company's exposure in a given financial instrument, due to conceivable changes in its value.

The development of credit institutions' foreign exchange balances

Box 4

Rules on credit institutions' foreign exchange balances¹

Credit institutions' foreign exchange balance may be defined as the difference between their foreign currency-denominated assets and liabilities, on and off the balance sheet. It is therefore a measure of an institution's currency risk. The Central Bank of Iceland has set rules on credit institutions' foreign exchange balance since 1984. At first they were not permitted to have a negative foreign exchange balance. The rules regulating foreign exchange balance were amended in 1993 when trading opened in the FX market and provisions were introduced stipulating permissible net foreign exchange imbalances.

The rules aim to restrict currency risk by preventing the net foreign position from exceeding specific limits. Initially, the maximum permissible net foreign exposure for a bank was 20% of its equity. When the rules were revised in 1997 the balance was changed to 30% of equity according to the last financial statements, and this maximum is still in effect. The current rules date from May 2006.²

Watershed in autumn 2005

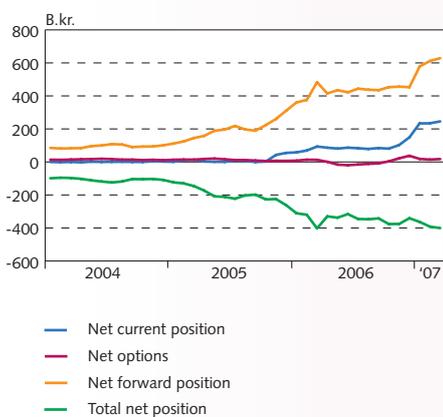
Until 2005, the banks' net foreign-denominated assets and liabilities were generally in broad balance – never more than 5 b.kr. long or short.³ This changed in autumn 2005 when the banks abandoned their policy of maintaining balance and began to build up positive exposures. From October to November 2005, the combined net foreign assets of the three largest commercial banks soared from 0.5% to 12.3% of equity. In terms of end-of-month figures, the increase amounted to 52 b.kr. This pattern continued and by March 2006 their net foreign position was equivalent to 19.2% of equity.⁴

Separate positive foreign exchange balance allowed

The financial markets have undergone massive changes in recent years. Since becoming fully privatised in 2003, the commercial banks have expanded their operations exponentially. The lion's share of growth has been outside Iceland, where banks have both established branches and acquired foreign subsidiaries. Swelling foreign assets have left the banks' capital adequacy ratios more exposed to changes in the exchange rate.

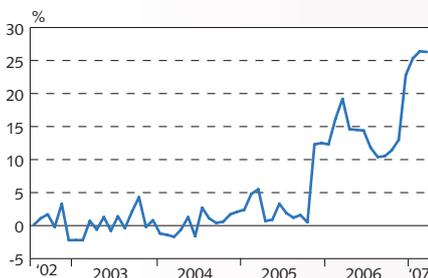
Under Central Bank rules on foreign exchange balance, the Financial Supervisory Authority (FME) may permit institutions to exclude certain items from calculations of the foreign exchange balance, namely exposures made specifically to hedge against the adverse impact of changes in the exchange rate of a currency on its capital adequacy ratio, and shareholdings in subsidiaries which have been deducted from equity capital calculations. This authorisation was refined in spring 2006 to allow financial institutions to maintain a separate positive foreign position outside their total foreign balance as a hedge against the effect of exchange rate movements on their capital adequacy ratios. These changes entered into force as of May 1, 2006.

Chart 1
Foreign exchange balance of credit institutions¹
January 2004 - March 2007



1. Three largest commercial banks.
Source: Central Bank of Iceland.

Chart 2
Foreign exchange balance of credit institutions¹
July 2002 - March 2007, as % of equity capital



1. Three largest commercial banks.
Source: Central Bank of Iceland.

- The rules apply to credit institutions subject to minimum reserve requirements and to other parties authorised to act as intermediaries in foreign exchange transactions. Minimum reserve requirements apply to commercial banks and savings banks, credit undertakings which are authorised by law to accept deposits from the public for custody and investment, and financial undertakings operating on the basis of Article 4, Point 3 of Act No. 161/2002, and which are not bound by the provisions of specific laws or of the Treasury budget at any time with respect to the procurement of funds for their activities.
- The prudential regulation on foreign exchange balance is discussed in more detail in the Appendix on p. 81.
- Based on monthly average.
- Banks benefited from their positive foreign exchange position in spring 2006 when the króna depreciated by almost 20% over the two months from February 21 to April 21.

The Central Bank has authorised two credit institutions to maintain a separate positive foreign balance, and net foreign assets have increased as a result. Combined net foreign assets of the three largest banks leapt by more than 81 b.kr. from 13% to 22.8% of equity from November to December 2006. It should be pointed out that Kaupthing made a 55 b.kr. equity offering over this period, targeted at foreign investors. At the end of 2006, the three largest banks' combined net foreign assets stood at 188.5 b.kr. and they have continued to grow in 2007.

positions sharply in 2006. The currency risk base amounted to 194 b.kr. at the end of 2006, up by 143 b.kr. (276%) from the preceding year. Until recent years, the banks faced little exposure to currency risk. A large part of the increase in reserves now is due to hedging by banks against the impact of exchange rate movements on their equity and capital adequacy ratios. The development of the banks' foreign exchange balance is discussed in Box 4 on p. 54.

Lower ratio of equity exposure at own risk

As a result of derivative contracts with their clients, the largest commercial banks' market risk on equity exposures is not the same as their book value. Book value of equities amounted to 422 b.kr. at the end of 2006 but after adjustment for derivatives, their equity exposure at own risk was 246 b.kr.²³ The banks' stock of equities at own risk grew by 44 b.kr., but declined as a proportion of own funds. Equities at own risk as a proportion of own funds amounted to 27% at the end of 2006, compared with 41% a year before.

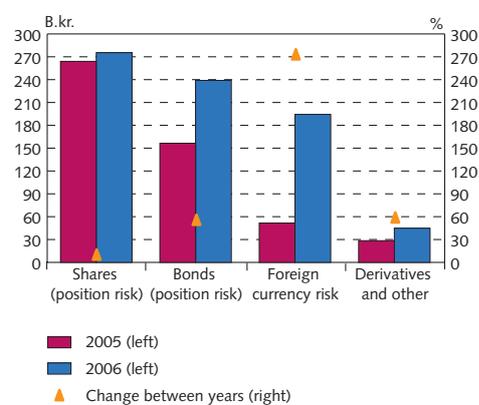
Equity derivative contracts

The most common term for equity derivative contracts is 3-6 months, which is often extendable. Derivative contracts reduce the banks' market risk from holding the equities, which in most respects is comparable to a loan secured with collateral in shares. Thus the banks' risk may be underestimated in the event of default on a derivative contract following a fall in the price of the underlying equities. According to FME data, the commercial bank groups' forward contracts with equities as collateral amounted to 139 b.kr. at the end of 2006. Some 69% of forward contracts had more than 100% margining and 20% more than 150% margining.²⁴ This means that the banks have considerable leeway for meeting a drop in equity prices. The bulk of leveraging (60%) in forward contracts is in equities listed on OMX Nordic Exchange in Iceland. Growth of equity derivative contracts may have been one of the drivers of higher share prices in recent years. By the same token, a contraction in derivative trades may cause downward pressure on prices.

23. Equities included among trading assets and financial assets designated at fair value under IFRS. Excluding the banks' holdings in associates owning shares in listed and unlisted companies.

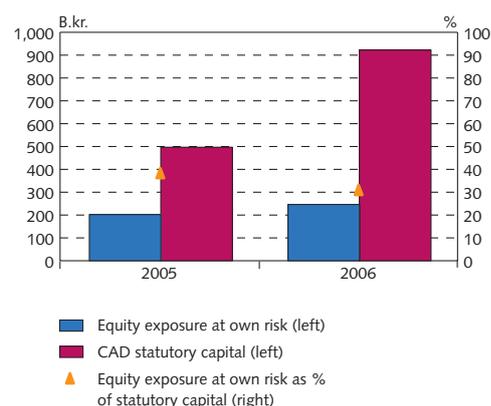
24. Margining indicates the market value of equity collateral for forward contracts in proportion to the forward contracts with equities. A margining level above 100% indicates that the market value of the shares exceeds that of the forward contract they secure.

Chart 8
Market and foreign currency risk
2005 and 2006¹



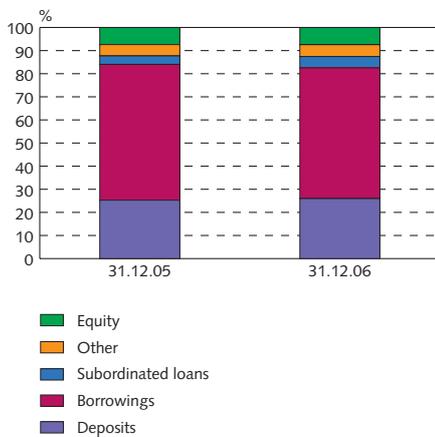
1. Risk according to risk weight base in capital adequacy rules. Largest commercial banks' consolidated accounts.
Source: Financial Supervisory Authority (FME).

Chart 9
Equity exposure 2005 and 2006¹



1. Three largest commercial banks' consolidated accounts.
Sources: Commercial banks' annual reports, Central Bank calculations.

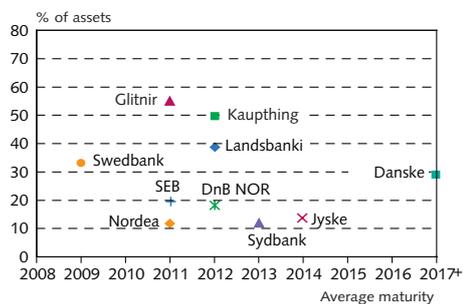
Chart 10
Composition of funding 2006¹



1. Largest commercial banks' consolidated accounts.
Sources: Commercial banks' annual reports, Central Bank calculations.

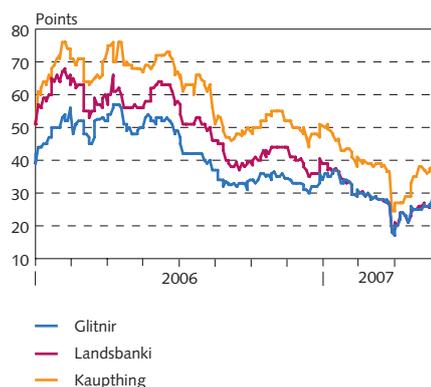
Chart 11
Nordic banks' funding

Market borrowings with regard to total assets and average maturity¹



1. Average maturity for Danske Bank is 2020.
Sources: Commercial banks' annual reports, Bloomberg.

Chart 12
Credit default swaps
May 2006 - March 2007



Source: GFI Group.

Financing

Composition of financing

The financing requirement of the largest commercial bank groups continued to grow in 2006 in pace with their swelling balance sheets. The banks' main channel for financing is borrowing, including securities issuance. At the end of 2006, 57% of the banks' assets were financed with borrowing, compared with 59% at the end of 2005. In particular, the lower ratio is explained by an increase in subordinated debt.²⁵

Hefty securities issuance in other currencies

At the end of 2006, borrowing by the largest commercial bank groups amounted to 4,793 b.kr., of which securities issues accounted for 4,034 b.kr. Securities issuance increased by 1,231 b.kr., or 44%, year-on-year. Securities issuance by the parent banks grew by 1,079 b.kr. (55%) over the same period. At the end of 2006, 94% of securities issued by parent companies were denominated in foreign currency. An even higher ratio may be expected with the inclusion of activities of foreign subsidiaries in the consolidated accounts.

Large majority of debt instruments listed

Most of the largest commercial banks' borrowing is made in the markets. At the end of 2006, debt instruments of the three commercial banks amounting to 4,061 b.kr. were listed on markets, or 78% of their total borrowing and subordinated debt. Only 3.6% of listed instruments were denominated in Icelandic currency. Compared with a sample of Nordic banks, the Icelandic banks have a higher ratio of listed issues to total assets, but a similar average residual maturity. The Icelandic banks' borrowing as a ratio of total assets decreased year-on-year, but they still rely much more heavily on financing in the market than the other Nordic banks.

At the end of 2006, the largest commercial banks had 1,026 b.kr. of listed debt maturing in 2007 and 587 b.kr. in 2008. Thus the banks will need to refinance or repay 1,613 b.kr. by the end of 2008, the equivalent of 40% of their listed debt instruments. Part of the refinancing will devolve upon their foreign subsidiaries.²⁶ By the end of 2006, the banks had completed their refinancing arrangements for 2007.

Much sharper focus on deposits

Total deposits with the largest commercial banks amounted to 2,202 b.kr. at the end of 2006, an increase of 61% year-on-year. As a proportion of total liabilities, however, deposits increased only marginally to 28%. In the recent term, the banks have given a much sharper focus to deposit-taking and have made good progress, especially outside Iceland. However, as a result of their rapid expansion, the ratio of deposits to total liabilities and lending for the banks as a

25. In the banks' accounts, borrowing comprises securities issuance and other borrowing (excluding subordinated debt). Securities issuance is divided into bonds and bills.

26. A negligible part of the refinancing requirement is extendable.

whole has remained virtually stagnant, even though the volume has surged. Some agencies that rate the commercial banks have pointed to the low share of deposits in their total financing. Ongoing growth of deposits and a larger share for them in total funding will underpin the banks' ratings.

Liquidity position was well in line with rules

The liquidity position of financial companies, measured according to the Central Bank's liquidity rules, was easy last year.²⁷ Liquid asset growth outstripped the increase in liquid liabilities over the year, driving up the end-of-year liquidity ratio. At end-2006, weighted net liquid assets of financial companies in the time belt 0-3 months tripled to 1,685 b.kr. with a year-on-year increase of 1,121 b.kr. Central Bank rules set a minimum liquidity ratio of 1, i.e. weighted net liquid assets one month and three months ahead shall be equal to or exceed net liquid liabilities. This ratio has been above 2 since the middle of 2006 but was 1.5 at the end of 2005. On the liquid asset side, claims on foreign credit institutions grew by 201% and marketable securities by 87%, while securities issuance increased by 109% on the liquid liabilities side. Net liquid assets at the end of 2006 were almost entirely denominated in foreign currencies, amounting to 1,567 b.kr., or 98% of the total. Virtually all the liquidity is therefore in the form of foreign currency.

Besides compliance with the Central Bank limits, the commercial banks have also set in-house rules aimed at enabling them to cover liabilities maturing within one year without resorting to market capital.

Large issuance of subordinated debt

The largest commercial banks' equity swelled in 2006, increasing by 230 b.kr. (57%) to 630 b.kr. at the end of the year. Market value of total new issues of capital by the commercial banks amounted to 77 b.kr. in 2006. The bulk of new capital, 56 b.kr., was procured by Kaupthing, while Glitnir also made an issue with a market value of 21 b.kr. There has been a large increase in the commercial banks' subordinated debt in the recent term. Rapidly expanding balance sheets have called for more capital, and subordinated debt that meets certain conditions is considered the equivalent of capital under law. At the end of 2006, subordinated debt of the largest commercial banks stood at 415 b.kr., an increase of 216 b.kr., or more than double, from the previous year. Around two-thirds of the additional subordinated debt issued last year was classified as Tier II capital for calculation of mandatory capital adequacy.

Highest capital adequacy ratio since rules were set

As defined under FME rules, the capital adequacy ratio (solvency ratio) of the largest commercial banks was 15% at the end of 2006, the highest ratio since the rules were introduced in 1992. The Tier

Chart 13
Proportion of claims by foreign entities, by maturity¹

Commercial banks' parent companies

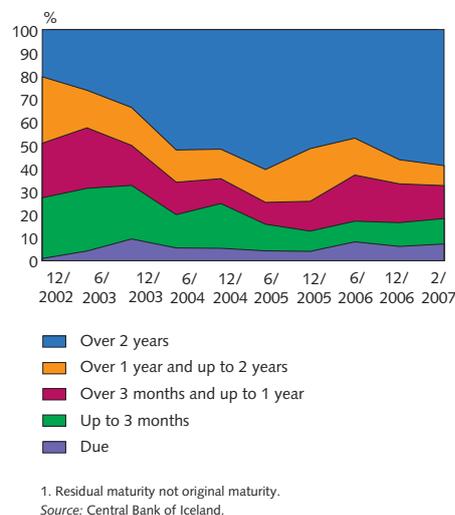


Chart 14
Maturity profile of market funding¹
End of year, 2006

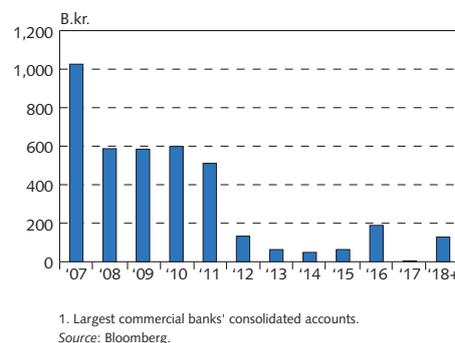
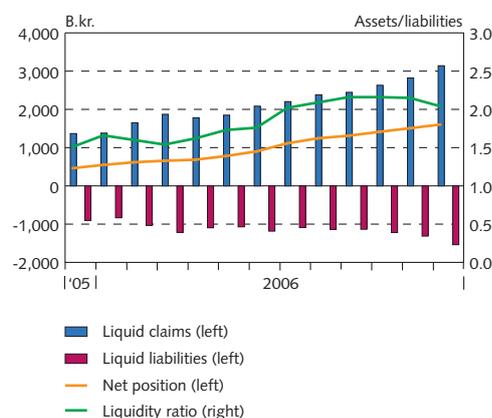


Chart 15
Credit institutions' liquidity position 2006¹
0-3 month



27. Central Bank of Iceland Rules on Liquidity Ratio apply to credit institutions subject to minimum reserve requirements. See the Central Bank of Iceland website, www.sedlabanki.is

Box 5 New capital standards

New international capital standards for financial companies took effect at the beginning of 2007. They are based on the Basel Committee on Banking Supervision's Revised International Capital Framework (Basel II), which was first published in June 2004 and revised in November 2005. Basel II replaces an earlier Capital Accord originally dating to 1988. The aim of Basel II is convergence of the regulatory framework governing the capital adequacy of internationally active banks.

The new framework has been adopted in the European Economic Area with amendments to Directives No. 2000/12/EC (now 2006/48/EU) and 93/6/EU (now 2006/49/EU). The former was transposed into Icelandic law with Act No. 161/2002 and rules were set under its provisions. In December 2006, Act No. 170/2006 transposed the amendments to these Directives, and current laws and rules were amended correspondingly. Under the new legislation, financial companies may defer calculation of capital adequacy ratios and risk base according to the new rules until January 1, 2008, and retain the corresponding provisions in force at the end of 2006. Two-thirds of financial companies in Iceland – primarily smaller ones accounting for 5% of total assets of financial companies – intend to take advantage of the deferral clause.

In future, financial companies will have a choice of approaches for calculating risk-weighted capital requirements. They can choose between a standard approach and one of two internal-based (IRB) approaches. Use of the IRB approach is subject to permission from the Financial Supervisory Authority (FME), which will also monitor compliance with the requirements. The standard approach resembles the traditional method for calculating capital adequacy and the overwhelming majority of financial companies, in terms of numbers, will probably opt for it. IRB makes more stringent and costly requirements and only the largest financial companies are expected to request authorisation. Two banks – Kaupthing and Glitnir – have already applied for permission.

On March 2, 2007, the FME set new rules on capital adequacy and risk base of financial undertakings, No. 215/2007, and new rules on large exposures of financial undertakings, No. 216/2007, based on the EU Directives. A provisional clause in Act No. 170/2006 authorises the FME to refer to Annexes to the Directives as published in the Official Journal of the European Union. The new capital adequacy rules extend to credit risk as well as market and operating risk.

In April 2007, the FME issued guidelines to promote a common framework for supervisory disclosure, which relate to Pillar II of Basel II. At the same time, the FME issued guidelines for rules on stress testing, management of concentration risk and management of interest rate risk arising from non-trading activities. All these rules have been set by Committee of European Banking Supervisors (CEBS) and are expected to be incorporated into the FME's own guidelines. Pillar II also makes a financial undertaking's management responsible for setting capital targets that are commensurate with its risk profile and control environment. The target should be equal to or higher than the general requirement to hold total capital equivalent to at least 8% of risk-weighted assets. Other requirements under Pillar II relate to routines and processes as well as internal audit of risk management systems and control processes.

Pillar III makes requirements for disclosure of risk profiles to market participants, in order to impose market discipline and facilitate investors in comparing financial undertakings.

Source: Financial Supervisory Authority (FME).

I capital adequacy ratio was 11.2% at the end of 2006. It can only be said that the capital position of the commercial banks is sound. A strong equity position and ample liquidity are important preconditions for financial stability.

Largest savings banks²⁸

Savings banks are small in comparison with the commercial banks. Their assets correspond to less than one-tenth of the largest commercial banks' assets. Nonetheless, savings banks play an important competitive role in the domestic market.

Massive trading gains on equities

The largest savings banks returned an exceptionally strong performance in 2006. Their combined return on equity reached 52%, compared with 39% in 2005. Much of this strong profitability can be attributed to trading gains on equities, which accounted for around 60% of net operating income for the largest savings banks.²⁹ In recent years, interest income has been decreasing as a proportion of the largest savings banks' net operating income. This trend continued in 2006 and – partly due to increased mortgage lending – their interest margin narrowed as well, falling to 1.9%, the same as for the commercial banks. The declining weight of interest income is surely a cause of some concern to the savings banks, because experience shows that other income, especially trading gains on financial activities, is volatile. Although position-taking in securities may form part of the savings banks' investment banking activities, it would be imprudent to assume that trading gains will always be positive. For example, if the savings banks had shown zero trading gains in 2006, their profit before tax could have been 8% instead of 62%.³⁰ In other words, without their trading gains, the savings banks' performance would have been unsatisfactory in 2006.

Low impairment provisioning

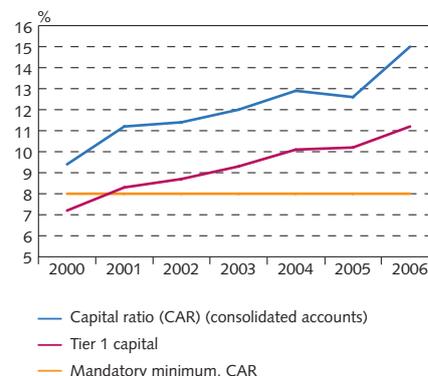
Impairment provisioning of the largest savings banks declined year-on-year in spite of soaring lending growth. Provisions amounted to 1.1 b.kr. in 2006, but were 1.4 b.kr. the previous year. At 19%, provisioning as a ratio of net interest income was at the lowest level for many years. A reduction in delinquency reduced the need for impairment provisioning in 2006, but the savings banks' provisioning as a ratio of net interest income is somewhat higher than that of the commercial banks.

28. The largest savings banks are Sparisjóður Reykjavíkur og nágrennis (SPRON), BYR-sparisjóður (created by the merger of Sparisjóður Hafnarfjarðar and Sparisjóður vélstjóra), Sparisjóðurinn í Keflavík, Sparisjóður Mýrasýslu and Sparisjóður Kópavogs. Figures are consolidated unless otherwise stated. Discussion of the aggregate position may diverge from that of individual savings banks. SPRON, BYR-sparisjóður and Sparisjóður Kópavogs present their accounts based on IFRS principles.

29. Some savings banks are shareholders in Exista financial services company, which generated large trading gains in 2006. Exista operates in the insurance, leasing and investment sectors with brands including VÍS and Lýsing. Exista is also a core investor in several of Iceland's largest companies, including Kaupthing Bank, Bakkavör Group and Iceland Telecom.

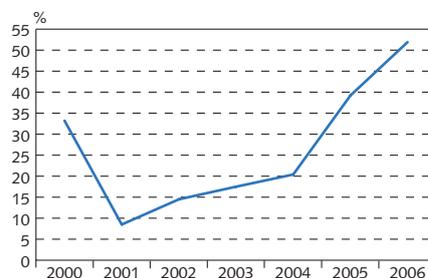
30. A simplified assumption, based on other income and expenses remaining unchanged.

Chart 16
Capital ratio 2000-2006¹



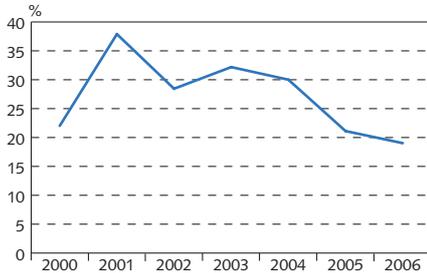
1. Largest commercial banks' consolidated accounts.
Sources: Commercial banks' annual reports, Central Bank calculations.

Chart 17
Return on equity 2000-2006¹



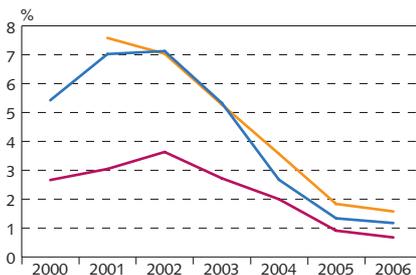
1. Largest savings banks' consolidated accounts.
Sources: Largest savings banks' annual reports, Central Bank calculations.

Chart 18
Impairment of loans 2000 - 2006¹
Provisions as a ratio of net interest income



1. Largest savings banks' consolidated accounts.
Sources: Largest savings banks' annual reports, Central Bank calculations.

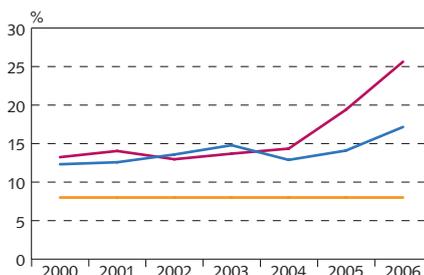
Chart 19
Delinquency rate 2000-2006¹



— Total delinquency
— Older than one month
— Total 12-month lagged rate

1. Largest savings banks' parent companies.
Source: Financial Supervisory Authority (FME).

Chart 20
Capital ratio 2000-2006¹



— Capital ratio (CAR) (consolidated accounts)
— Tier 1 capital
— Mandatory minimum

1. Largest savings banks' consolidated accounts.
Sources: Largest savings banks' annual reports, Central Bank calculations.

Growth in lending and market securities portfolios

Lending by savings banks³¹ at the end of 2006 amounted to 299 b.kr., an increase of 35% year-on-year. Domestic borrowers accounted for 286 b.kr. of the total outstanding loan stock at end-2006 (an increase of 36%) and foreign borrowers 13 b.kr. The lion's share of domestic lending is CPI-indexed, including mortgage loans to households. If it generates adequate returns, and if moderate loan-to-value ratios are maintained and fixed interest rate risk is kept to a minimum, increased mortgage lending should strengthen the savings banks' position, because experience shows that delinquency and impairment of such loans is generally low. Substantial growth was shown in 2006 on the savings banks' portfolios of marketable securities, which grew by 44 b.kr. year-on-year to 87 b.kr. at the end of the year.³² Domestic equities account for the bulk of their marketable securities portfolios.

Low delinquency and credit loss allowance accounts

According to data from the FME, the delinquency rate³³ on lending by the largest savings banks at the end of 2006 was 1.2%, virtually unchanged from a year earlier. This is the lowest delinquency rate recorded since regular compilation of data on arrears began at the end of 2000. Nonetheless, the customer delinquency rate is higher for savings banks than for the commercial banks. Lower ratios of delinquency go hand in hand with the favourable economic climate for businesses and households. Alongside low delinquency, credit loss allowance accounts shrank sharply relative to lending growth. As a proportion of total outstanding loan stock, the largest savings banks' credit loss allowance accounts stood at 1.2% at the end of 2006, the lowest ratio ever. Low levels of delinquency warrant smaller credit loss allowance accounts. However, sharp lending growth in recent times may be seen as conducive to increased loan losses later.

Diminishing share of deposits

Unlike the commercial banks, the savings banks largely procure their finance in the domestic market. The largest single component of their funding is deposits, although the share has been declining in recent years. At the end of 2006, deposits with savings banks amounted to 190 b.kr., which was 39% of their funding.³⁴

Capital adequacy and holdings in other financial companies

As defined under FME rules, the capital adequacy ratio (solvency ratio) of the largest savings banks was 17.2% at the end of 2006. The Tier I capital adequacy ratio was 25.6%. The main explanation for the discrepancy between the two capital ratios in recent years has been that several of the largest savings banks own substantial holdings in

31. Parent companies of the savings banks and Icebank.

32. Parent companies of the savings banks and Icebank.

33. Total arrears as a proportion of outstanding loans, including provisions for impairment. Parent companies.

34. Parent companies of the savings banks and Icebank.

other financial companies which are deducted from their own capital when the solvency ratio is calculated. Because of the high equity ratio of the largest savings bank, SPRON, the savings banks' capital adequacy ratios are higher than those of the commercial banks.

Appendix 1

Estimating the commercial banks' loan portfolio quality

Credit risk is a major risk in banking operations. Consequently, it is important to monitor the development of the largest banks' loan portfolios and assess their resilience towards impairment. This paper describes an assessment of the loan portfolios of Iceland's largest commercial banks. The aim was to develop a simple but functional model of the banks' credit risk. Their expected credit loss was estimated using information on the geographical and sectoral distribution of their loan portfolios. Although expected default frequency is much higher in Iceland than elsewhere in Europe, the outcomes of these estimates indicate that the banks have adequate buffers for meeting expected impairment. Further development of the model will focus on assessments of the banks' capital requirement and design of stress tests to estimate their resilience to economic shocks.

Financial Stability 2006 included an estimation of the banks' potential credit losses on lending to households and its effect on their balance sheets. Their resilience to serious economic shocks was assessed and a stress test performed using the results of a simple regression analysis. On the basis of the findings it was considered safe to conclude that the equity position of Iceland's commercial banks was strong enough to be resilient towards a significant economic shock in the form of a large fall in real asset prices, increased unemployment and a decline in disposable income.

The following study estimated the banks' total impairment and used other methodologies to estimate potential loan losses. Unlike the 2006 study, losses on lending to households were not estimated. It was largely modelled on a Sveriges Riksbank study of the credit risk of the four largest banks in Sweden.¹ Initially it was planned to follow Riksbank in using only official published data, i.e. from the banks' annual reports. In the end a different approach was opted for and it was decided to request certain additional unpublished information from the banks.² In their annual reports, the banks publish a geographical breakdown of lending based on either the location of their offices and subsidiaries, or of their customers. The latter disaggregation was used for this study. Banks were also asked to disaggregate sectoral information by country and provide a breakdown into nominal and indexed lending.

Uncertainty always surrounds estimates based on such data. The banks have more comprehensive data on their individual loans and can evaluate the risk of each one, and thereby the portfolio as a whole, far more accurately than can be done in such a study. The aim was to

1. See Sveriges Riksbank (2006), pp. 75-88.

2. Iceland's largest commercial banks are Kaupthing Bank, Glitnir and Landsbanki.

produce a broad simulation of the risk profile of the banks' loan portfolios, based on data about borrowers, then to estimate their potential impairment and perform a stress test on the basis of it.

The following study begins with an explanation of expected loan loss and how it can be calculated. Data collection is described along with the compilation methodology for individual data sets. Next comes a discussion of the geographical and sectoral breakdown of the banks' loan portfolios. The findings of these estimations are presented and compared with the banks' own assessments in their annual reports. Finally, the development of expected loan losses is examined using a number of different assumptions.

Expected and unexpected loan losses

Loan loss is a loss incurred by a creditor on default by the borrower.³ The distribution of a banks' loan losses indicates the risk profile of the loan portfolio. Chart 1 shows loan loss distribution. Banks always assume that a certain proportion of credit will be lost, and estimate their expected loan loss. They compensate themselves for the expected loss with a risk premium on the price of loans. However, the actual loss can be much greater. Banks set a tolerance level on the basis of how much of possible total loan losses they can cover with their capital. The greater the difference between expected losses and the tolerance level, the greater the banks' capital requirement (see Chart 1).

Estimate of expected loan losses

With data on the banks' loan portfolio, expected default frequency and expected recovery rate, expected loan losses can be estimated as follows:

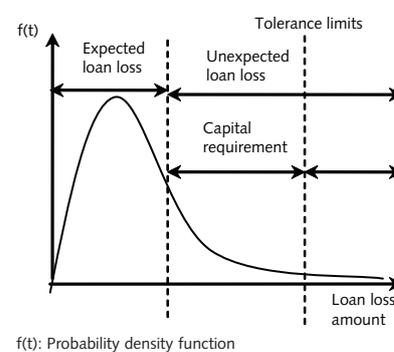
$$(1) \quad ELL = NVD \times EDF \times (1 - ERR)$$

Where *ELL* is expected loan loss one year ahead, *NVD* is nominal value of debt,⁴ *EDF* is expected default frequency and *ERR* expected recovery rate.

EDF reflects the probability of default within a given period. Moody's and Lánstraust (the Icelandic member of Creditinfo Group) have designed a model to estimate EDF of companies within one year.⁵ A geographical and sectoral breakdown of EDF in the banks' portfolios was obtained from the Moody's database for non-resident companies and from Lánstraust for domestic companies.⁶ The banks' sectoral classifications were harmonised to ensure consistency in EDF estimates.

ERR reflects the market value of a bond as a proportion of its nominal value immediately upon default. Since data was not available for ERR on lending by Icelandic banks, the findings of international

Chart 1
Distribution of loan losses



3. A borrower defaults by failure to pay, bankruptcy or an unsuccessful distraint action.

4. Under Basel II, debt should be stated at nominal value within a period of one year. Data was collected from the largest commercial banks in Iceland on the registered nominal value of lending by parents and subsidiaries. Lending was then broken down by country and sector in order to allow for portfolio risk distribution.

5. Probability of default can also be estimated within other periods, e.g. three months or five years.

6. See Box 1 on p. 68 for Moody's and Lánstraust's methodology for estimating EDF.

studies were used as a reference.⁷ Loans were classified into whether they were secured with collateral or unsecured, and senior or subordinated debt. The lower ERR on bonds than other credit instruments was also taken into account.

No data were available on probable household and public sector default. Historical data were therefore used for Iceland, whereas for other countries, EDF was estimated from international studies.⁸

It is unlikely that all lending to the same sector carries an equal risk. To allow for this, companies were classified into three risk groups; low, average and above average. Since insufficient data were available to estimate the shares exactly, the Icelandic banks' portfolios were assumed to resemble those of the Swedish banks in the Riksbank study (see Table 1). However, a higher proportion of above-average risk was assumed for lending to European countries, to compensate for the difference between data in the Moody's and Lánstraust databases.⁹

Table 1 Risk distribution of Icelandic bank's loan portfolios

<i>Risk category</i>	<i>Lending to Iceland</i>	<i>Lending to Europe</i>
Low	10%	10%
Average	80%	70%
Above average	10%	20%

Data on expected loss and its distribution enable an estimate of unexpected loan losses and thereby the banks' capital requirement relative to given tolerance limits. Thus in order to assess the banks' minimum capital ratio, the distribution of lending by Icelandic banks needs to be known.

Geographical and sectoral classification of lending

Loan portfolio risk can either be confined to individual borrowers or systemic, i.e. applying to the entire portfolio. Total risk in a loan portfolio can be reduced with diversification of borrowers. Portfolio risk is reduced if a suitable geographical and sectoral distribution is achieved. Systemic risk, on the other hand, cannot be reduced in this way, since it is intrinsic to the portfolio.

Table 2 shows a geographical breakdown of the banks' loan portfolios. A large proportion of credit was to Iceland, where default frequency was much higher than elsewhere in Europe.¹⁰ Iceland's relatively high corporate leverage could explain this difference. A significant share of lending in Iceland was secured with collateral, which implies that the recovery rate should be higher than in other countries. Nonetheless, since Iceland's expected loss was higher, the higher default frequency ought to outweigh the higher recovery rate in calculations of expected loan losses in Iceland.

7. Data on ERR in Europe was obtained from the report *Default and Recovery Rates of European Corporate Bond Issuers: 1920-2006*.

8. Including the Riksbank study, op. cit.

9. The Lánstraust database contains all companies in the Icelandic Register of Firms, while Moody's covers only listed companies.

10. It should be borne in mind that different methodologies were used to estimate default frequency in Iceland and the rest of Europe, which may explain some of the discrepancy. However, Lánstraust (Creditinfo Group) has estimated default frequency outside Iceland using its model and confirmed the difference.

The UK and Germany had the highest default frequency after Iceland in the country sample, although it was much lower. The largest share of foreign lending by Icelandic banks went to the UK, but a relatively small proportion to Germany at only just over 1% in all. Almost 16% of bank credit was to Denmark, which had the lowest default frequency of the countries in Table 2. Norway was the next lowest.

Table 2 Geographical classification of loan portfolios

<i>Country</i>	<i>% of total</i>
Iceland	39
UK	18
Denmark	16
Norway	12
Sweden	4
Luxembourg	2
Germany	1
Finland	1
Other	8
Total	100

Table 3 shows a sectoral classification of bank lending, in Iceland and in Europe. Default frequency was highest in retail and transport, but these sectors accounted for less than 10% of bank lending. The largest sectoral borrower was services, where default frequency was fairly high. Bank lending to households was also high, but the default frequency quite low. In Europe, 24% of lending was to manufacturing, which had a fairly high default frequency, and 22% to property management companies where the frequency was very low.

Table 3 Sectoral classification of loan portfolios

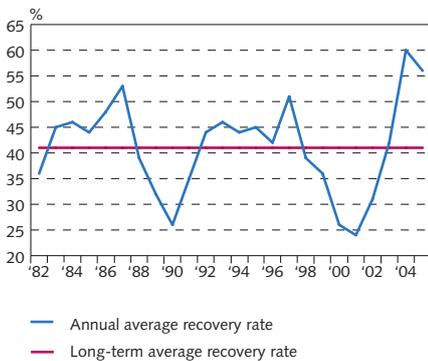
<i>Sector</i>	<i>% of total, Iceland</i>	<i>% of total, Europe</i>
Services	37.5	29.44
Households	26.6	15.01
Retail	10.4	8.45
Manufacturing	9.4	23.81
Fisheries	8.3	0.00
Property management	5.0	21.60
Transport	1.2	1.36
Public sector	0.7	0.12
Agriculture	0.4	0.02
Utilities	0.1	0.11
Other	0.3	0.08
Total	100	100

After lending has been broken down by country and sector and classified by credit quality, expected loan losses can be found (see equation 1).

Findings of calculations

The banks publish the position of their credit loss allowance accounts in their annual reports. As a proportion of the banks' total lending, this amounted to 0.8% at the end of 2006. According to the above calculations, expected losses were equivalent to 0.53% of total lending, so

Chart 2
Annual average recovery rate of due bonds
1982-2005



Source: Moody's.

their provisioning was adequate in this respect. As pointed out above, Iceland's high EDF has a major effect on the results of calculated expected losses.

Given the lack of data on recovery rate, a rough approximation was made instead. Studies have also revealed considerable volatility in recovery rate, which can cause large fluctuations in loss given default (LGD).

The assumptions in the model were therefore changed to allow for the possibility of a lower recovery rate. According to Moody's the recovery rate has hovered around a long-term average of 41% over the period 1982-2005, as shown in Chart 2. Over this period, the largest year-on-year decrease was 29%. A new assumption was then made, reducing the recovery rate by 29%.¹¹ This raised expected loss as a proportion of the banks' total loan portfolio from 0.53% to 0.68%. The banks can still cover a change on this scale, since their provisioning was higher, at 0.82%.

As Chart 2 shows, the recovery rate reached a low of 24% in 2001. The modelling results were also tested if the recovery rate falls to 24% over one year. This raises the expected loss from 0.53% to 0.83% of the total portfolio. It should be borne in mind that the recovery rate never fell by more than 30% in a single year over the historical period. On this basis it could be inferred that the banks would have time to adjust to such a reduction by increasing their write-offs.

The findings for expected loss were also tested against a downturn in the Icelandic economy. A deterioration in loan portfolio quality and a fall in the recovery rate were assumed. The number of companies classified as below average risk in Iceland was assumed to increase, with a corresponding reduction in the average category. The low-risk classification was assumed to remain unchanged, since companies with high credit ratings are expected to show more resilience to a downturn than lower-rated ones.¹² The recovery rate was also assumed to fall by 29%. According to the model, expected loss as a ratio of the total loan portfolio would increase from 0.53% to 0.75% if credit quality deteriorated and the recovery rate fell.

Table 4 Overview of results

Credit loss allowance accounts as % of lending	0.82%
<i>Expected loss:</i>	
Central Bank estimate	0.53%
Recovery rate reduced by 29%	0.68%
Recovery rate reduced to 24%	0.83%
Credit quality deteriorates and LGD deteriorates by 29% in Iceland	0.75%

A comparison of these results with those of the Riksbank study shows that the Icelandic banks have a higher expected loan loss than the four major Swedish banks. Iceland had a high default frequency, as pointed out above, but lending to financial companies was included

11. See *Modeling Default Risk* (2003), pp. 13-14.

12. The risk distribution of companies in the Icelandic loan portfolio was changed from 10% low-risk, 80% average and 10% below average, to 10%, 75% and 15% respectively.

in the Riksbank's calculations. Including lending to financial companies lowers expected loss from 0.53% to 0.47%.

The Swedish banks' credit loss allowance accounts were considerably larger than the credit quality estimates indicated was necessary. The same conclusion was found for the Icelandic banks.

Conclusion

According to the model simulation, provisioning by the Icelandic banks is sufficiently high to cover expected loan impairment. It is interesting to note how much of an impact the high share of lending in Iceland has on the expected loss figure. Banks take this into consideration and those with a larger share of lending to Iceland reflect this in a higher impairment provision. The banks' provisioning is resilient to a considerable change in the assumptions in the model. The next stage in this study will be a closer examination of portfolio distribution to provide an estimate of unexpected loan losses for comparison with the banks' capital ratios.

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Box 1
Methodology for estimating expected default

Data on expected default frequency for the model described in Appendix 1 were obtained from Moody's KMV database for foreign companies and from Lánstraust (Creditinfo) for domestic companies. The following is a more detailed description of the methodology used.

Lánstraust uses its LT-score model which merges data on financial positions and calculates expected default frequency (EDF) by logistic regression.¹ The data used are largely based on its registry of defaulting debtors and companies' annual accounts. A logistic regression for default frequency p_i may be stated as follows:

$$\text{Logit}(p_i) = \ln\left(\frac{p_i}{1-p_i}\right) = \alpha + \beta_1 x_{1,i} + \dots + \beta_k x_{k,i} = X_i' B \quad \forall i = 1, \dots, n$$

where $x_{k,i}$ are variables affecting the operation of firm i and thereby the probability of default, and β are coefficients. The number of firms is represented with i and number of variables with k . Lánstraust uses around 30 variables in its model.

Y_i is a logistic variable which takes the value 1 if firm i is bankrupt. The probability of a credit default by firm i is then:

$$p_i = E(Y = 1 | X_i) = \frac{e^{X_i' B}}{1 + e^{X_i' B}} \quad \forall i = 1, \dots, n$$

where X is the variable vector and β is the coefficient vector. Lánstraust estimates the coefficients by maximum likelihood.

Moody's uses its KMV model to calculate EDF. The KMV model implements the Vasicek-Kealhofer model, which in turn is an extension of Merton's (1974).² Merton's model assumes that the firm is financed with equity H and one zero-coupon bond F . The value of the firm's equity at time T can be expressed as an option:

$$H_T = \max[V_T - F, 0]$$

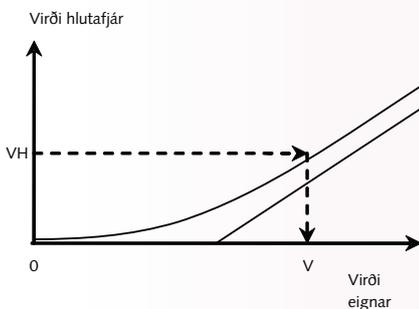
If asset value V_T is less than the principal of the bond F at time T , the firm defaults and the creditors receive the market value of its assets. Assuming that asset return follows a stochastic differential (Brownian motion):

$$\frac{dV}{V} = \mu dt + \sigma dW$$

where V is asset value, μ is expected return, σ is asset volatility and W is a Wiener process, then asset value is log-normally distributed.³ Asset value at time T , from an initial asset value V_0 , may be expressed as:

$$V_T = V_0 \exp\left\{\left(\mu - \frac{\sigma^2}{2}\right)T + \sigma W\right\}$$

Mynd 1
 Kaupvilnun



1. Lánstraust assumes default point to be when a firm is bankrupt or its net market worth reaches zero. Moody's assumes default point to be non-payment of any scheduled payment, interest or principal, or when a firm is bankrupt or its net market worth reaches zero.
 2. See Crosbie (2003), pp. 15-18
 3. If asset value follows the Brownian motion, Ito's Rule can be used to find the path for $\ln V$ which follows a Wiener process with a fixed drift $(\mu - \sigma^2/2)$ and deviation σ^2 . The change in $\ln V$ from time 0 to T is then normally distributed with the average $(\mu - \sigma^2/2)T$ and volatility $\sigma^2 T$, and the variable V is log-normally distributed.

Chart 4 illustrates asset value change over time.⁴ EDF is the probability that market value of assets will be less than book value of liabilities F .⁵

$$p_T = \text{pr}[V_T \leq F] = \text{pr}\left[\ln V_0 + \left(\mu - \frac{\sigma^2}{2}\right)T + \sigma W \leq F\right]$$

Since $W = \sigma\sqrt{T}\varepsilon$ this resolves as:

$$p_T = \text{pr}\left[-\frac{\ln\left(\frac{V_0}{F}\right) + \left(\mu - \frac{\sigma^2}{2}\right)T}{\sigma\sqrt{T}} \geq \varepsilon\right] = \text{pr}[-d_2 \geq \varepsilon]$$

where ε is a standard normal variable and d_2 stands for distance to default measured as the number of standard deviations the firm is away from it.

Probability of default is estimated from asset value at time T and asset volatility, which are unknowns.⁷ Asset value and volatility are found by simultaneously solving the following expressions:

$$H_0 = V_0 N(d_1) - e^{-rT} FN(d_2)$$

$$\sigma_H = \frac{V}{V_H} \Delta\sigma$$

The former is a Black-Scholes option-pricing equation in which N is the probability density function of normal distribution. The latter is equity volatility as a function of the volatility of the underlying asset:

$$d_1 = \frac{\ln\left(\frac{V_0}{F}\right) + \left(\mu + \frac{\sigma^2}{2}\right)T}{\sigma\sqrt{T}}$$

$$d_2 = d_1 - \sigma\sqrt{T}$$

Merton's model allows only two types of liabilities, i.e. a single class of debt and a single class of equity.⁸ To adjust for this, KMV estimates asset volatility with an iterative procedure. It also allows dividend payments.

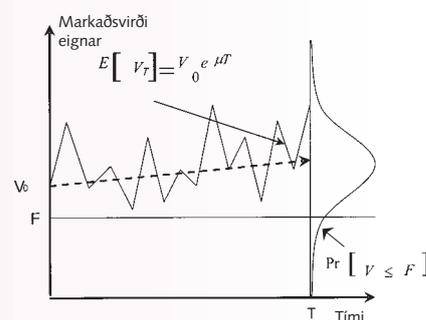
Since d_2 is the number of standard deviations from default and the stochastic variable ε is normally distributed, probability of default may be defined by including a probability density function for normal distribution:

$$p_T = N\left[-\frac{\ln\left(\frac{V_0}{F}\right) + \left(\mu - \frac{\sigma^2}{2}\right)T}{\sigma\sqrt{T}}\right] = N(-d_2)$$

In practice it is difficult to estimate the distribution of distance from default, i.e. it is not theoretically precise to use an assumption for normal or log-normal distribution for underlying asset value. Consequently, KMV first estimates distance to default as the number of standard deviations that an asset is away from default but also uses empirical data to determine the corresponding probability of default. KMV Moody's uses empirical data for default and bankruptcy to find the relationship between distance to default and default frequency.

Mynd 2

Próun undirliggjandi eignar



4. Thus six variables determine the default frequency of firms from the start until time T : Asset value, distribution of asset value at time T , volatility of future asset value at time T , default point, expected asset value growth over the period and duration T . See Chart 4.
5. For further details of the calculations see Crosbie (2003) and Hull (2000).
6. Distance to default also combines country, industry and size effects through asset value and fluctuation.
7. Crosbie (2003) assumes that the point of default is not where asset value equals book value of total liabilities, but between total and short-term liabilities.
8. The model holds only instantaneously because leverage moves around too much for the relationship between asset volatility and equity to remain steady.

