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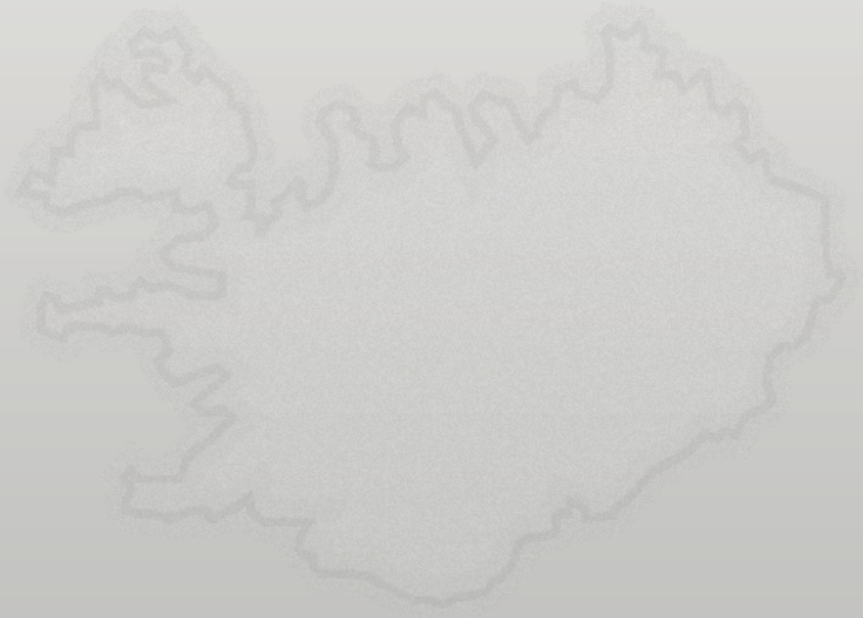

The Internationalisation of Iceland's Financial Sector

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The Internationalisation of Iceland's Financial Sector

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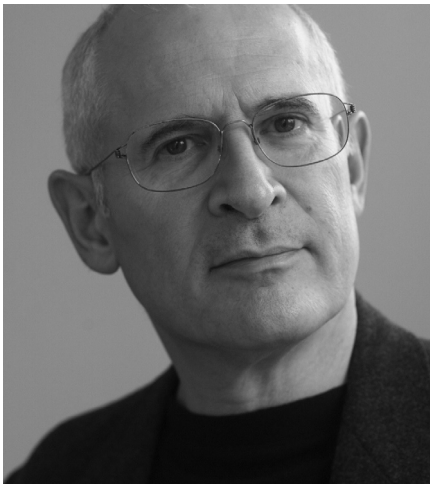


Dr. Richard Portes

Professor Portes is a Fellow of the Econometric Society, a Fellow of the British Academy, a Fellow of the European Economic Association, and Secretary-General of the Royal Economic Society. He is Co-Chairman of the Board of Economic Policy. He is a member of the Group of Economic Policy Advisors for the President of the European Commission; of the Steering Committee of the Euro-50 Group; of the Bellagio Group on the International Economy; and Chair of the Collegio di Probiviri (Wise Men Committee) of MTS. He has written extensively on globalisation, sovereign debt, European monetary and financial issues, international capital flows, centrally planned economies and transition, macroeconomic disequilibrium, and European integration.

Richard Portes was the first to examine the international role of a single European currency (European Economy, 1991). He returned to these issues in 'The Emergence of the Euro as an International Currency' (*Economic Policy,* 1998). His recent research includes 'The Determinants of Cross-Border Equity Flows' (*Journal of International Economics*, 2005), 'Price Discovery in the European Bond Market' (*Journal of Business Finance and Accounting*, 2007), 'Optimal Currency Shares in International Reserves' (*Journal of the Japanese and International Economies*, 2006). With other researchers, he published in May 2006 *European Government Bond Markets: Transparency, Liquidity, Efficiency and European Corporate Bond Markets: Transparency, Liquidity, Efficiency* (City of London). In November 2007, he published (with co-authors) *International Financial Stability* (CEPR).

Richard Portes was decorated Commander of the British Empire (CBE) in the Queen's New Year Honours List 2003.

Dr. Friðrik Már Baldursson

Dr. Friðrik M. Baldursson is Professor of Economics at Reykjavik University and Director of the Reykjavik University Financial Research Institute. Professor Baldursson received his Ph.D. in 1985 from the Department of Mathematical Statistics at Columbia University and subsequently became Assistant Professor there. He moved to his home country in 1988 to become Head of Research at the National Economic Institute of Iceland. He served as Managing Director of the Institute from 1998 to 1999 when he became Professor of Economics at the University of Iceland.

Professor Baldursson's research is mainly in the areas of financial economics, natural resource economics and industrial organisation. He has published his research in academic journals, including *Journal of the European Economic Association*, *Scandinavian Journal of Economics, Finance and Stochastics*, *International Review of Law and Economics*, *Journal of Economic Dynamics and Control*, *Environmental and Resource Economics* and *Journal of Environmental Economics and Management*.

Professor Baldursson has written extensively on Icelandic economic affairs. He has participated in public policy making in Iceland since the late 1990s, chairing several governmental committees on economic issues and utilisation of Iceland's natural resources. He is now chairman of a committe evaluating Iceland's taxation system and chairman of the Marine Research Institute of Iceland. Professor Baldursson was Acting Director of the Icelandic Competition Authority in the merger of the investment firm Burdaras with Landsbanki on the one hand and Straumur Investment Bank on the other hand. He has been an advisor to international institutions, private firms and the Government of Iceland.

CONTENTS

EXECUTIVE SUMMARY

1. The internationalisation of the Icelandic financial sector proceeded from market liberalisation, European integration, and privatisation, on the base of a strong, well-funded pension system and an exceptionally healthy institutional framework.
2. The growth of the banks has been spectacular: total assets of the banking sector have grown from 96% of GDP at the end of 2000 to eight times GDP at the end of 2006. The majority of the banks' revenues originate outside Iceland, mainly in other northern European countries.
3. Rapid financial sector expansion and growing cross-border activities, together with macroeconomic tensions, led to market suspicion and the mini-crisis of early 2006. The exchange rate depreciated by approximately 25%, the OMXI15 stock index fell by a comparable percentage, and the banks were in trouble.
4. The 'mini-crisis' of 2006 was an informational crisis, arising from external criticisms of the banks' reliance on market funding with short maturities, questions of earnings quality, cross-ownership, and lack of transparency, as well as perceived macroeconomic imbalances in the Icelandic economy.
5. The Icelandic financial sector responded quickly and decisively:
   - They expanded their deposit base, and deposit ratios are now higher.
   - They extended and broadened the maturities and geographical scope of their market funding.
   - They have mainly eliminated cross-holdings.
   - They put great effort into increasing transparency and information dissemination about their structure and activities.
6. The resilience and responsiveness of the banking sector have been impressive. Yet in the current financial turmoil, is that enough? Despite their strong performance, Icelandic banks still have lower ratings than their Nordic peers, and a much higher risk premium is currently placed on their debt. We see no justification for this in their risk exposure. This suggests that either the markets are not fully aware of their situation, or that markets place a country premium on the banks.
7. Our report examines closely the current state of the Icelandic banks and financial sector, as well as the regulatory and macroeconomic environment.
8. The institutional and regulatory framework appears highly advanced and stable. Iceland fully implements the directives of the European Union's Financial Services Action Plan (unlike some EU member states). The budget of its Financial Services Authority was recently doubled.

9. We see reasons for concern, however, with macroeconomic imbalances. Although the fiscal position is enviably strong, the economy has been running at a high pressure of demand, because of major investment projects in aluminium and hydroelectricity, as well as capital inflows. The resulting current account deficit is very high, the net international investment position is highly negative and is increasing. But the current account deficit has already fallen significantly from its 2006 peak, and we believe the path will prove sustainable.
10. That is partly because the official data exaggerate the deficits. In addition to doubts about the data raised by other observers (including the IMF), our own calculations of the apparent rate of return on Iceland's foreign assets and liabilities yield implausible results. The data suggest that Iceland's investments abroad are substantially less profitable than foreigners' investments in Iceland. This is simply inconsistent with the outstanding profitability and growth of Iceland's international banks and corporations in recent years.
11. We therefore strongly recommend efforts to improve the collection of data to account more accurately for the balance of international income and the international investment position. The CBI should also publish parallel accounts for items such as equities where the most glaring inconsistencies arise.
12. We conclude that analysis should focus less on the current account deficit and NIIP numbers and more on the resilience of the financial system – which has proven to be excellent – and the flexibility of the economy, where Iceland has a proven track record over many decades.
13. In an economy so small and so highly leveraged in international financial markets, one might expect a high volatility of financial variables: the exchange rate, equity prices, and bond yields. We do not find especially high volatilities. We focus in particular on the Icelandic krona, which many see as an important risk factor for Iceland and the Icelandic banks. In fact, the krona is not much more volatile against major currencies than the currencies of New Zealand, Sweden and Australia.
14. The banks are now hedged fully against currency volatility, so their exchange rate risk is primarily associated with loan quality. Icelandic firms have a long history of borrowing in foreign currency. For many this provides a natural hedge, others are in a strong market position and can pass exchange rate effects into prices. Households have increasingly been borrowing in foreign currency. This is still only a minor share (7-8%) of overall lending, but the risk there bears continued attention.
15. The krona does represent a disadvantage for listed firms, because it tends to fluctuate with equity prices. Exchange rate volatility is therefore added to stock market volatility. This makes shares in firms listed in ISK less attractive to foreign investors, so equity financing is more costly for firms. These firms are now moving to adopt the euro as their listing currency and to use the euro rather than the krona in other ways as well.
16. The euro is evidently becoming more important in Iceland. As it is outside the EU, Iceland cannot join the European Monetary Union. The possibility remains, however, of unilateral adoption of the euro – 'euroisation'.

17. We do not recommend for or against unilateral euroisation. This is an issue that requires extensive political as well as economic debate. We do, however, caution against the possible destabilising consequences of a *gradual* shift to using the euro.
18. The CBI is on an inflation target of 2.5%. Inflation driven by housing prices, however, has remained above the target for some time. The policy rate of the CBI is very high, and monetary policy appears to be ineffective. First, the Housing Financing Fund is a major obstacle to the transmission of monetary policy. We agree with many other commentators (including the IMF) that the HFF's role should be changed so that it no longer competes with banks in mortgage markets. Second, price indexation of financial contracts is widespread, which tends to weaken monetary policy. Third, the CBI has undermined its own policy by linking its decisions to exchange rate developments. The high policy rate leads to distortions in the financial system, such as the large carry trade. If only for that reason, we urge the CBI to reconsider its strategy.
19. On the criteria of deposit ratios, the characteristics of market funding, and others, Icelandic banks come out well in a comparison with their Nordic peers – and their overall and core profitability is higher. That is despite the high CAD and Tier 1 ratios with which they counterbalance their equity exposure. They are well-hedged against volatility in the krona. Stress tests by the FSA indicate that the banks can withstand quite extreme movements in market variables specific to Iceland. The banks have negligible exposure to the US subprime market, structured finance products, and related financial vehicles.
20. Most fundamentally, the banks exploit strong competitive advantage, arising from their entrepreneurial management, flat management structures, and unusual and strong business models.
21. We conclude that the Icelandic economy and financial sector are highly resilient, as shown in their response to the mini-crisis of early 2006 and their stability in the current turmoil. With regard to both the macroeconomic situation and the characteristics and performance of the banks, we consider that the current market premium on Icelandic banks is excessive relative to their risk exposure and in comparison with their Nordic peers. If this is in fact a country risk premium, we think it is not justified by Iceland's economic situation. It is reasonable to expect the CDS spreads (for example) for Icelandic banks to return to more normal levels.
22. Overall, the internationalisation of the Icelandic financial sector is a remarkable success story that the markets should better acknowledge.

INTRODUCTION

Iceland's financial sector has grown dramatically in the past few years along with the advance of firms in other sectors into new markets. The foreign advance of Icelandic firms has resulted from several factors. The Icelandic pension system has underpinned the financial sector as a whole, providing savings and liquidity; the individual transferable quota system in fisheries created substantial new equity that could be used for investments in other sectors; market liberalisation and European integration provided a modern institutional framework for investors and entrepreneurs. Most importantly, the Icelandic banks were privatised at the same time that international interest rates were low and liquidity was ample. The banks could therefore escape the limitations set by the small size of the Icelandic economy and seek new markets. This they did with alacrity, acquiring financial firms in other countries and establishing branches. Their growth has been spectacular: total assets of the banking sector have grown from 96% of GDP at the end of 2000 to eight times GDP at the end of 2006. The majority of the banks' revenues originate outside Iceland, mainly in other northern European countries.

The fast growth has generated an enormous amount of value, but there have also been growing pains. In early 2006 the banks went through a period of turmoil that for a while obstructed their access to market funding. The 'mini-crisis' of 2006 was an informational crisis in the sense that the only shocks that hit the sector were negative views of rating firms like Fitch and other analysts. There were no credit events such as loan defaults. Rather, external criticisms of certain aspects of the way the banks were run, e.g. reliance on market funding with short maturities and cross-ownership, as well as perceived macroeconomic imbalances in the Icelandic economy, triggered the episode.

We discuss how the banks responded to these criticisms. We find that they have improved on all fronts. Indeed they perform very well in comparison with their peers in other Nordic countries. They also proved remarkably resilient in the face of adversity and came through the crisis unscathed.
In May 2006 the Icelandic Chamber of Commerce published a report, *Financial Stability in Iceland*, by Frederic Mishkin and Tryggvi Thor Herbertsson. That report focused on whether Iceland was going down the path to financial instability. The report concluded that this was not the case. Its analysis was widely accepted.

Icelandic banks are now again in a storm. The difference this time is that this is part of more general turmoil in the international financial system. We consider whether Iceland's macroeconomic situation and its external ramifications should cause concern. We also examine the Icelandic banks in some detail, with international comparisons.

There are macroeconomic imbalances, but their reflection in the external accounts is exaggerated. Despite problems with monetary policy and its effectiveness, the imbalances are being corrected, and the demonstrated, exceptional flexibility of the economy gives cause for optimism. We find that their effective response to the shock of early 2006 has made the banks much better placed now to cope with domestic macroeconomic shocks, credit events, and external liquidity constraints. They are well-managed, and their business models are strong.

We consider, therefore, that the current market premium on Icelandic banks is excessive relative to their risk exposure and in comparison with their Nordic peers. If this is in fact a country risk premium, we think it is not justified by Iceland's economic situation.

In extreme cases, such risk premia can be self-fulfilling, when funds become so expensive or restricted that the health of the borrower is impaired. We believe that is very unlikely in the Icelandic case, and it is reasonable to expect the CDS spreads (for example) for Icelandic banks to return to more normal levels. Overall, the internationalisation of the financial sector is a remarkable success story that the markets should better acknowlege.

CHAPTER 1

THE ICELANDIC ECONOMY

1.1 Background

1.1.1 Size and composition of the Icelandic economy[1]

Iceland's population is just over 300,000, so the Icelandic economy is the smallest in the OECD, generating GDP of EUR 13 billion in 2006. But its GDP per capita of approximately USD 40,000 in 2006, measured in terms of Purchasing Power Parity (PPP), was the sixth highest among OECD countries and somewhat above the EU average. In comparison to the Nordic countries, Iceland's per capita GDP is lower than Norway's, equals Denmark's, and exceeds that of Finland and Sweden.

Iceland's abundant marine and energy resources have historically fuelled economic growth, though more recently services, particularly in the financial sector, have taken over that role. While the fishing industry is still the most important source of export revenue, its share of GDP has declined from 16% in 1980 to 6% in 2006. The fastest growth of recent years is in the finance, insurance and real estate sectors, whose share of GDP has risen from 17% in 1998 to 26% in 2006.

As in other developed economies, services form the bulk of economic activity, accounting for approximately 67% of GDP in 2005. Private consumption contributed, on average, about 58% of GDP from 2002 to 2006, and public consumption over the same period rose to 25% after remaining broadly stable at about 20% through most of the 1990s. Gross fixed investment of 24% over the past five years represents a substantial rise in the average investment-to-GDP ratio, which fell below 1/5 in the mid-1990s.

Iceland's trade balance represents its fairly open economy, with imports and exports of goods and services averaging 42% and 34% of GDP, respectively, in 2002 to 2006. External trade involves a fairly large share of primary products and commodities, but exports have been diversifying significantly in recent years.

1.1.2 Education and health

Iceland is a modern welfare state, spending just over a quarter of GDP on health, education, social security, welfare and other social services in 2003. The state guarantees access to universal health care, education and a high degree of social security, and scores highly on all relevant indicators.

Life expectancy of 81.4 years is the fourth highest in the world, and Iceland has the second lowest infant mortality rate (1.4 per 1,000 live births in 2006), testifying to the high quality of health care.

1 For a more extensive general overview of Iceland's economy, see *Economy of Iceland*, Central Bank of Iceland (2007).

TABLE 1: AN OVERVIEW OF THE ICELANDIC ECONOMY

Population size at year end 2006 (thousands)	307,700
GDP Per Capita (USD, PPP)	39,986
- Rank among OECD countries	6
GDP Per Capita (USD)	54,764
GDP Growth 2006	4.20%
Average annual growth rate of GDP in last 10 years	3.80%
Stock market change (first 9m 2007)	22.20%
Current Policy rate of the Central Bank	13.75%
Inflation rate with housing (past 12 months)	5.20%
Inflation rate without housing (past 12 months)	1.90%
Current labour force participation	84.10%
Current labour force participation (women)	79.60%
Foreign labour (percentage of total labour force)	9.00%
Unemployment rate	2.10%
Balance of trade 2006 (% of GDP)	-13.50%
Current Account Balance 2006 (% of GDP)	-25.50%
Gross Domestic Investment 2006 (% of GDP)	33.40%
Gross National Savings 2006 (% of GDP)	8.80%
International Investment Position at year end 2006 (% of GDP)	-122.40%
Government Revenue 2006 (% of GDP)	46.70%
Government Expenditure 2006 (% 2006)	41.40%
Central Government, Gross Debt 2006 (% of GDP)	13.60%
Central Government, Net Debt 2006 (% of GDP)	3.90%
Life Expectancy (males)	79.4
Life Expectancy (females)	83
Infant mortality (% of 1,000 live births)	1.4
Worldwide Competitiveness (rank)	7
Households connected to Internet (% total)	88%
Economic Freedom (rank)	11
Corruption Perception Index (rank)	6

Source: **Statistics Iceland, Central Bank of Iceland, OECD, OMX Iceland, Iceland Directorate of Labour, Iceland Ministry of Finance, IMD World Competitiveness Report, The Wall Street Journal and The Heritage Foundation, Transparency International**

Public education is compulsory until the age of sixteen, and university enrolment of those completing secondary education was around 79% in 2004, third highest among the OECD countries (average 53%). In 2005, 30.6% of the employed labour force held a university degree. Although higher education is offered at several universities in Iceland, one out of every five university degrees held by Icelanders is obtained outside of Iceland.

1.1.3 The labour market

The Icelandic labour market is highly centralised, with 85% unionisation and comprehensive wage settlements. It is, however, highly flexible as well. Labour is mobile both within the country and between Iceland and other countries. Participation rates are high compared to other OECD economies and have been consistently at or above 85% for the last decade. Icelanders also tend to work long hours. The participation rate, number of hours worked, inflow of labour and real wages are all positively correlated with the economic cycle, thereby dampening cyclical movements in unemployment.

Iceland's EEA membership and the free flow of labour within the Area have helped increase the flexibility of the labour market in recent years. With the rapid economic growth of the last few years the influx of foreign labour has increased substantially, helping to sustain growth and contain inflation. In 2006 approximately 7% of the labour force was foreign compared with 2.3% in 1998. Foreign participation has continued to rise and now stands at approximately 9%.

1.1.4 Public Finance

In comparison with its neighbours, Iceland has a relatively modest public sector, which has become smaller in recent years after a rise in spending on health, social services and education from 1998-2003. Expenditures of around 41% of GDP in 2006 represented a 4% drop from 2003 and a total lower than in the Nordic countries (49%) and the mainland countries of the European Union (48%), though higher than for the US, Japan or South Korea.

Iceland's fiscal balance has been well above the OECD average since the mid-1990s, with a predicted surplus of 3½% of GDP in 2007. Like many other OECD members, Iceland accrued a relatively large public sector deficit in the late 1980s and early 1990s, with deficits averaging 3% of GDP from 1985 to 1995, but economic recovery led to surpluses in 1999 and 2000. After a brief return to deficit as the economy slowed slightly in 2002-2003, budget surpluses rose to 5½% of GDP in 2005 and 2006.

Although structural fiscal balances (which are adjusted to reflect the state of the business cycle) have not been as favourable, the surplus in public finances, as well as the privatisation of state-owned enterprises such as the banks, has made it possible to repay almost all central government debt. Net debt stood at only 3.9% of GDP at the end of 2006, an enviable situation.

1.1.5 External relations

Iceland participates actively in the international community, primarily as part of the group of Nordic countries – Denmark, Sweden, Norway and Finland, as well as Greenland and the Faroe Islands – which has adopted wide-ranging measures for cooperation in a variety of fields, including economic affairs and international representation. It is a member of the Nordic Council and specialized institutions such as the Nordic Investment Bank.

Iceland became a member of the United Nations in 1946 and is an active participant in most of its affiliated agencies; it is a founding member of the Bretton Woods institutions that were established in 1945 – the International Monetary Fund (IMF) and the International Bank for Reconstruction and Development (World Bank); it is one of the original members of the Organisation for Economic Cooperation and Development (OECD) and of the European Bank for Reconstruction and Development (EBRD); it joined the Council of Europe in 1950; and it has participated in the Organisation for Security and Cooperation in Europe since it was initiated in 1975.

In 1964, Iceland became a signatory of the General Agreement on Tariffs and Trade (GATT), the predecessor to the World Trade Organisation (WTO). Iceland then joined the European Free Trade Association (EFTA) in 1970 and entered into a free-trade agreement with the European Economic Community in 1972. In May 1992, the member states of EFTA and the European Union signed an agreement to establish a zone for the free movement of goods, services, capital and persons, creating the European Economic Area (EEA), of which Iceland became a part in 1994.

This development marked a major milestone in Iceland's integration into the global economy. The agreement focuses on the four fundamental pillars of the internal market, ensuring the freedom of movement of goods (although agriculture and fisheries are included only to a limited extent), persons, services, and capital. Adopting the agreement gave Icelandic companies unprecedented access to European markets and played a fundamental role in facilitating future developments.

1.1.6 A market-based economy

Policies of market liberalisation in Iceland were implemented in the late 1980s and early 1990s, when significant structural reforms targeted enhanced efficiency through fiscal consolidation and privatisation of state-owned enterprises. This process was motivated by the need to align the Icelandic legislative and regulatory framework to that of the European Union in preparation for Iceland's role as one of the founding members of the EEA in 1994.

With the exception of the energy sector, which is still largely publicly owned, and agriculture, still widely supported by government subsidies, import protection and a system of production quotas, the liberalisation process continued during the second half of the 1990s. Most government-owned businesses have been privatised in recent years, leading to increased competition and a restructuring of Icelandic financial markets and institutions.

1.2 The financial system

In 1979, the Icelandic financial system was in crisis after a period of political interference and severe restrictions in the financial market. Rapidly rising inflation created double-digit negative real interest rates, which significantly reduced the demand for deposits and cut the banking system by half. These circumstances prompted dramatic changes, and in the following decades the system was transformed into a fully modernized and very liberal financial system.

The first step in the reform process was taken in 1979 when the authorities, still controlling nominal interest rates, introduced general indexation of financial obligations, including bank deposits and loans. Indexation involves the adjustment of the nominal values of financial assets to reflect changes in price levels, so that real interest rates are normally positive as long as nominal rates are positive. In Iceland, financial indexation (see Table 2 for the evolution of financial market development) proved highly successful in restoring the stock of financial savings.

The final steps in the transition toward a fully modernized financial system were taken in May 2001, when a new Act on the Central Bank of Iceland entered into force. This act gave instrument independence to the Central Bank, making Iceland the smallest state in the world with an independent monetary policy. An inflation target had been adopted two months earlier through a joint declaration of the government and the Central Bank, and the bank changed the exchange rate policy of the Icelandic krona (ISK) from a fixed rate to a floating one. Structural and legislative reforms, along with the massive expansion in financial services and activity that they have engendered, have made Iceland's financial system even more internationalized than European norms.

TABLE 2: RECENT DEVELOPMENTS IN FINANCIAL MARKETS

Financial indexation permitted	1979
Liberalisation of domestic bank rates	1984-1986
Iceland Stock Exchange established (presently OMX Nordic Exchange Iceland)	1985
Interest Rate Act – Interest rates fully liberalised	1987
Stepwise liberalisation of capital movement begins	1990
Treasury overdraft facility in the Central Bank closed	1992-1993
Liberalisation of cross-border capital movements starts	1992
Interbank market for foreign exchange established	1993
Iceland becomes a founding member of the EEA	1994
Long-term capital movements fully liberalised	1994
Short-term capital movements fully liberalised	1995
Foreign direct investment liberalised per EEA agreement	1995
Interbank money market	1998
Interbank FX swap market	2001
Instrument independence for the Central Bank	2001
Privatisation of state-owned banks completed	2003

Source: **Central Bank of Iceland**

1.2.1 Main players

There are currently three major commercial banks in Iceland – Glitnir, Kaupthing and Landsbanki – which all provide conventional banking and securities services. Total assets of the three bank groups amounted to over EUR 110 billion (ISK 9,502 billion) at the end of 2006, a sum eight times the GDP of Iceland.

After a decade of consolidation and reforms, by 2000 the banking system was fully privatised, leading to a period of sharp growth in the financial sector that continues. The three main commercial banks have driven this growth, and their foreign advance has been complementary with the international expansion of other Icelandic businesses, e.g. in retail, pharmaceuticals, food production and high tech manufacturing. At the end of 2006, almost half of the total assets of the largest commercial bank groups were held in foreign subsidiaries, mostly in northern Europe, and in 2006 about 50% of their overall income was generated abroad. The three largest commercial banks (as well as Straumur-Burdarás) are rated by international rating agencies.

At the end of 2006 there were 23 savings banks in Iceland and two commercial banks in addition to the three major ones described above. These are Icebank, which serves as a banking institution for most of the savings banks, and Straumur-Burðarás, which operates mainly as an investment bank and only recently received a license for commercial banking. Twelve other credit institutions currently operate as well in Iceland, comprising five investment banks, two payment card companies, two investment funds and three leasing companies, plus the Housing Financing Fund, a state-owned mortgage credit fund.

There are also twelve insurance companies authorized to operate in Iceland, with total assets of around EUR 1.8 billion (ISK 171 billion) at year-end 2006. The three largest, Sjóvá, VÍS and TM, together serve over 90% of the market. These are fully owned by investment companies, FL Group and Exista, which are listed on the OMX Nordic Exchange Iceland (OMX ICE).

TABLE 3: MAIN PLAYERS IN ICELAND'S BANKING SECTOR

	Glitnir		Kaupthing		Landsbanki	
	2006	9m 2007	2006	9m 2007	2006	9m 2007
After tax profit (EUR billion)*	0.45	0.3	1.01	0.71	0.47	0.41
Total assets (EUR billion)	26.4	32.5	47.6	57.4	25.5	33.4
Cost / Income ratio	38.0%	49.9%	35.9%	41.3%	43.0%	48.0%
ROE	39.0%	24.1%	42.4%	27.5%	36.0%	33.0%
CAD ratio	15.0%	11.7%	15.0%	12.1%	14.8%	11.2%
Tier 1 ratio	10.8%	8.5%	10.5%	9.3%	13.0%	9.9%
Moody's rating	Aa3/P1/C		Aa3/P1/C		Aa3/P1/C	
Fitch rating	A/F1		A/F1		A/F1	
EUR/ISK = 85.2 (this exchange rate is used in all authors' calculations)						

Source: **Annual reports and authors' calculations**

1.2.2 Pension funds

Unlike many other countries, Iceland is not threatened by a looming pension crisis. The reform of the pension system, which began in 1969, has not only generated a stable outlook for future pensions, but also has contributed to the rapid expansion of the economy in the past decade. The pension system is chiefly organised around occupational pension funds. Instead of the common "pay as you go" structure, this system is fully funded through accumulated payments.

Growth in pension funds' assets took off during the period of 1979 to 1986, when indexation was introduced and interest rates were liberalised. The emergence of a new pension system and the liberalisation of financial markets had powerful interactive effects. Strong demand by the pension funds for financial instruments, combined with new opportunities for supplying securities, provided the catalyst that in the 1990s triggered a vibrant market for securities in Iceland.

The pension fund system has gradually developed into a three-pillar system: firstly, a tax-financed public plan that provides a flat-rate or means-tested basic pension. Secondly, there is a mandatory occupation- or private-funded, but publicly regulated, pension scheme. The third pillar is a voluntary pension saving scheme, which offers incentives in the form of complementary contributions from employers. All contributions are exempted from income tax until reception of pension and therefore allow employees to defer taxes.

The total assets of Icelandic pension funds have grown over the past decade to over 130% relative to the country's GDP, from 50% of GDP in 1994, despite impressive economic growth over the period. It is estimated that total assets may exceed the equivalent of twice GDP within a decade. Creating massive savings and liquidity, the funds serve as important investors in many of Iceland's largest companies.

1.3 Markets and infrastructure

The Iceland Stock Exchange, founded in 1985, merged in December 2006 with OMX, which owns exchanges in all the Nordic and Baltic countries except Norway. The resulting OMX Nordic Exchange Iceland (OMX ICE) is the only authorized stock exchange operating in Iceland for all public listing of securities and securities trading, and it is also licensed to operate a regulated OTC market. The Stock Exchange Act, modelled on European Union laws, regulates listing, takeover bids, disclosures and flagging in the event of the major transactions.[2]

The Icelandic bond market consists of a primary market, which usually takes the form of bond auctions, and a secondary market, which is mainly operated on OMX ICE. It has several unique features in comparison with other countries: first, indexed bonds dominate the market, with the bulk of issues with a maturity exceeding 5 years being linked to the CPI. Second, a large share of the bonds carries a state guarantee, including HFF bonds, the market's most liquid issues. Third, yields on the Icelandic bond market have been high by international comparison. Icelandic bond issues can be broadly divided into four categories:

1. Treasury notes and Treasury bills, which are non-indexed, zero-coupon bonds.
2. Housing Financing Fund (HFF) bonds, housing authority bonds and housing bonds which are indexed, interest-bearing bonds in an annuity format.
3. Bonds that are issued by government agencies, private firms or institutions such as banks.
4. Government bonds, issued by the Treasury, are indexed against inflation and paid up with accrued interest at maturity date. However, these bonds have not been issued for a while now and currently account for only ISK 14.5 billion (approx. EUR 170 million).

An active market-making program ensures liquidity in the market for benchmark government bonds, HFF bonds, housing bonds and housing authority bonds. A primary dealer system is also in place for Treasury notes and bills.

A total of 25 companies are now listed on the OMX Iceland main list. Market capitalization of Icelandic equities has increased in recent years as equity prices have risen, with current total capitalization of approximately EUR 38 billion (ISK 3,150 billion), almost three times the country's GDP in 2006.

The money market consists of a secondary market in Treasury bills, bank bills and other short-term bonds on the Stock Exchange, and the interbank loan market. The Central Bank of Iceland (CBI) operates the interbank market and trading involves unsecured loans between members, who must display indicative bid and ask yields on various maturities, ranging from overnight to 12-month loans. Trades must be reported to the CBI, which fixes REIBID and REIBOR rates daily.

Iceland's foreign exchange market is an interbank market run by the CBI since 1993 consisting of the three largest commercial banks and the CBI, though it has not been an active market maker for a number of years. The CBI has purchased foreign exchange in the interbank market on behalf of the Treasury and to boost its own reserves since 2003. In November 2001 an informal FX swap interbank market was launched, for which the CBI issued rules in March 2002. Other derivative instruments are used in Iceland but not in a formal market.

2 The Icelandic Securities Depository is also owned by OMX, and acts as a registry, depository and clearinghouse for securities in dematerialized (electronic) form. Settlement of bonds takes place on a T+1 basis but equities on a T+3 basis.

1.3.1 Central Bank

The Central Bank of Iceland is managed by a board of three governors. The bank is part of the portfolio of the Prime Minister who, *inter alia*, appoints the chairman of the bank board. There is also a supervisory board, elected by Parliament. The supervisory board, however, has mostly an oversight role and is not supposed to play any role in monetary policy decisions.

Iceland has employed an inflation targeting regime since March 2001. The CBI has the mandate to aim for an annual rate of inflation of 2.5% as measured by the 12-month increase in the CPI. If inflation deviates by more than 1.5% from the target, the CBI is obliged to submit a (public) report to the government where it explains the reason for the deviation, how it intends to respond and when it expects the inflation target to be reached again. Monetary policy is not to be used to reach other economic targets, such as to attain balance on the current account or to maintain a high level of employment, except to the extent that this is consistent with the Bank's inflation target. The Bank's main policy instrument is the interest rate it sets for 7-day collateral loan agreements with credit institutions. The Bank announces its decisions regarding the policy rate at least six times each year.

As of March 2007 the CBI bases its inflation forecasts – a forward extrapolation of two-and-a-half years – on a policy rate path "that its staff estimates as appropriate for attaining the inflation target" within an acceptable horizon which – based on the most recent *Monetary Bulletin* – appears to be defined as approximately two years.[3] In the *Bulletin*, the bank publishes its inflation forecast, the policy rate path the forecast is based on and other underlying assumptions.

The CBI shows great transparency regarding monetary policy decisions. As explained above it publishes not only an inflation forecast for 2.5 years ahead but also the policy rate path on which the forecast is based, the exchange rate and the predicted output gap. It also publishes the model used for forecasting along with its database, so, in principle the forecasts can be independently replicated. The Bank does not, however, publish the minutes of the board meetings where the decisions are made.

1.3.2 Financial Supervisory Authority

Financial regulation in Iceland is strong. The Central Bank of Iceland monitors overall financial stability, and the Financial Supervisory Authority (FSA) is an independent entity entrusted with considerable enforcement powers. It monitors the credit market, the pension system, the insurance market, and the securities market, and has access to all information from all parties subject to supervision. The FSA has the authority to impose financial sanctions and withdraw licenses. It is also entitled to conduct house searches and to confiscate relevant material, supported by a court order. It can call and chair board meetings of a bank under investigation and can publicly issue its interpretations of rules and regulations for sound and proper business practices.

Monitoring and inspection activities are both off- and on-site. The off-site approach is based on regular information gathering and analysis, producing reports on capital adequacy, large exposures, connected lending, defaults, liquidity, major interests in non-financial companies, lending collateral on shares, etc. Analysis is based on general data inspection, stress testing and CAMELS, a risk assessment tool focusing on six key variables (capital, asset quality, management, earnings, liquidity, and sensitivity to market risk). The stress testing is discussed in detail in Chapter 3. Iceland implemented the Basel II standard as a part of its fulfilment of the EEA Agreement in 2004.

3 CBI *Monetary Bulletin*, November 2007, p. 81.

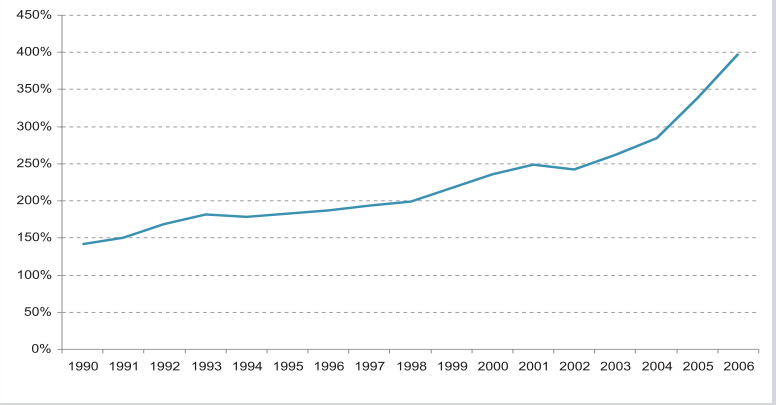
On-site inspections are based on benchmark meetings with the management of the banks, where financial results, goals and risks are discussed, with an emphasis on credit, liquidity, market, and operational risks. Furthermore, the FSA monitors how well the bank measures and controls its risk.

The FSA budget has recently been doubled to enable it to keep pace with the rapid growth of the financial sector and the increasing foreign expansion of the main players in the market. It also plays the major role in implementing the EU Financial Services Action Plan (which applies to the EEA countries), including the important Markets in Financial Instruments Directive (MiFID). Unlike several EU member states, Iceland was able to apply MiFID as from the starting implementation date of 1 November 2007.

1.4 Putting the size of the Icelandic economy into perspective

The Icelandic economy is very special in many ways. In absolute terms the economy is only about 0.1% of the US economy, and about 5% of the Danish economy, but its small size has been one reason why rapid growth has been possible. A population of only 300,000 allows much higher flexibility and adaptability than is possible in a larger economy. These special circumstances cause some features particular to the Icelandic economy. In addition, asset markets have been growing noticeably, foreign investment has been booming, unemployment is almost nonexistent and economic growth has been high. Recent developments may therefore seem unconventional to people who are unaware of the unique character of the Icelandic economy.

FIGURE 1
CREDIT SYSTEM
(% OF GDP)



Source: Central Bank of Iceland

1.4.1 Size of companies and foreign operations

A distinctive feature of the Icelandic economy is the relative size of the largest companies. The total market capitalization of the four largest companies listed on OMX Iceland is almost twice the country's GDP, and single investments can sometimes amount to a substantial proportion of GDP. Kaupthing recently acquired Dutch bank NIBC for close to EUR 3 billion. This is approximately a quarter of Iceland's GDP. Earlier this year Exista acquired a 20% share in the Finnish financial company Sampo for close to EUR 2 billion. Those two acquisitions combined are close to half of Iceland's GDP. It should therefore not come as a surprise that economic indicators such as FDI, gross debt and balance of payment seem off the chart. When single investments are on this scale, minor errors or disequilibria can have enormous effects on aggregate indicators. In many cases these problems are related to standard accounting conventions that are not created to deal with such unorthodox situations, rather than economic imbalances as the indicators might suggest on first sight.

The financial system has undergone extraordinary expansion during the past several years. Total assets of the Icelandic credit system have grown from approximately 140% of GDP in 1990 to 400% in 2006, which is high, but not out of line with small countries that have become international financial centres. This fast growth has contributed to the increasing external debt of the country.

TABLE 4: FOREIGN WORKFORCE OF ICELANDIC COMPANIES

(as of June 2007)	Number of foreign employees	as % of domestic labor force
Baugur Group	67000	38.3%
Bakkavör	20000	11.4%
Eimskip	14000	8.0%
Actavis	11000	6.3%
Nordic Partners	7500	4.3%
Promens	5400	3.1%
Icelandic Group	4600	2.6%
Alfesca	3400	1.9%
Kaupthing	2500	1.4%
Glitnir	1000	0.6%

Source: **data gathered from companies**

The total number of employees working for Icelandic companies abroad is approximately the same as the total domestic labour force (see Table 4). In the domestic market, about 9% of the labour force are foreigners. These are good indicators of the international integration of the Icelandic economy.

1.4.2 Investments in the energy sector

In the past few years the biggest investment project in the history of Iceland has been taking place in the Eastern part of the country. A large scale hydro-electric power plant (called Karahnjukavirkjun) is well on its way to being finished, and a new aluminium smelter will utilize the energy. Both the power plant and the aluminium smelter will be the largest of their kind in Iceland. Total investment cost of these large projects will be approximately EUR 2.5 billion, close to 20% of the country's GDP. Since the Icelandic economy is approximately 0.1% of the US economy, this can be compared to a single project of EUR 2.5 trillion (EUR 2,500,000,000,000) taking place in the US. It is not surprising that these investments have led to some economic imbalances in Iceland.

Due in large part to extensive investments in renewable energy and aluminum production, business investment in 2005 soared 57% from 2004, and reached its peak in 2006 when it grew a further 20% compared to 2005. Gross domestic investment in 2006 was 33.4% of GDP. It is obvious that this project has had enormous impact on the economy and its indicators, such as inflation, interest rates, exchange rates and current account deficit. If the investment is sufficiently profitable (i.e., has a positive net present value), however, future generations will benefit from it despite these short term imbalances.

1.4.3 The Icelandic krona

Iceland is the smallest sovereign state in the world that has an independent monetary policy. Since 2001 its policy has been based on inflation targeting and a floating exchange rate. While the Icelandic FX market has always been relatively thin, turnover has grown fast in recent years. The main factor at work is growing participation by non-residents in ISK trades, mostly against the euro.

The domestic market now resembles international FX markets more closely in that an ever-smaller share of trade is connected with actual merchandise trade. Foreign investors and speculators have become more active, both through position-taking and in order to manage or hedge against risks. Speculation may induce exchange rate volatility but has significantly deepened the market to create more active price formation. Nonetheless, the small size of the ISK market remains its greatest weakness. Only three market makers are active, and it is difficult to see how it could function normally if their number falls.

Comparison is useful in order to gain a perspective of how small the market for the ISK really is. Total turnover in 2006 was EUR 52.9 billion, and in the first six months of 2007 it had reached EUR 28.7 billion. The ISK market is in fact too small to figure separately in the BIS Triennial Central Bank Survey data on currency markets (it is not among the top 35 currencies in turnover). We can, however, do our own calculation. According to the Survey, in April 2007 average daily turnover of the world foreign exchange markets was approximately EUR 2.9 trillion. With close to 260 business days a year this would amount to an annual turnover of EUR 754 trillion. This means that the turnover in the ISK market should be approximately only 0.007% of the total world market.

CHAPTER 2

THE ICELANDIC FINANCIAL SECTOR GOING FORWARD

2.1 Events of February 2006

The banks relied heavily on favourable global financial market conditions in the beginning of their foreign advance. Possibly, they were not sufficiently prudent. The first sign of change was a rise in bank Credit Default Swap (CDS) spreads and yields on their bond issues starting November 2005. Economic imbalances along with scepticism about the banks' funding position had raised concerns about the financial stability of Iceland's economy and financial system. Fitch changed its sovereign outlook for Iceland from stable to negative on February 21, 2006[1]. That immediately triggered ISK depreciation and a sequence of negative analyst reports, in particular that of Merrill Lynch on March 7.[2,3]

The rating downgrade, criticism of the banks and negative discussion about the Icelandic economy in general caused the krona to depreciate by one-quarter in the first half of 2006, and share prices on the Iceland Stock Exchange also fell by one-quarter from their peak in February until mid-year. The access of Icelandic banks to foreign credit in traditional markets was seriously curtailed. Negative coverage of the banks and Icelandic economy went hand in hand at this time, both temporarily eroding international investors' confidence.

The main criticism of the Icelandic banks concerned heavy reliance on capital market funding, exposure of the banks to market risks on the asset side, the quality of the loan portfolio (considering the rapid asset growth in recent years), foreign exchange risk on regulatory capital, cross-ownership issues, and earnings quality (outsize gains on equity). Much of this criticism was based on valid arguments, but some was due to lack of transparency and information flow from the banks.

Since February 2006 the banks have made great efforts to improve those factors in order to strengthen their credibility in international markets. A test came earlier than expected with the recent credit crunch. The global turmoil of the fixed-income markets seems to have hindered their access to wholesale funding, but on a different scale. During this period, senior five-year CDSs have widened to a record level. On this measure, the risk related to Icelandic banks seems to be estimated well above average, despite their efforts since February 2006. It is therefore important to consider what the current situation of the Icelandic banks really is.

1 Fitch Ratings (2006).

2 Merrily Lynch (2006)

3 It is notable that Fitch did not actually downgrade Iceland until 10 months later on December 22, 2006. At that point, the exchange rate depreciated again, but quickly recovered between Christmas and the New Year. Then, however, it depreciated again on rumours that Kaupthing would adopt euro-denominated accounting, but that too was short-lived, and an extended appreciation began. Note that when Kaupthing did confirm the rumours, that had no effect on the ISK – appreciation continued.

2.2 Skating on thin ice?

2.2.1 Financial structure

Despite dominant market shares in their domestic market, both in retail and corporate banking, given the small size of this market, the three largest banks (Glitnir, Kaupthing, and Landsbanki) have had to use substantial wholesale funding to finance rapid asset growth (both organic and external growth) over the past five years. In February 2006, the maturities of securities were relatively front-loaded for all the banks. Together with the heavy reliance on market funding, this posed a significant threat to the banks in the financial turmoil following Fitch's announcement of a negative outlook on the sovereign credit rating of Iceland. The banks went through a real-life stress-test of their access to capital market funding, but within a few months, the situation normalized as they demonstrated their ability to absorb shocks.

Nevertheless, these events have changed the banks' strategies, since they have all been seeking to limit their dependence on the wholesale markets by diversifying their investor base and raising retail deposits. The February 2006 turbulence worked as an alarm bell, putting the banks in a much stronger position to come through the current liquidity squeeze unscathed.

2.2.2 Deposit ratios and debt maturities

With already-dominant positions in their domestic markets, it is mostly through their subsidiaries that the three main commercial banks have been seeking to raise customer deposits. Landsbanki has so far been the most successful. This is mainly due to a deposit programme called Icesave, which was launched by the bank in the UK in October 2006. As Table 5 shows, all three banks have thus improved their deposit ratios substantially since February 2006.

TABLE 5: DEPOSIT RATIOS

	Glitnir	Kaupthing	Landsbanki
Year end 2005	25.9%	31.5%	33.9%
End of Q3 2007	37.6%	42.7%	75.5%
Change	**+12.3%**	**+11.2%**	**+41.4%**

Source: **Annual Reports**

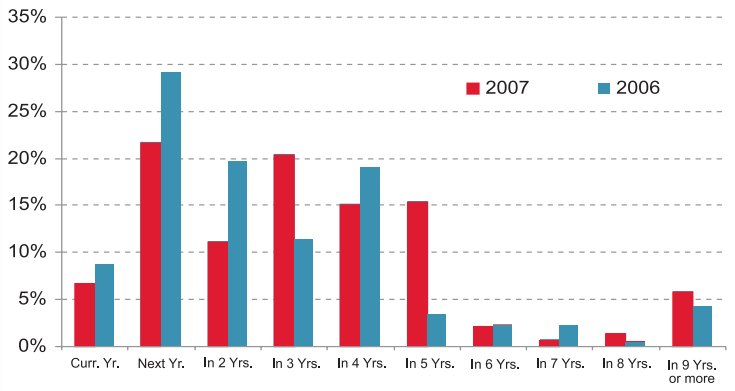
Despite their continuing reliance on wholesale funding, as underlined during the previous turbulence in early 2006, a number of elements mitigate this risk. First, the Icelandic banks have made significant efforts to diversify their investor base, enabling them to raise funds in many regions. 'New' markets targeted since 2006 include, for example, the US, Japan, Canada and Australia. In addition, the average maturity of funding has been markedly lengthened, with the majority of recent bond issues maturing in 2010 or after. The maturity has moved from being relatively front-loaded to a much more even distribution. The following charts show outstanding debt at each year as a percentage of total outstanding debt, and therefore show the relative debt distribution.[4]

The three major banks all have defined policies in relation to liquidity. The key criterion for all the banks is to be able to serve and repay all maturing debts for 360 days without any access to capital markets.

4 Data from Bloomberg. The current debt distribution was extracted on October 23, 2007.

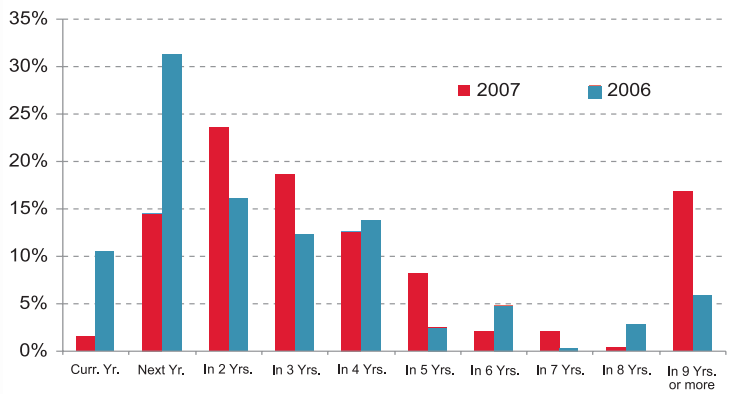
Despite the current market turbulence, the Icelandic banks have been able to access the wholesale markets, although at a higher price than in the past. A prolonged liquidity squeeze and deterioration in some of the markets in which the banks operate would undoubtedly affect performance. But underlying profitability should benefit from the increased diversification of the banks' revenue and exposure by geography and product, despite the potential volatility in some of the banks' activities, most notably investment banking.

FIGURE 2
GLITNIR BANK DEBT DISTRIBUTION



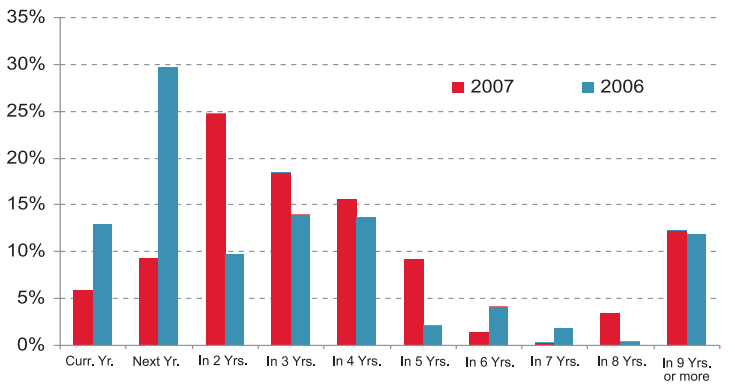
Source: Bloomberg

FIGURE 3
KAUPTHING BANK DEBT DISTRIBUTION



Source: Bloomberg

FIGURE 4
LANDSBANKI DEBT DISTRIBUTION



Source: Bloomberg

2.3 Loan portfolio

Until recently, markets have been very favourable in relation to the cost of risk on the asset side with decreasing provisions to loans for most banks around the world. With banks at a favourable point in the credit cycle, the cost of holding a risky asset portfolio becomes far less transparent, making it hard to judge whether credit risk is substantial or not.

The asset growth of the Icelandic banks has been extraordinary during the past few years. It is therefore natural to observe some scepticism concerning the quality of the assets. Taking this into consideration, the asset quality of the Icelandic banks would have been far less visible had it not been for the financial turmoil in February 2006. In a period of two months the domestic equity market dropped a quarter of its value and simultaneously the Icelandic krona depreciated rapidly, by approximately 30% over a three month period.

Despite these extreme circumstances, the combined credit loss allowance (provisions) account of the largest commercial banks amounted to approximately EUR 0.5 billion at the end of 2006. 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. This is due primarily to low levels of delinquency.

There are several features that distinguish the loan portfolio of Icelandic banks from that of their peers. The most obvious is exposure to the Icelandic market, i.e. equity and real estate. In addition, domestic customers take foreign-denominated loans on a large scale, and therefore the client base currency exposure needs to be taken into consideration. The exposure to Icelandic markets varies substantially between banks. Landsbanki has the highest domestic exposure with 63% of loans located in Iceland, Glitnir has 45% of its loan portfolio in Iceland and Kaupthing has only 22% of its loans in Iceland.

In regard to equity and fixed income exposure, it is worth noting that Icelandic banks have all acted as middle-market investment banks investing alongside their clients in leveraged transactions, Kaupthing being the most active out of the three. The market risk from equity varies between banks, with Kaupthing having market risk of approximately ISK 162 billion at year end (4% of total assets), Landsbanki ISK 52 billion (2.3% of total assets) and Glitnir ISK 21 billion (0.9% of total assets). As a result of derivative contracts with their clients, the market risk on equity exposures is not the same as their book value. The risk of equity positions will be discussed further below in relation to market risk.

2.3.1 Domestic housing market

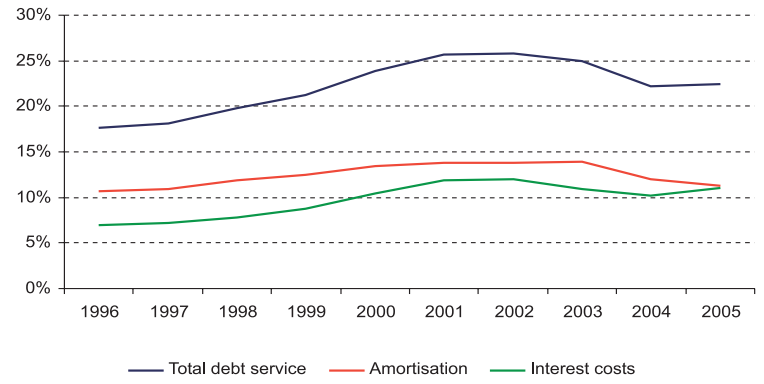
Until 2004, the state-owned Housing Financing Fund (HFF) dominated the mortgage market in Iceland through state-backed bond issues that were sold to private investors, so the retail banks had trouble competing with their cost advantage. However, restrictions on the types of loans the HFF could offer and the low interest rate environment allowed the banks to penetrate the residential mortgage market.

The expectation of the banks was probably that they would create sufficient pressure on the HFF to bring about political changes in the residential mortgage market. Generally the mortgage market provides attractive risk-adjusted returns on capital allocated, and therefore mortgages make a strong component in banks' loan portfolios. This is not the case in Iceland, since the banks entered the

market without really being able to make money from it under the current circumstances. They justify this with cross-selling and customer loyalty.

In a country where home ownership and incomes are among the highest in the world, it is hard to see a large role for an entity such as the HFF. Being a sovereign entity, and backed by the state guarantee, HFF enjoys excellent access to cheap wholesale funding and can therefore offer very advantageous rates to mortgage customers. This creates a severe bias in the mortgage market and makes it very hard for the banks to compete. The exit of the HFF from the market would relieve these competitive pressures and allow the banks to move their mortgage business onto a more profitable basis.[5]

FIGURE 5
HOUSEHOLD DEBT SERVICE



Source: Central Bank of Iceland

Regarding the quality of the mortgage loan portfolios, household debt service has not increased as a proportion of disposable income since 2004; instead, it has gone down slightly. Lower interest rates and longer maturities are the main reasons for this. Nonetheless, households that increased their debt the most are quite vulnerable to shocks, such as higher unemployment and declining real wages, if the economy contracts. If this were to coincide with a fall in house prices financial companies might need to step up their mortgage write-offs.

Another reason for concern is the increasing level of foreign-currency-denominated mortgages. During 2007 this proportion rose from approximately 7% to 14% of all mortgage loans provided. Considering the fact that domestic households usually do not earn much of their income in foreign currency, it could be questionable for them to assume debt in other currencies than the ISK.

2.3.2 Equity market

Since shares are frequently pledged as collateral for loans, a bank's exposure to equity is not only direct but also through the loan portfolio. Lending by the largest commercial bank groups against share collateral amounted to ISK 674 billion at the end of 2006, or 12% of their total lending to customers. The bulk of leveraging (59%) involves equities listed on OMX Nordic Exchange in Iceland. According to margining data from the Central Bank the banks have considerable leeway for meeting a drop in equity prices.[6] This is probably the main reason why the sharp fall of the domestic stock market in February 2006 did not have more dramatic effects on delinquency. This does not change the fact that equity investments on OMX in Iceland are being leveraged on a sizeable scale, which could be questionable in the long term if share prices fall substantially.

5 It seems that under the EU/EEA competition policy regime, the HFF could be judged to be in receipt of illegal state aid, in the light of the recent moves against the German regional banks on these grounds.

6 CBI Financial Stability 2007 (p. 51).

2.3.3 Customer exchange-rate exposure

The outstanding stock of foreign-currency-denominated loans by commercial banks on a (parent-company basis) at the end of 2006 stood at approximately ISK 1,800 billion. Some 57% of foreign-currency-denominated lending was to Icelandic residents. The overwhelming majority of foreign-currency-denominated lending to residents is made to businesses, accounting for 92%, while 6% went to households.

The bulk of foreign-currency-denominated lending is to borrowers with sizeable incomes in foreign currency. 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% to residents with between 1/3 and 2/3 of their total revenues in foreign currency. These groups therefore have a natural hedge to the exchange rate risk involved. This leaves 21%[7] of lending to residents who earned less than 1/3 of their total revenues in foreign currency. However, included in this group are several businesses which have a strong enough market position to be able to pass on to prices the extra cost resulting from a depreciation of the krona.

2.3.4 Decline in ratio of large exposures

According to FSA data, total large exposures of the largest commercial banks amounted to ISK 547 billion 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 ISK 377 billion or 76% of own funds. It should be remembered that the expansion of commercial banks' capital in 2006 has naturally reduced their number of large exposures. Since the total amount of large exposures has grown by ISK 170 billion 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.[8]

2.4 Market risk

The risk from equity varies between banks, with Kaupthing having market risk of approximately ISK 162 billion (4% of total assets) at year end 2006, Landsbanki ISK 52 billion (2.3% of total assets) and Glitnir ISK 21 billion (0.9% of total assets).

Equity exposure is relatively high for the Icelandic banks, especially Kaupthing. The risk is magnified to a certain extent by the fact that Icelandic banks have all acted as middle-market investment banks investing alongside their clients in leveraged transactions. By doing so, the banks definitely place more than one egg in the same basket. The advantage of this strategy is that it should lead to stronger monitoring of the respective companies.

As previously mentioned, the banks have already gone through a demanding test of their ability to withstand serious simultaneous shocks in the domestic market. This does not, however, necessarily mean that their strength would be the same today. The FSA periodically calculates the effects of simultaneous shocks on capital ratios of the largest Icelandic banks. The shocks imply that a financial undertaking must be in a position to take on certain setbacks that simultaneously may lead to changes in the value of shares, market bonds, non-performing/impaired loans and appropriated assets and

7 CBI Financial Stability 2007 (p.50).

8 CBI Financial Stability 2007 (p.53).

the Icelandic krona without having its capital adequacy ratio drop below 8%. These shocks involve a simultaneous 20% fall in the value of non-performing/impaired loans and appropriate assets, a 25% fall in value of foreign shares at own risk of the bank, a 35% fall in value of domestic shares at own risk of the bank, a 7% fall in value of bonds owned by the bank (bonds with less than one year maturity excluded) and a 20% weakening of the krona. The last stress test was performed at the end of June 2007. The results (see Table 6) imply that all three banks remain well above the regulatory capital ratio despite a simultaneous shock of this kind. This indicates that the high market risk of Icelandic banks, relative to their peers, is more than offset by higher Capital Adequacy (CAD) and Tier 1 ratios.

TABLE 6: FSA STRESS TEST

(End of June 2007)	Glitnir	Kaupthing	Landsbanki
Capital Ratio (CR)	13.2%	13.4%	12.5%
Thereof Tier 1	9.4%	10.3%	11.1%
Capital Ratio (CR) after stress test	12.5%	12.3%	10.0%
Stress test effect	0.7%	1.1%	2.5%

Source: **Financial Supervisory Authority**

2.5 Foreign exchange rate risk on regulatory capital

It is important to consider how a depreciation of the krona would affect the banks. All three banks have the majority of their assets in foreign currencies, varying from 67% (Landsbankinn) to 81% (Kaupthing) in mid-2007. The liabilities are in similar proportions mostly in foreign currency. The equity of the banks is denominated in ISK, however, and therefore depreciation of the krona could lead to a proportional deterioration of the capital ratios if the banks do not have adequate hedges.

The effect of depreciation is counteracted by two factors. First, the banks have all issued foreign-currency-denominated subordinate debt, which mitigates exchange rate volatility of tier 1 capital. Secondly, the banks all have positive foreign currency balances. Sensitivity analysis of the capital adequacy ratio for the banks at mid-year 2007 shows that the banks can resist a significant depreciation of the ISK without a serious deterioration of the ratios. Kaupthing is basically neutral to fluctuations in the ISK[9], Glitnir's ratio falls approximately 0.3% against a 10% depreciation and Landsbanki's ratio falls approximately 0.5% when such a depreciation occurs. During the third quarter, however, Glitnir increased their balance 14% and Landsbanki more than tripled its balance, making both banks more or less neutral to changes in the ISK.

TABLE 7: EFFECTS OF THE ISK ON REGULATORY CAPITAL

(as of June 07)	Glitnir		Kaupthing		Landsbanki	
Depreciation	**CAD ratio**	**Change**	**CAD ratio**	**Change**	**CAD ratio**	**Change**
0%	**13.20%**	**-**	**13.4%**	**-**	**12.50%**	**-**
10%	**12.90%**	**-0,3%**	**13.3%**	**-0,1%**	**12%**	**-0,5%**
20%	**12.50%**	**-0,6%**	**13.3%**	**-0,1%**	**11.50%**	**-1,0%**
30%	**12.20%**	**-1,0%**	**13.2%**	**-0,2%**	**11.10%**	**-1,4%**

Source: **Annual reports and authors' calculations**

9 Kaupthing did not publish its foreign currency balance in the consolidated interim for Q2. The balance was calculated as the sum of the bank's total foreign currency balance, reported by the Central Bank, minus the foreign currency balance of Glitnir and Landsbanki.

Considering the relatively high CAD-ratios of the banks, it is evident that all three banks are well equipped to face a severe depreciation of the ISK without the risk of going below the regulatory capital ratios.

2.6 Earnings quality

During recent years, capital gains have played an important role in the unusually high returns of the Icelandic banks. Return on equity has been very high, and equity positions doubtlessly play a role there. Considering the volatility of financial income, it is likely that the banks' earnings will not be sustainable at these past levels. We therefore calculate the return on equity for the Icelandic banks without the financial income, i.e. we assume 0% returns on equity holdings (see Table 8).

The returns on equity fall substantially in this exercise showing that the banks have made substantial excess profits from their equity positions. Returns on equity are still acceptable, however, which indicates that the banks' income is indeed well diversified. It should be considered that the business model of the Icelandic banks is unusual, placing them somewhere between regular commercial banks and investment banks. Considering that all three banks have relatively high capital ratios to compensate for this different nature of their business model, the returns are even more acceptable. In addition, a high proportion of salaries in Icelandic banks are based on performance, indicating that the cost ratios would be much lower with simpler and less profitable operations. Taking that into consideration, the effect of the re-estimation on returns with no return on equities is rather modest.

The extra returns made from equity positions by the banks seem therefore to be a complement to their operations rather than a basic element of their success. The additional market risk from the equity positions is more than offset by the high level of capital, as stress tests indicate.

TABLE 8: RETURN ON EQUITY, EXCLUDING FINANCIAL INCOME

P&L (first 9 months of 2007)	**Glitnir**	**Kaupthing**	**Landsbanki**
Net interest income	27,219	56,374	38,825
Net fees and commission income	27,050	40,898	29,708
Net financial income	11,479	32,698	16,672
Other income	1	5,126	0
Total income	65,749	135,096	85,205
Total Cost	(32,503)*	(56,072)	(40,900)
Risk provisions	(3,150)	(4,146)	(4,670)
Profit before tax	30,096	74,803	39,635
Profit after tax	25,164	61,544	35,028
Cost/Income ratio	49.4%	41.5%	48.0%
ROE before tax	**29.0%**	**31.7%**	**37.6%**
ROE after tax	24.1%	27.5%	33.1%

continued on next page

TABLE 8: continued from previous page

Corrections	GLB	KAUP	LAIS
Net financial income	(11,479)	(32,698)	(16,672)
Core Income			
Net interest income	27,219	56,374	38,825
Net fees and commission income	27,050	40,898	29,708
Other income	1	5,126	0
Total income	54,270	102,398	68,533
Total Cost	(32,503)	(56,072)	(40,900)
Risk provisions	(3,150)	(4,146)	(4,670)
Profit before tax	**18,617**	**42,180**	**22,963**
Cost/Income ratio - Core Income	**59.9%**	**54.8%**	**59.7%**
ROE before tax - Core Income	**17.7%**	**18.6%**	**21.4%**

*** parentheses indicate negative values**

Source: **Annual reports and authors' calculations**

2.7 Cross-ownership

One negative factor in external evaluations was apparently extensive cross-ownership and associated lack of transparency. These gave rise to concerns about corporate governance, contagion risk (across financial institutions), and possible related party lending. Considering the fact that the firms themselves cannot control where their shareholders choose to invest their money and that Iceland is a small, fast-growing economy, it is easy to see how such circumstances could arise. Nevertheless, there were certain cases where this cross-ownership was well above appropriate limits, mainly in the case of Kaupthing and Landsbanki. For historical reasons, Kaupthing was a large shareholder in Exista (the largest investment company in Iceland) and vice versa. Also, Landsbanki owned a substantial share in Straumur, which raised concerns about related party lending since ownership was similar for both.

Much of this has been unwound: Kaupthing distributed its shares in Exista as a dividend to its shareholders, changing the relationship to a one-way connection. Landsbanki sold its stake in Straumur so there is no cross-ownership between the banks today.

One of the main transparency problems during the turbulence in February 2006 was due to large holdings of equity by the banks in order to hedge themselves from forward contracts, made by their clients. The market risk of the banks was very opaque, since it was not clear to what extent the equity belonged to the banks compared to what was being held as a hedge. Since the banks were registered owners of the respective shares, and since substantial portions of several listed companies were held through forward contracts, this also indicated severe cross-ownership in certain cases even if this were no longer the case once the forward contracts had been taken into account. As an example, in the spring of 2006 FL Group – the second largest investment company in Iceland – owned a substantial share in Landsbanki which it has now sold. At the same time, 29.9% of all shares in FL Group were held by Landsbanki. Of those shares, only 1% of the 29.9% was being held

directly by Landsbanki, while the rest was being held as a hedge against forward contracts. In order to make it clearer to what extent the equity held by the banks is at own risk and under their control, the banks have now separated ownership of shares that are held for customers from the banks.[10]

2.8 Exposure to sub-prime

One of the strengths of the banks is their low exposure to sub-prime loans. Both Glitnir and Landsbanki have declared that they have no exposure to sub-prime. Kaupthing's subprime exposure is limited. The bank is exposed to Collateralised Debt Obligations (CDOs) and Asset-Backed Securities (ABSs) through its asset management company, New Bond Street Asset Management.

In the nine month interim, the amount of CDO and ABS exposures of the bank and the effect on profit and loss statement in the third quarter of 2007 are explained. The bank's position in corporate synthetic CDOs amounts to ISK 30 billion and the bank's holdings in ABSs total ISK 24.7 billion. Losses due to these instruments, as well as floating rate notes amounted to ISK 6.9 billion during the third quarter. Supposing that the total exposure of Kaupthing, ISK 54.7 billion, would become worthless, the bank would still maintain a capital level above the regulated standards. Since CDOs and ABSs include a pretty broad range of instruments, this scenario is more for theoretical purposes. Calculations show that this would deteriorate the tier 1 ratio by roughly 1.4%. The calculations are based on unchanged risk-weighted asset base, which should actually fall if this scenario were to happen. Therefore this is rather an overestimated effect than underestimated.

In relation to the recent acquisition of NIBC Bank, it is important to point out that the bank's troublesome subprime book will not be sold to Kaupthing along with the Bank. As part of the terms of the transaction, the US sub-prime portfolio is to be transferred to a company controlled by the sellers, which are a consortium of shareholders led by J.C. Flowers & Co.

2.9 Are all the Icelandic banks the same?

The Icelandic financial market tends to be referred to as a single entity, instead of a group of different companies. This is understandable, considering that the main players all share certain characteristics. These include very strong growth, increased presence in foreign markets, low hierarchy and short decision-making channels, relatively young and dynamic executives and unconventional policy.

Comparing the strategy and basic structure of the three major banks, however, reveals that they are much more diverse than they seem at first sight. The growth strategies of the banks have been very different. Kaupthing was the first to expand their operations abroad, when they started Kaupthing Luxembourg SA, a securities firm. In the following decade all three banks have expanded their operations abroad, both through acquisitions and organic growth. Kaupthing has been by far the most aggressive in relation to acquisitions. The total value of companies it has acquired during past decade has been approximately EUR 5 billion. The largest ones have been the recent acquisition of NIBC (approx. EUR 3 billion); Singer & Friedlander, which was acquired in March 2005 (approx. EUR 0.8 billion); and finally the Danish FIH bank, which was acquired in June 2004 (approx. EUR 1 billion). In comparison total acquisitions made by Glitnir (the largest acquisitions include FIM Group and BN Bank) during the same period were close to EUR 1 billion. Landsbanki (largest acquisitions include Teather & Greenwood, Kepler Equities, Merrion Capital and Bridgewell) has

10 Voting rights belong to the clients. However, prior to shareholders' meetings, they need confirmation from the banks of their ownership.

acquired foreign companies for a cost of less than EUR 0.5 billion. Therefore, the organic growth has proportionally been the highest at Landsbanki, despite strong organic growth by both Glitnir and Kaupthing.

In terms of geographical focus, the banks vary to some extent. They all focus mainly on Nordic markets, but the concentrations of their operations differ. Kaupthing has the most diverse market, defining Northern Europe as their operating market. The recent acquisition of NIBC expands their operations to continental Europe, and they are launching their operations in the Middle East. Kaupthing's primary markets are Denmark, Iceland and the UK. Glitnir has defined Iceland and Norway as its domestic markets. Their recent acquisition of Finnish FIM Group should increase the weight of Finland in their operations. In addition, Glitnir has opened branches which are intended to service companies in industries which are described as key industries in the bank's operations. Those branches are e.g. in New York, London and Shanghai. Landsbanki has placed much emphasis on UK and Ireland. In addition, Landsbanki operates in Continental Europe and Scandinavia and has recently entered the Canadian market. As previously mentioned, the acquisitions of Landsbanki have not been large, but the operations of the companies acquired have been relatively dispersed, especially Kepler Equities, allowing the bank to enter many new markets.

The business model of the banks is in many ways similar. They do, however, operate in different segments, and their strengths lie in different areas. Glitnir focuses on certain niches in terms of corporate customer base, mainly fishery and fish processing, sustainable energy (emphasising geothermal energy), and financing of offshore service vessels. Kaupthing's main focus is on small and medium companies, institutional investors and wealthy individuals, and the bank provides universal service for these customers. Landsbanki has used the broad European network of branches that it has built up through acquisitions to grow organically, placing main emphasis on providing comprehensive financial services to small- and medium-sized European companies.

2.10 Peer comparison

Although the Icelandic banks differ in many ways, their business model does have strong similarities. They all have a higher than average risk profile, which is compensated by unusually high capital ratios. Their strategy has proven highly successful in recent years, delivering very high returns on equity. Finding appropriate peers for comparison is not easy, since their model is unique. Nevertheless, it is useful to compare Icelandic banks to their Nordic peers, especially on the factors specifically criticized during the spring of 2006. Here we look at the Norwegian bank DnB Nor and the Swedish banks Swedbank and Swenska Handelsbanken (SHB). The market capitalization of these banks is relatively close to Kaupthing, the largest Icelandic bank.

2.10.1 Market funding and deposit ratios

The two main factors criticized in relation to financing of Icelandic banks were heavy reliance on market funding in relation to deposits and the concentrated front-load of debt maturities.

TABLE 9: DEPOSITS/LOANS OF MAJOR NORDIC BANKS

	Glitnir	Kaupthing	Landsbanki	DnB Nor	SHB	Swedbank
End of first 9m 2007	37.6%	42.7%	75.5%	58.6%	39.8%	40.7%
End of 2006	24.9%	29.6%	47.5%	57.3%	48.5%	42.3%
End of 2005	25.9%	31.5%	33.9%	58.9%	41.4%	41.2%

Source: **Annual Reports and authors' calculations**

Comparison of deposit ratios shows that Kaupthing and Glitnir have reached the stage where they are more and less in line with their Nordic peers. Landsbanki, on the other hand, has by far the highest deposit ratio of the sample.

Secondly, we consider the debt maturity distribution of the banks. The distribution in the following charts shows the proportion of outstanding market borrowing in each relative year. As an indication of the absolute values involved, the ratio of market funding divided by outstanding loans to customers has been calculated for each bank. The higher is the ratio, the more reliant is the bank on market funding[11].

These graphs show that compared to their peers, Icelandic banks are far from being front-loaded. In fact, the distribution seems to be somewhat more favorable than for the other Nordic banks. However, both Glitnir and Kaupthing have a relatively high ratio of market funding. Landsbanki and DnB Nor have a low market-funding ratio, and SHB and Swedbank are in between.

2.10.2 Earnings and ROE

Comparing the banks' return on equity shows that Icelandic banks have been much more profitable during the past few years, with average return on equity close to 35%. Their Nordic peers have earned on average roughly 20% return on equity over the respective period (see Fig. 12). Considering

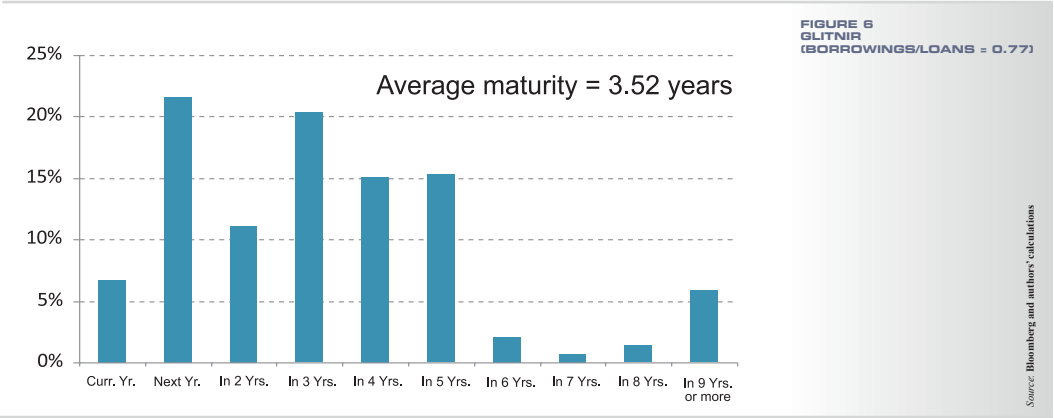


FIGURE 6
GLITNIR
(BORROWINGS/LOANS = 0.77)

Source: Bloomberg and authors' calculations

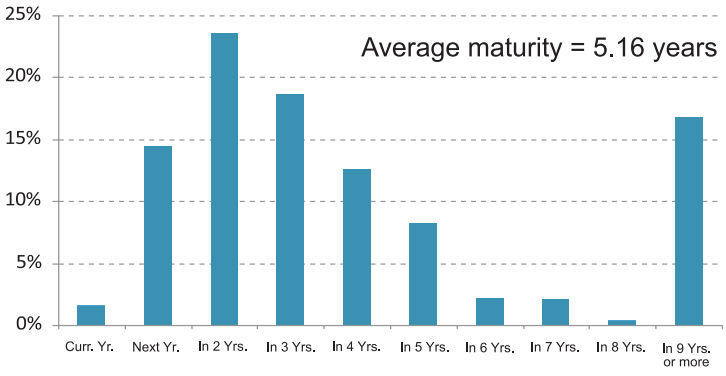
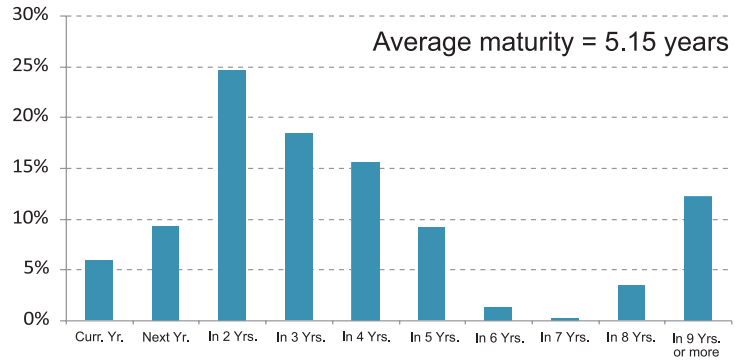


FIGURE 7
KAUPTHING
(BORROWINGS/LOANS = 0.81)

Source: Bloomberg and authors' calculations

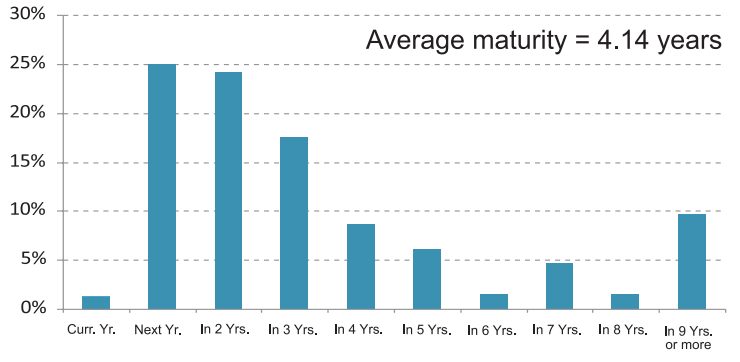
11 The ratios are calculated according to the Q3 2007 interim. The debt distribution is from Bloomberg, October 23rd 2007.

FIGURE 8
LANDSBANKI
(BORROWINGS/LOANS = 0.41)



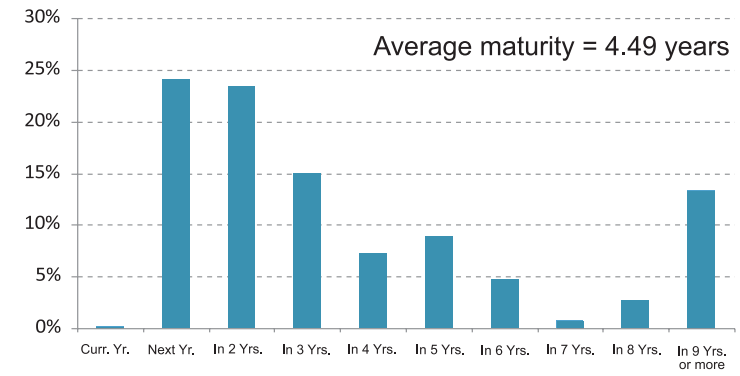
Source: Bloomberg and authors' calculations

FIGURE 9
DnB NOR
(BORROWINGS/LOANS = 0.35)



Source: Bloomberg and authors' calculations

FIGURE 10
SHB
(BORROWINGS/LOANS = 0.53)



Source: Bloomberg and authors' calculations

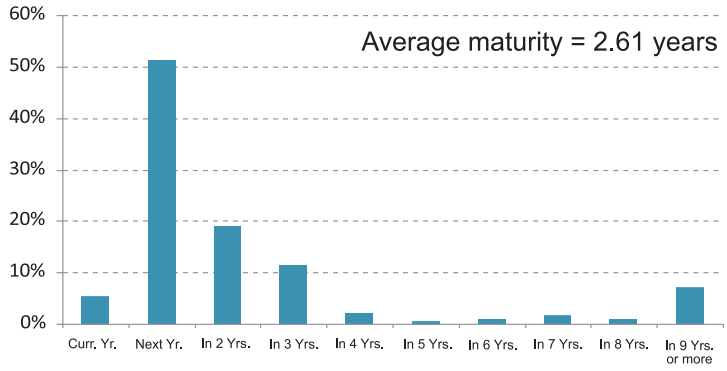


FIGURE 11
SWEDBANK
(BORROWINGS/LOANS = 0.6)

Source: Bloomberg and authors' calculations

the higher financial income of the Icelandic banks, a comparison of core income is appropriate in order to analyze the nature of these high returns. This is done by excluding financial income and making the respective corrections to net interest income. Since the banks could earn interest on the capital invested in equity, net interest income is scaled up accordingly, using short term REIBOR to calculate interest for Icelandic equities and short term EURIBOR for foreign equities. The core return is calculated for the year 2006.

As Table 10 shows, the core income of the Icelandic banks was the same or higher compared to their Nordic peers in 2006. This indicates that despite high returns on equity positions, the other segments of their operations are highly profitable as well. Considering the relatively high capital ratios of the Icelandic banks and a large proportion of performance based salary, the high ROE is even more impressive. It should be noted that the cost of capital has been relatively higher in Iceland over the period and therefore some of the excess return, but by no means all, is due to this.

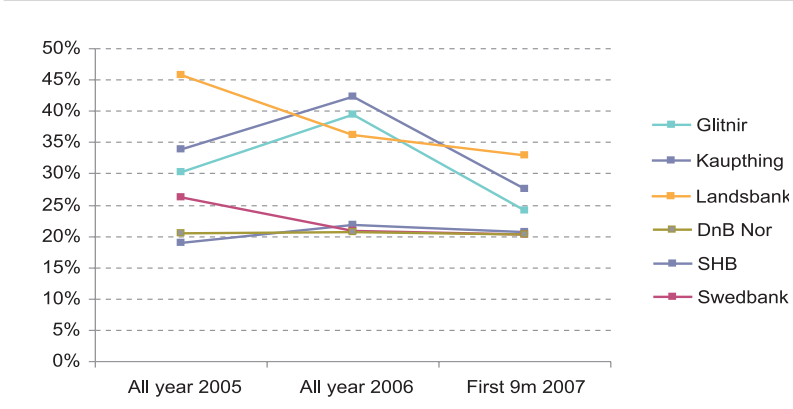


FIGURE 12
RETURN ON EQUITY,
2005-2007

Source: Annual reports and authors' calculations

2.10.3 Tier 1 and CAD ratios

Icelandic banks have compensated for their high risk exposure by retaining high levels of capital. All three banks have implemented the policy of keeping tier 1 and capital adequacy ratios well above the regulated standards. This becomes apparent when the ratios are compared with their peers. As Figure 13 shows, the tier 1 ratios of the Icelandic banks are on average approximately 3-4% higher than for the other banks. Comparing CAD-ratios will lead to a similar result.

TABLE 10: CORE RETURNS

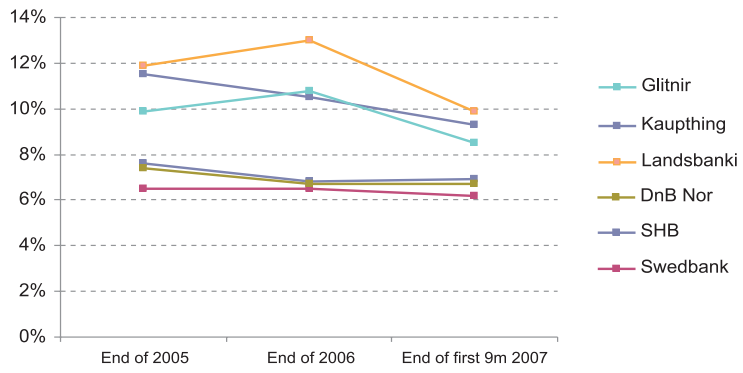
	Glitnir	Kaupthing	Landsbanki	DnB Nor	SHB	Swedbank
P&L*	**EUR mil.**	**EUR mil.**	**EUR mil.**	**EUR mil.**	**EUR mil.**	**EUR mil.**
Net interest income	440	615	487	1,983	1,942	2,011
Net fees and commission income	317	438	333	870	1,197	1,150
Net financial income	160	792	230	538	591	417
Other income	10	119	0	352	103	209
Total income	927	1,963	1,050	3,743	3,834	3,787
Total Cost	(328)	(704)	(453)	(1,871)	(1,615)	(1,964)
Risk provisions	(56)	(72)	(72)	34	7	27
Profit before tax	543	1,186	525	1,905	2,226	1,850
Cost/Income ratio	35.4%	35.9%	43.2%	50.0%	42.1%	51.9%
ROE before tax	**46.1%**	**50.2%**	**40.3%**	**26.8%**	**29.2%**	**27.9%**
Corrections						
Net interest income	17	106	43	175	203	24
Net financial income	(160)	(807)	(230)	(538)	(591)	(417)
Core Income						
Net interest income	456	721	530	2,158	1,942	2,035
Net fees and commission income	317	438	333	870	1,197	1,150
Other income	10	119	0	352	103	209
Total income	783	1,277	863	3,380	3,243	3,394
Total Cost	(328)	(704)	(453)	(1,871)	(1,615)	(1,964)
Risk provisions	(56)	(72)	(72)	34	7	27
Profit before tax	**399**	**501**	**338**	**1,542**	**1,635**	**1,458**
Cost/Income ratio - Core Income	**41.9%**	**55.1%**	**52.5%**	**55.4%**	**49.8%**	**57.8%**
ROE before tax - Core Income	**33.9%**	**21.2%**	**25.9%**	**21.7%**	**21.5%**	**22.0%**
						EUR/SEK = 9.20 and EUR/NOK = 7.71

Source: **Annual reports and authors' calculations**

2.11 Does coming from Iceland affect the banks?

The Icelandic banks are a special case in many ways. Not only has their growth been extraordinary in recent years, but their business model is also exceptional. They are relatively aggressive commercial banks with certain features of investment banks. The model is relatively simple, but at the same time unfamiliar. Certainly the roots of this model can be traced to the fact that the banks have followed Icelandic firms into new foreign markets, in order for both parties to take the next step in

FIGURE 13
TIER 1 RATIOS



Source: Central Bank of Iceland

their advance. This has meant that the banks have engaged in these ventures on more levels than traditional banks would have. As the banks have established a foothold in new markets in other countries, this same model has been adapted to firms in those markets.

The higher risk of this strategy seems to be more than offset with relatively high capital ratios, diverse markets and customer base, and strong risk management. This has been reflected in reasonably good ratings, relative to the size of the banks. Yet their ratings are uniformly lower than those of Nordic banks, which seem unjustified based on the comparison above.

2.11.1 Why haven't analysts and ratings firms responded to the changes made and the apparent robustness of the banks?

Some analysts have a reputational stake in the views they took in spring 2006 – e.g., Danske Bank has consistently taken a highly pessimistic view of Iceland, having forecast in March 2006 a 5-10% drop in Icelandic GDP over the following two years. Danske Bank has since been consistently negative on the ISK, as well – investing on its forecasts would have led to significant losses.[12]

TABLE 11: RATINGS

		Glitnir	Kaupthing	Landsbanki	DnB Nor	SHB	Swedbank
Moodys	Long term	Aa3	Aa3	Aa3	Aa1	Aa1	Aa1
	Short term	P1	P1	P1	P1	P1	P1
	Individual	C	C	C	B-	B	B
S & P	Long term	A-	n/a	n/a	A+	AA-	A+
	Short term	A-2	n/a	n/a	A-1	A-1	A-1
Fitch	Long term	A	A	A	n/a	A+	A+
	Short term	F1	F1	F1	n/a	F1	F1

Source: **Annual reports**

12 Ólafsson (2007).

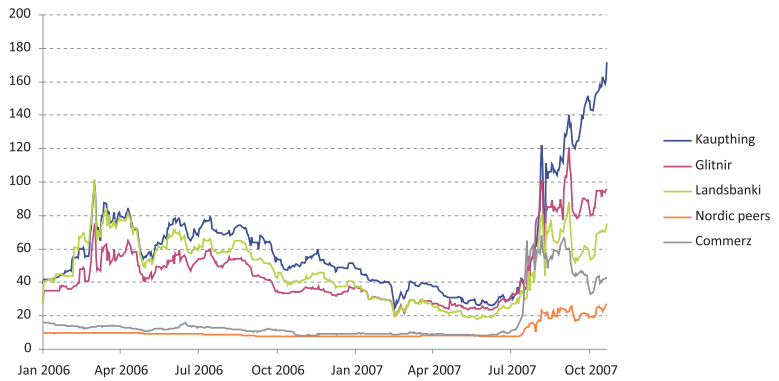
S&P on 20 February 2007 expressed concern that the very rapid expansion of the banks might raise execution risk and also lead the banks to misprice risk. Our view, which appears to be shared by the regulatory authorities (the FSA and the CBI), is that these are in fact very well run banks. Their management is indeed entrepreneurial, but they are wary of becoming involved in anything they do not understand, and they are very focused on risk management. As for the potential mispricing of risk, experience since July 2007 and the information which the banks have provided to the markets suggest they had relatively little involvement with the excesses that underlie the current turmoil.

2.11.2 Country risk premium

Comparing CDS paths of the Icelandic banks with those of other Nordic banks and the German Commerzbank is interesting (see Figure 14).[13] As could be expected, the Icelandic banks experienced a hike in their CDSs during the turbulence in 2006. Afterwards the trend was downward until autumn 2007, when it has risen substantially, reaching a peak which is much higher than in 2006. This is surprising, considering that the main risk factor during the current turmoil is on one hand exposure to sub-prime markets and illiquid structured finance and on the other hand unfavourable funding structure. The Icelandic banks have almost no exposure to the subprime market, and their funding structure has improved enormously during the past year. Even banks heavily affected by the sub-prime problems, like Commerzbank, do not seem to be experiencing anything similar to the Icelandic banks in regard to CDS spreads. It thus appears that the banks are paying a high premium for their Icelandic origin.

It should be noted that Kaupthing's CDS has diverged recently. The main reasons for this are uncertainties regarding the NIBC acquisition and a higher exposure to CDOs and ABSs relative to the other two banks.[14] The acquisition will be partially funded by a preemptive rights issue of 40 million shares (estimated to deliver EUR 1.6 billion in cash) in December 2007. There may be some concerns that these shares need to be priced at a discount in the current situation.

FIGURE 14
CDSs FOR ICELANDIC BANKS, NORDIC BANKS, COMMERZBANK, JAN 2006 - OCT 2007



Source: Bloomberg

13 Since CDS data was not available to the authors on Swedbank and SHB and average of DnB Nor, Danske Bank, and SEB CDSs was taken instead.

14 Morgan Stanley (2007).

The turmoil in February 2006 seems to have marked the reputation of the Icelandic banks, making them much more sensitive to risk adversity. This is despite their successful efforts to improve the factors that were criticized at the time. Coming from Iceland seems to put a premium on both share price, and, especially, on funding terms. Considering the imbalances in the Icelandic economy, this would be natural if the banks had a high exposure to their domestic economy. But for these banks, that is not the case. Therefore, it seems that they are paying a premium for their origin rather than actual risk exposure.

2.11.3 Strong domestic market

There are certain benefits that the banks gain from being Icelandic. The Icelandic economy has been among the fastest growing developed countries in the world, creating a very favourable environment for the banks in many respects. The smallness of the market also comes with benefits, since foreign competition is nearly non-existent. Therefore, the incomes from their domestic operations have been both stable and strong. Iceland offers a very favourable tax regime, both in terms of corporate tax, as well as the capital income tax. The low corporate income tax has increased profitability substantially, and the low capital income tax encourages equity investments in the domestic market. This has been complemented by the strong pension funds, creating vast sources of liquidity in relation to equity funding.

In addition, the volatility in the Icelandic economy has actually benefitted the banks in many ways. All three banks have a positive indexation balance, meaning that inflation actually enhances their income. The volatility has also boosted the turnover in equity, bond and foreign exchange markets, with a resulting increase in commission fees for the banks.

Comparing these costs and benefits is not easy. During stable periods in world markets, the benefits definitely outweigh the cost. But during periods of turbulence in the global financial markets, the cost of the risk premium paid for their origin can be very high.

Considering this, it is extremely important for the banks to retain a steady and transparent information flow on their operations in order to limit the effects from this country premium. The banks are well equipped to face disruptions in capital markets and contraction in the Icelandic economy, but the premium will obviously affect their profitability. The long term prospects of the banks should however not be threatened, considering their strong funding structure, high capital ratios and diversity regarding income and market exposure.

2.12 Fast growth in the financial sector and investments abroad

Iceland's financial services sector has grown enormously in recent years, catalyzed by deregulation in the 1990s and, in particular, by the privatisation of two commercial banks, completed in 2003. International acquisitions and internal growth have increased the banks' combined balance sheets tenfold from 2000 to 2006. This development has puzzled many, especially since it was not until quite recently that outsiders took an active interest in the affairs of this small country.

2.12.1 Why have the banks grown so fast?

It is natural to ask why the banks have grown so fast and expanded so much abroad. We discuss some of the key elements below.

Financial Liberalisation

As was previously mentioned, Iceland has undergone comprehensive financial liberalisation in the past three decades, before which the strict regulatory environment specifically discouraged growth in the banking sector. The reforms carried out since 1979 involved the standard approaches to liberalising financial markets: reforms at the CBI, the development of securities markets, privatisation of the state banks (discussed in detail below), the diminished role of public investment credit funds, and the liberalisation of both short- and long-term international capital movements.

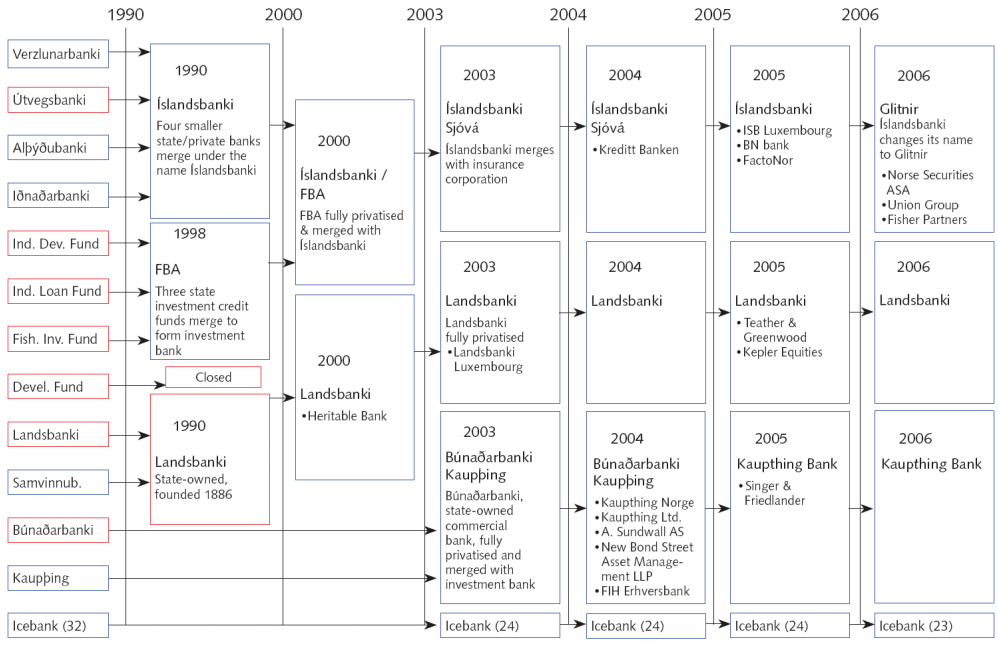
Consolidation and privatisation of the banks

The main stimulus for strong growth in the financial system was privatisation, undertaken in earnest over the past decade. The two state-owned commercial banks, Landsbanki and Búnaðarbanki (which later merged with Kaupthing bank), were privatised in stages between 1999 and 2003; FBA (an investment credit fund that later merged with Glitnir Bank) was privatised over the period 1998-1999. Today, the government's participation in financial markets is limited to mortgage lending institutions, such as the Housing Financing Fund, and a few other much smaller credit funds.

In the preceding decade, the banking sector was consolidated through mergers of both investment credit funds and commercial banks.

The process of consolidation and privatisation improved efficiency within the financial sector and equipped the largest players with the tools necessary for further development with relatively favourable credit ratings and vast opportunities for improvements. This restructuring has been complemented by strongly favourable market conditions, both domestically and internationally.

FIGURE 15: BANK CONSOLIDATION



Source: Central Bank of Iceland

Exhausted market opportunities and diversification
A domestic economy of 300,000 people does not offer the market opportunities that investors and executives in the Icelandic financial sector consider promising for future growth. With the opportunities of further consolidation and streamlining domestically exhausted, the banks have naturally sought to expand their operations abroad to ensure a profitable future. Icelandic banks and firms in general have successfully adopted a strategy of aiming high in their acquisitions, creating extensive growth opportunities.

Another factor that is likely to have motivated Icelandic firms to expand their operations abroad is to diversify risk. Icelandic banks have combined acquisitions abroad and organic growth to diversify their income streams, using a variety of approaches.

Increased access to funds
Profound structural changes, combined with promising macroeconomic conditions, have resulted in a breakthrough in Icelandic business life. Since 2000, real GDP has grown substantially, and along with it, both real disposable income and productivity. Asset growth has been strong in all markets, particularly in equity and real estate, creating high liquidity in domestic markets. Historically low global interest rates and reduced credit spreads generated ideal conditions for the rapid expansion of the financial sector. Although Icelandic banks have exploited these globally relaxed liquidity conditions, the continuing solvency of the Icelandic banking sector faced with stricter liquidity conditions has proven its resilience to changing conditions.

2.12.2 Foreign advance of Icelandic businesses

The foreign advance of Icelandic businesses has not just been in banking, but also has been taking place across the retail, pharmaceutical, food production, high tech manufacturing, airline services and real estate sectors. The main factors leading to foreign expansion within these sectors are generally the same as those driving the banks' expansion: going beyond exhausted market opportunities in Iceland, decreasing risk through income diversification and capitalizing on favourable economic conditions. These firms and the banks have complemented each other in their advance into new markets.

Icelandic firms' focus on foreign markets encouraged banks to capitalise on the trend by expanding their businesses abroad further. The banks, with well-established reputations and relationships in the main foreign markets, have in turn been very helpful for Icelandic firms pursuing business ventures abroad. In addition to providing resources to fund projects, the banks' support and business relations have facilitated these ventures. In this context, the international rating of Icelandic banks is a valuable asset, allowing them to give credible reference for Icelandic companies to accelerate transactions and to underwrite credit facilities when necessary.

The banks have gained substantially from this evolution as well. Projects supporting foreign ventures have provided opportunities for them to prove themselves in new markets and to show that they are quite capable in the field of investment banking and financial consulting. The expansion of Icelandic banks shows that they have predominantly moved to markets where they can serve their Icelandic customers, while at the same time gaining a new customer base. Of course, these projects have also been very profitable in their own right, generating substantial royalties and service fees.

2.12.3 Where does the money come from?

Icelandic investment in other countries averaged 33% of its own GDP in each of the years 2004-2007. It is often asked how this "Icelandic advance" has been financed. The simple answer is that to a large extent, international investments have been financed by borrowed funds; Icelandic entrepreneurs seized the opportunity provided by ample international liquidity and low interest rates. An investor must, however, always put up a share of equity in order to secure funding. The question is therefore where the equity needed for these large investments has come from. The answer is that it has been built up by a number of factors. There are, however, a few important items on the balance sheet that are worth mentioning. The first is new equity created in fisheries, through the establishment of the individual transferable quota system, estimated at 350 billion ISK, or 36% of GDP, at year-end 2005. The second is the equity created by privatisation, especially in the banking sector, estimated at 370 billion ISK, or 38% of GDP, in 2005. Finally, a few very successful ventures had already netted a profit of some 40 billion ISK at the end of 2005, adding another 4% of GDP.[15] These numbers add up to a total of 670 billion ISK, or 78% of GDP, in 2005.

It is obvious that Iceland's small domestic economy did not and could not provide sufficient opportunities to put this new capital to work. International investments were not just an exciting prospect – they were a necessity if adequate return was to be made on this equity. The favourable circumstances in international financial markets in recent years created the opportunity for this expansion to happen. With 78% of GDP in new equity in the domestic market, it does not require excessive leveraging to fund the foreign investments of Icelandic firms in the last few years. This is where the money comes from.

15 Kristinsson (2007).

2.13 The lender of last resort

The law on the CBI gives it the role of promoting financial stability, including acting as a lender of last resort (LLR). The Bank also sets prudential regulations on the liquidity and foreign exchange balance of credit institutions.

The LLR provision states that when the CBI thinks it necessary in order to protect the safety of the domestic financial system, the Bank may issue guarantees or grant loans to credit institutions that are in liquidity difficulties against other collateral than is customary or against other conditions laid down by the Bank. The law follows the Bagehot doctrine – although it does not mention "very high rates" on the CBI's loans as suggested by Bagehot (1873) – in allowing the Bank to provide such help only to solvent banks having liquidity problems: The CBI will not provide assistance "to boost the capital position of institutions which run into difficulties".[16] As noted by the Bank, however,

16 CBI *Financial Stability Report*, April 2005, p. 58.

"[it] can prove difficult to distinguish between a liquidity problem and wide-reaching ones when an institution experiences difficulties."[17]

It is important that the FSA, as prudential supervisor, and the CBI work closely together in a crisis. The institutions hold contingency exercises to prepare for meeting problems in financial markets should they arise.

Icelandic banks now all operate in several countries and are classified as cross-border banks. The same applies to most large Nordic banks. The Nordic Central Banks and the FSAs cooperate on financial stability. They too hold regular contingency exercises and have signed Memoranda of Understanding on cooperation in managing crises.

Failure of any of the three large Icelandic banks would inevitably have repercussions for the others and be extremely disruptive, financially and economically, for Iceland. In this sense these banks are each individually 'too big to fail'. This is recognized by market participants; for example, Moody's counts "Strong likelihood of state support in the event of systemic shock" as one of the main strengths of the Icelandic banking system.[18]

But the international character of the banks and their size relative to the economy limits the capacity of the CBI to come to their rescue. The banks' combined assets are now eightfold GDP, and most of their lending is in foreign currency. For example, 78% of Kaupthing's lending is now outside Iceland, and with the acquisition of NIBC this share is set to grow. The most likely scenario where a lender of last resort would be needed is probably that of a drying up of market funding in international markets.

The question therefore arises whether the banks are not just too big to fail, but also too big to rescue. Can the CBI draw on its currency reserves or borrow enough to bail a bank out in dire times? An indication of the size of the amount that the CBI would have to inject, say over the span of three months, is given by the amount of foreign currency market funding maturing in a typical quarter. With the current funding structure of the banks this could be in the range ISK 50-100 billion for any single bank. Current reserves are now ISK 155 billion so it would be feasible for the CBI to provide these funds, but it could come close to exhausting currency reserves by doing so. Were all three banks to need funding of such magnitude the CBI would clearly have to resort to borrowing abroad – or guaranteeing the banks' borrowing. Given the sound financial situation of the Government of Iceland, this would probably also be feasible, although borrowing what would amount to almost a year's worth of tax revenues for the central government would stretch its credit lines.

Another way of looking at this issue is considering what the banks themselves can withstand. In October their net foreign currency position was ISK 446 billion. The banks now maintain a currency surplus (to hedge their equity) and could draw on these funds to meet a temporary closure of markets for their bonds.

17 There is a continuing debate on the need for a lender of last resort (see, e.g., the papers in Goodhart and Illing, 2002). Indeed, one way of interpreting the Icelandic mini-crisis of 2006 is as an example of banks' saving themselves rather than falling back on a LLR. Bagehot's doctrine has, however, been placed on a sounder footing in recent years; see e.g. Rochet and Vives (2004) and Freixas et al. (2004).

18 Moodys Investor Service (2006).

CHAPTER 3

THE FINANCIAL SECTOR IN THE GLOBAL ECONOMY

3.1 External Finance

3.1.1 Sustainability

A current account deficit (CAD) is typically not a 'primary factor promoting financial instability' (Mishkin and Herbertsson 2006). There may nevertheless be reasons for concern about a high current account deficit.

- If the external position and its dynamics are unsustainable in the long run, investors may in due course perceive this and exit, even if there is ample time for a correction – indeed, even if the correction has already begun.
- If expectations about sustainability change suddenly, then there may be an abrupt exit. This 'sudden stop' or reversal of capital flows is a familiar phenomenon in emerging market countries (Calvo 2006), but it can also occur in an advanced economy like Iceland or even the United States (see Krugman 2007). It may bring the economy to a 'hard landing': a sharp depreciation of the exchange rate, generating inflationary pressures, particularly strong in a highly open economy; a rise in interest rates to prevent 'overshooting' and contain the inflationary threat; a fall in consumption and investment (if the interest rate effect outweighs the rise in profitability of investment in tradeables); a fall in output and rise in unemployment; a deterioration of household finances that will hit some non-tradeables, like housing.
- These developments can in turn pose problems for the financial system, even if banks' balance sheets do not show currency mismatch. They may be exacerbated if the private sector has taken on liabilities to the domestic banking system denominated in foreign currency (domestic liability dollarisation [euroisation]).
- Monetary policy may be responding in part to the external position, even in an inflation targeting regime, because of the influence of the exchange rate on domestic inflation – again, this will be more pronounced in a small open economy. Conversely, monetary policy will directly affect the external position – a particular example (discussed below) is the 'carry trade'.

We therefore consider here the relationships among capital flows, the exchange rate, interest rates, the current account, macroeconomic stability, and the financial system – all this in the context of the Icelandic economy. We do not find that the dynamics of the external position are unsustainable, nor that a 'sudden stop' and 'hard landing' are likely. We do conclude that there are difficulties in running monetary policy in Iceland, some of which are self-imposed and could be corrected. The carry trade is costly to the economy but is unlikely to subside until policy rates are brought down substantially.

One issue that is unresolved is the future of the currency itself. A shift towards use of the euro could gather momentum. That might be a cause of monetary instability, but it is likely that the financial sector would be able to cope with the consequences.

3.1.2 Capital inflows problems

The 'classical' capital inflows problem (see Portes and Vines, 1997) often starts with a rise in the return to investment or financial liberalisation, or both. In Iceland, recent developments are closely related to the exploitation of aluminium and hydroelectric resources as well as the culmination of financial liberalisation with the privatisation of the big banks at the beginning of the century. Investment increases strongly, but domestic saving lags behind, partly because of consumption smoothing: households expect substantial increases in per capita income when the investments come on stream, and they take some of the expected future consumption in the present. Thus aggregate demand exceeds aggregate supply, and financial reforms facilitate capital inflow that meets the gap and finances a current account deficit. A standard example of this phenomenon in an advanced economy is the case of Norway in the 1970s, where the current account deficit rose to 15% during the development of the oil fields.

The authorities may find the macroeconomic disequilibrium excessive and may try to reduce it with a tightening of monetary policy. But the boom is too strong to subside easily, and the rise in interest rates just brings in more capital flows. The nominal exchange rate appreciates. Pressure on the labour market generates inflationary impulses. On both counts, the real exchange rate appreciates. Competitiveness deteriorates. Investment in effect 'crowds out' net exports. And in a small open economy, the exchange rate appreciation, by lowering import prices, will stimulate consumption further, thereby adding to aggregate demand.

The authorities then face the unappealing choice between allowing inflation (inadmissible for an inflation-targeting central bank), allowing nominal appreciation, or trying to prevent both with fiscal tightening. They are likely to see cutting interest rates as too dangerous on the inflation front, even if they recognise that the exchange rate effect might both dampen consumption and stop the capital inflows that are based only on the 'search for yield'.

Meanwhile, the current account deficit continues or even rises, and the external debt burden grows.

A common response is the so-called 'Lawson doctrine' (referring to the UK finance minister of the late 1980s, who presided over a boom and an associated current account deficit): *Why do anything? Where is the market failure?* Unless the excess demand is in good part due to fiscal excess, it is private decision-making that has generated the macro outcome. We can reasonably suppose that investors expect to be rewarded amply for their decisions, that households are far-sighted in their consumption smoothing, and that the external debt – again, the result of private decisions to borrow – will be repayable from the future savings of firms and households.[1]

There are several reasons, however, to believe that there may indeed be market failures. First, there can be asymmetries of information, in particular for foreign investors. These can lead to bandwagon or herding effects that initially exaggerate the capital inflows, then exacerbate the 'sudden stop' if investors react to 'news' by reversing the flows. Informational problems can also lead to self-fulfilling speculative attacks on the currency. And deposit insurance or the expectation of lender-

1 The 'Lawson doctrine' is supported by Belkar at al. (2007), discussing the long-running current account deficit of Australia. Note that the Lawson boom had an unhappy ending, in a recession and exchange-rate tensions.

of-last-resort bailouts if the banks misjudge their lending can create a moral hazard in the banking system, hence overborrowing and the accumulation of excessive private debt – that is, private decisions are not in fact optimal. Down the road awaits currency crisis, debt crisis, or both.

3.1.3 Putting the current account deficit into perspective

It is not unreasonable to see the Icelandic CAD and large negative net international investment position (NIIP) as sustainable, especially if the economy is on a path that will bring the current account deficit down substantially from its peak at 25.5% of GDP in 2006. As we shall see, it has indeed fallen sharply in 2007. There are also important issues of measurement that suggest a nuanced interpretation of the official data (see the discussion below). Even if the current account as measured in official statistics follows international conventions, there are unusual features for Iceland that lead us to believe that the 'true', or the underlying, or at least the relevant current account data would show a significantly smaller deficit and that the NIIP is indeed less negative than it appears to be. An alternative view is that some external income may be unrecognized or deferred and will appear in the accounts over the next few years. Moreover, the special characteristics of the Icelandic economy suggest that conventional comparative statistics for the current account and NIIP are misleading.

The common standard of reference for the current account and NIIP is GDP – that is, the numbers are often expressed as percentages of GDP. This does measure appropriately the 'resource burden' of the debt and its long-run sustainability or the degree of macroeconomic adjustment that would be required to 'correct' the deficit. But such figures have little to do with the ability to finance the deficit (or increasing debt) in the short- to medium-term. Nor do they represent well the situation of a very small, very open economy that does an enormous amount of financial intermediation – like Iceland, but also like Luxembourg, or in a different way, New Zealand.

Indeed, one way of seeing the Icelandic external position is to view the country as a very large venture capital firm. It has been borrowing short- and medium-term to finance very substantial foreign investments in portfolio equity, acquisitions, and organic foreign expansion of its financial institutions, as well as the growth of its non-financial corporations. One reflection of this is that the stock exchange, though 'small' (only 25 firms listed), has a market capitalization of 260% of GDP (69% for Denmark, 40% for New Zealand, 139% for Australia, all end-2006).

A better standard of reference than GDP might be national wealth. But full national wealth accounts, though highly desirable for this and other purposes (Buiter 1985), are not available for most countries. An alternative might be household wealth, but a measure of household wealth that takes account of funded pension assets. Iceland does have very large fully funded pension funds, and these are clearly part of household financial assets. Housing wealth is also part of the picture. The capacity to finance current account deficits and service external debt is better measured by the stock of household wealth than by the flow of GDP.

At the end of 2006, the net international investment position of Iceland was in deficit, in

the amount of 121.5% of GDP. This is very high by international standards. But household wealth was 287% of GDP, including housing and pension wealth. Thus the (negative) NIIP was 42% of total household wealth. For comparison, New Zealand at end-2005 had a negative NIIP of 22% of household wealth, Australia 13%.

But the data for Iceland significantly underestimate household equity wealth. Market capitalisation on the stock exchange at end-2006 was BISK 2596. The international investment position data show foreign holdings of domestic equity at 6% of total foreign liabilities of ISK 5,916 billion, i.e. ISK 354 billion (this is probably an overestimate, since it ignores shares owned by holding companies in low-tax jurisdictions, of which Icelanders own a substantial part). The pension funds owned ISK 250 billion in shares at end-2006. That leaves at least ISK 1,992 billion for Icelandic households. The CBI figures show only ISK 248 billion, but these are the shares owned directly by households. Most wealthy individuals hold their shares in private corporations, which may themselves be registered in tax shelters. The difference is ISK 1,744 billion (138% of GDP!). If we add that ISK 1,744 billion to total household wealth, we find that the NIIP is negative 27% of adjusted total household wealth.

3.1.4. Data

The financial account

The net international investment position of Iceland, as conventionally measured,[2] was substantially negative but fairly stable for the two decades prior to the end of the 1990s. It then went much more deeply into negative territory (see Fig 16).

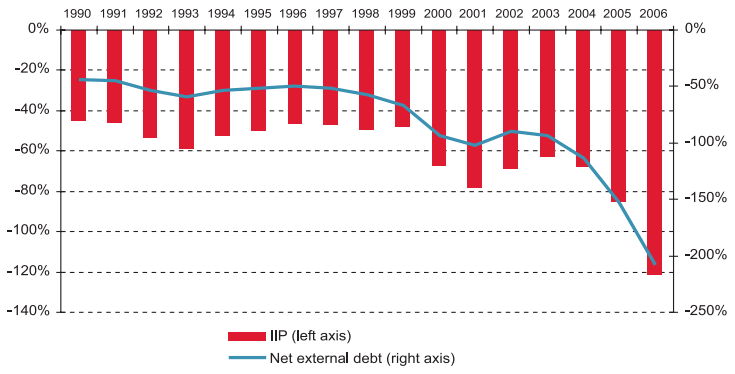


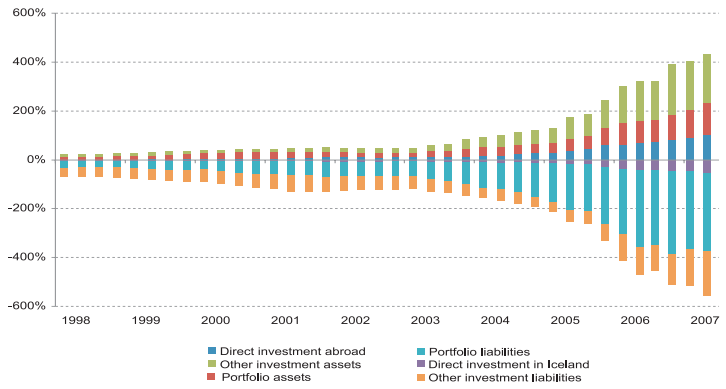
FIGURE 16
EXTERNAL DEBT POSITION, 1980-2006
(AT END OF YEAR AND LATEST QUARTER)

Source: Central Bank of Iceland

There were substantial capital outflows as well as inflows, and consequently the country appears highly leveraged, in the sense that external assets exceed 400% of GDP and external liabilities exceed 500% of GDP. As a result, the factor income flows in the current account are very large and highly sensitive to the rates of return on Iceland's external assets and liabilities. The composition shows significantly more Icelandic foreign direct investment than foreign investment in Iceland (see Figure 17). The most notable feature, however, is the explosion of portfolio liabilities from 2003 onwards, in particular 2005-06. Much of this, we may conjecture, is carry trade.

2 That is, according to official statistics and expressed as a ratio to GDP. We suggest that on both counts, there are mitigating factors.

FIGURE 17
EXTERNAL DEBT AND ASSETS, Q1/1998 - Q2/2007 (AT CURRENT PRICES)



Source: Central Bank of Iceland

Carry trades relate to cross-border investments in high-interest rate currencies funded in low interest-rate currencies. The interest rate difference is the 'carry'. There are two distinct types of carry trade in Iceland. A standard retail transaction would be the purchase by individual foreign investors of medium- to longer-term international bonds denominated in ISK – the 'glacier bonds' issued since 2005. There are also transactions in which institutional investors or hedge funds outside Iceland seek ISK exposure and put highly leveraged transactions through foreign banks, which place the funds in Icelandic banks. The two banks swap out their exposure, and the Icelandic bank is left with ISK deposits which it then uses for domestic funding.[3] The main reason why Icelandic banks have sought these funds is to finance their domestic mortgage lending, and some argue that this demand for funding has been just as important in generating carry trade as foreign investors' search for yield.

The carry trade is highly sensitive to changes in the level and volatility of exchange rates. If carry trades unwind in an abrupt fashion, the very large exposures involved could destabilize financial markets and institutions (Ferguson et al., 2007).

Since carry trades are risky, traders will pursue them only if they generate an expected return sufficient to compensate for the risk. The carry-to-risk ratio (a form of Sharpe ratio) is the interest differential divided by the expected volatility of the exchange rate.[4] Carry trades can unwind if the interest rate differential tightens; if the high-yielding currency depreciates; or if exchange rate volatility increases.

Plantin and Shin (2006) find that carry trades can generate large, persistent deviations of exchange rates from fundamentals as well as the failure of uncovered interest parity. And they show that the exchange-rate dynamics for the high-yield currency exhibit a pattern of slow appreciation punctuated by sharp depreciation, known in the markets as 'going up by the stairs, coming down in the elevator.'

In Iceland, the carry-to-risk ratio has apparently been closely related to the exchange rate. A rise in the attractiveness of the carry trade appears to bring a capital inflow and exchange rate appreciation.

3 See 'Iceland: Selected Issues', IMF Country Report 07/296, August 2007, Appendix I.

4 See Bank for International Settlements Quarterly Review, September 2007.

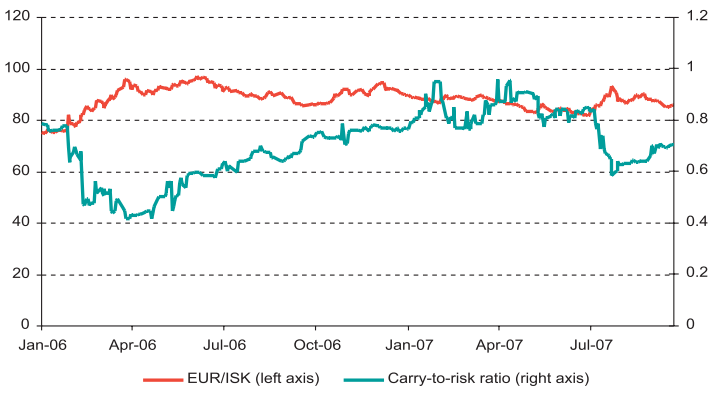


FIGURE 18
CARRY-TO-RISK RATIO VS. EUR/ISK EXCHANGE RATE

Source Central Bank of Iceland

Foreign bond issuance in the Icelandic krona (glacier bonds), directed at the carry trade, has been substantial since 2005. A large segment matured in September, without any market disturbance. The nominal value of the outstanding glacier bond stock now stands at ISK 373 billion. There appears to be some correlation of issuance with the exchange rate, but the causation could go either way, and both are directly influenced by interest rates.

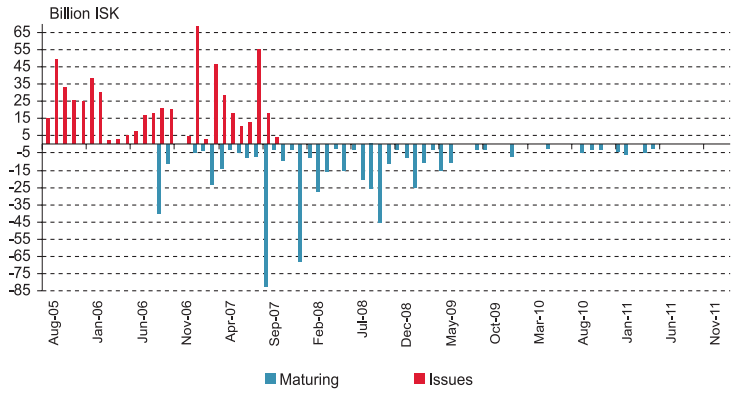


FIGURE 19
GLACIER BONDS

Source Kaupthing Bank Monthly Market Focus, 5 November 2007

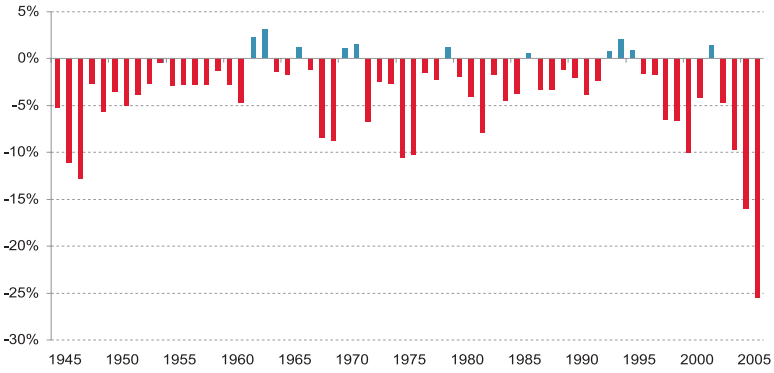
A considerable portion of foreign debt for both non-financial and financial firms is naturally hedged by foreign revenues (Mishkin and Herbertsson say that 78% of total OMX I15 revenues were in foreign currency, and this has not changed much overall). On the other hand, this is not the case for households, 7-8% of whose debt is foreign-currency denominated. It would be unwise and a potential source of instability for household borrowing in foreign currency to continue to rise, unless firms move to paying wages in foreign currency (see below). Monetary policy may contribute to household foreign currency borrowing, insofar as households may expect CBI policy to support the ISK or at least to limit any medium-term depreciation of the exchange rate (this reinforces the interest-rate advantage of non-ISK borrowing). The recent rise in the policy rate after the ISK depreciation of the summer may reinforce such perceptions (see below).

The current account

Official data

Iceland's current account has been in deficit for all but a handful of years in the past half century. There have been several years when deficits exceeded 10% of GDP, but these were usually quickly corrected.

FIGURE 20
CURRENT ACCOUNT BALANCE, 1945 - 2007



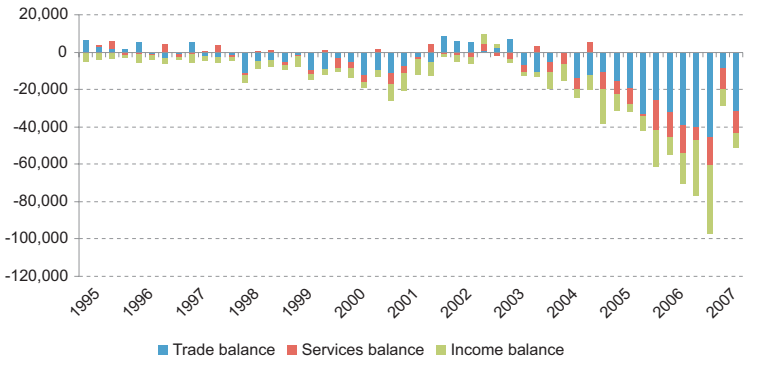
Source: Central Bank of Iceland

Yet it is clear that the deficits for 2005-2006, according to the official statistics, were exceptionally high, and after the 25.5% of GDP deficit of 2006, the CBI projections show 17% for 2007, 14% for 2008, and still10% at the end of the decade.[5] A private forecast is more optimistic, showing 15% for 2007, 11-12% for 2009-2010, with the trade deficit falling from 13.5% in 2006 to 8% in 2007 and 4-5% thereafter.[6]

In addition to the fall in the trade deficit, there has been a significant improvement of the officially measured income balance so far in 2007. Revenues were up strongly, so that although expenditures rose as well, the balance for the first six months was ISK -14.7 billion, as compared with ISK -25.0 billion. in the first half of 2006 (the total deficit on income in 2006 was ISK 90.1 billion). The components of the current account may be seen here:

Among the macroeconomic factors behind these large current account deficits, we need not pay

FIGURE 21
COMPONENTS OF CURRENT ACCOUNT, QUARTERLY DATA IN ISK
(NET CURRENT TRANSFER IS INCLUDED IN FACTOR INCOME)



Source: CBI, Economic Indicators, October 2007.

much attention to the government fiscal balance, which has been in significant surplus (although this is now falling). On the other hand, gross saving, which was running at 20% of GDP in 2002, fell to less than 10% of GDP in 2006.[7] This appears to have been temporary, but it coincided with a peak of investment at 32% of GDP. This was directed primarily at a very large aluminium smelter and hydroelectricity development. The recent cut in the cod fishing quota can also be viewed as an investment, with the same effect on the current account – namely, we can expect significant

5 CBI Monetary Bulletin 2007: 3.

6 Kaupthing Bank *Quarterly Economic Outlook*, 26 October 2007.

7 As noted below, the current account deficit may be overestimated, and gross savings are correspondingly underestimated.

increases in aluminium exports in the medium term and fish exports in the longer term. Judging by consumer confidence surveys, the exchange rate affects the current account also through its effect on consumption: ISK appreciation makes households feel richer, so that consumption rises and imports with it. And there has been a trend appreciation over the past several years (see below). But real estate prices have trended upwards strongly too during this period, and it is hard to disentangle the two effects.

Controversies

There is considerable controversy surrounding the data on Iceland's current account and NIIP. Because the economy is so highly leveraged, factor incomes and expenditures are very large. In the official statistics, interest income and dividends are reported as 13.7 % of GDP in 2006, while expenditure was 22.5 % of GDP. But these figures are hotly debated.

One set of issues is dealt with by the CBI (Svavarsson and Sigurdsson, 2007). There we find calculations of the balance on factor income that mark portfolio equity holdings to market, but not FDI (which is therefore still undoubtedly undervalued, with a corresponding undervaluation of the NIIP[8]). This leads to revising the factor income deficit for 2006 downwards by ISK 49 billion, which takes the current account deficit down by approximately 5% of GDP.

That is of course still very high, even relative to New Zealand (-9% in 2006, previous peak -13.6%), though it begins to look closer to the mid-1970s Norwegian data. But there are two further points that the CBI article excludes. First, some expenditure is part of the profit of firms owned by holding companies registered outside Iceland but controlled by Icelandic residents (there are capital gains tax incentives for such transfers of domicile). One estimate puts this at ISK 100 billion.[9] Adding this to the adjustment above would bring the factor income account into a surplus of ISK 50 billion in 2006, so that the current account deficit would be 13.5 % of GDP – roughly half the official estimate. Second, the banks have made considerable debt-financed acquisitions abroad – the debt service begins immediately, the income accrues with a lag. There are no estimates of this effect. But Egilsson (2007) applies various adjustments (including an estimate of net capital gains) that bring net factor income in 2006 (excluding employee compensation) into the range ISK +10 to +170 billion, so ISK 110-270 billion greater than the official data.

There is evidently very high uncertainty attached to estimates of returns on Iceland's foreign assets. This matters enormously, because of the exceptionally high leverage of the Icelandic economy: net debt was 210% of GDP at end-2004, the highest for any country in the Lane-Milesi-Ferretti (2006) data set; but net equity investment abroad was 88% of GDP, higher than all countries except the United Arab Emirates (whose sovereign wealth fund is now estimated to be approximately USD 800 billion[10]).[11] Our own efforts to estimate the returns on various categories of foreign assets and liabilities (based on the official NIIP and balance of payments data) yield results that are surprising – in particular, for all types of investments, Iceland appears to earn lower rates of return on its foreign investments than foreigners earn on their investments in Iceland. The difference is particularly marked for direct investment. This simply does not correspond to the outstanding profitability and growth of the Icelandic banks and large companies over the past five years.

8 The IMF acknowledges this in para. 22 of the 2007 Article IV Consultation Staff Report. In Appendix I they conjecture that the net equity investment abroad might be undervalued by as much as one-third, which would bring the NIIP below 100% of GDP.

9 Landsbanki, 'Macroeconomic Insight', 5 June 2007.

10 See Portes (2007).

11 The data are cited in Svavarsson and Sigurdsson (2007).

The NIIP has deteriorated much more since 2000 than the cumulative current account deficit for 2000-2006 would indicate. The difference is ISK 200 billion. This is partly because the official statistics value FDI at book value even when it has just been purchased for considerably more – it is in effect immediately written down.

A recent Fitch report on Iceland[12] speaks of a 'widening current account deficit'. Fitch downgraded Iceland's sovereign rating in December 2006 and has not revised it since. In fact, however, the deficit is not widening but falling in 2007, and the official data for 2006 undoubtedly overstated both the deficit and the deterioration of the NIIP. Forecasts differ, but the IMF base case (for example) has the current account deficit falling to 6% of GDP in 2010 – well in the range that Australia and NZ have sustained for many years. The IMF project that the 'official' returns on Iceland's FDI and foreign equity investment will rise significantly. The medium-term depreciation of the ISK assumed in all forecasts will have a negative 'valuation effect', because Iceland has large net foreign-currency-denominated liabilities. But this will have much less effect on the NIIP than on the net external debt.[13]

We conclude that analysis should focus less on the current account deficit and NIIP numbers, more on the resiliency of the financial system and the flexibility of the economy, which will determine whether an adverse shock could lead to a bad equilibrium[14]. We return to this below when considering the shocks of early 2006 and mid-2007. Here we simply note that Iceland's past ability to turn around large current account deficits suggests that the flexibility is there. The current account was -10.2% of GDP in 2000 and two years later had improved by 12% of GDP to +1.5%.

3.2 The exchange rate and the ISK

3.2.1 The nominal exchange rate

The ISK is the currency of a very small country, doubtless the smallest with a floating exchange rate and an inflation-targeting monetary policy regime. Because Iceland is so small, it is also highly open to trade and capital flows, as we have seen. That does not necessarily imply instability, in the sense of high volatility: in fact, across countries one finds openness to trade has been negatively correlated with exchange-rate volatility. One reason is that relatively closed economies are less affected by exchange-rate movements and hence less prone to seek to stabilize the exchange rate. As inflation targeting has spread, however, we may find that empirical regularity disrupted, because central banks will not be willing to sacrifice their inflation performance for exchange-rate stability. On the other hand, the CBI is very conscious of the effect of exchange-rate movements on inflation itself (see Sec. 3.4). This warrants a closer look at both the level and the volatility of the ISK.

From the end of 2001 to early November 2005, the ISK appreciated steadily against the euro, with a total appreciation of 35% (and substantially more against the dollar and most other currencies). Then there was a sharp decline, hitting bottom on 19 April 2006, when the exchange rate with the euro had returned almost exactly to the end-2001 level. This is indeed the 'up the stairs, down the elevator' pattern of a carry trade currency, mentioned above. Yet the annualized daily volatilities have not been exceptionally high (see Figure 22).

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12 A presentation by Paul Rawkins in Stockholm on 7 June 2007.

13 IMF Article IV Consultation Staff Report, Appendix I.

14 See Mishkin and Herbertsson (2006) and Ferguson et al. (2007) on multiple equilibria in the context of financial stability.

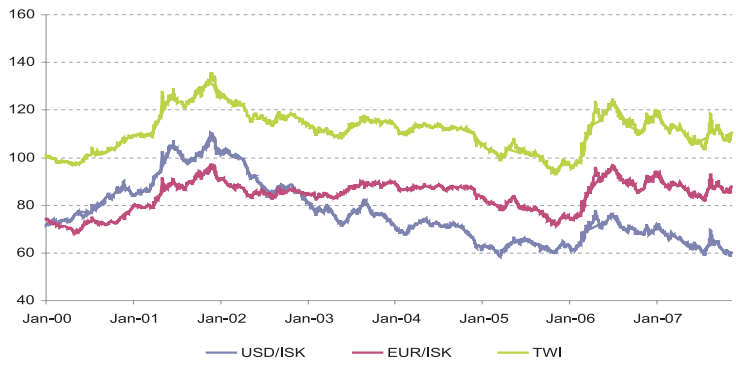


FIGURE 22
ISK/EUR, ISK/USD, TWI

Source: Central Bank of Iceland

There is a high (and recently rising) degree of comovement between the ISK and the NZD and other carry trade target currencies (and negative comovement with JPY and CHF). The following chart is quite striking.

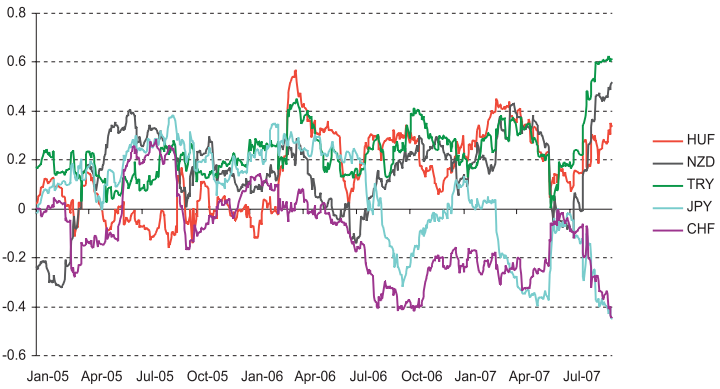


FIGURE 23
CORRELATION OF VARIOUS CURRENCIES WITH THE ISK, DAILY CHANGES (3M MOVING CORRELATION)

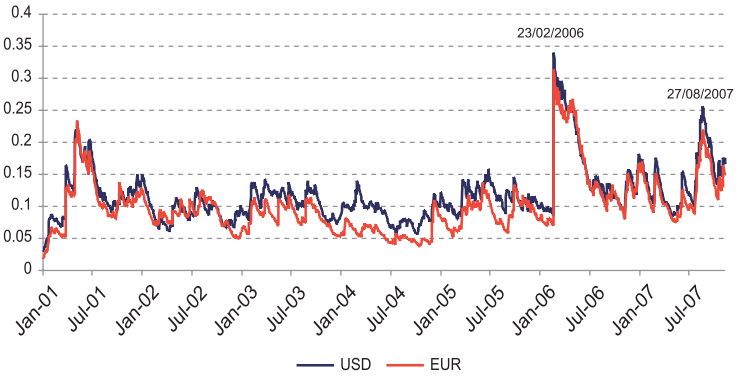
Source: Reuters. From "The Icelandic Economy 2007-2011", Glitnir Research, September 2007.

This is *prima facie* strong evidence that the carry trade has a substantial influence on the exchange rate. That does not mean that the determinants of the exchange rate of the ISK are entirely 'external' – the domestic interest rate is a major determinant of the carry-to-risk ratio. It is also striking, however, that domestic 'news' has recently had little impact on the exchange rate, which responded very little to the recent sovereign rating downgrade and the announcement of a delay in the coming on stream of the major aluminium investment.

The volatility of the ISK has fluctuated within a surprisingly narrow range, with two major recent 'spikes' precisely where one would expect to see them (see Figure 24). It is interesting to note that the volatility in the 'mini-crisis' of February-March 2006 was greater, and the period of high volatility more extended, than in the period of international turmoil in summer/fall 2007. The volatilities of the NZD, SEK, and AUS (exchange rate with USD) are normally in a very similar range – that of the ISK is not exceptionally high. So this is not a particular source of instability for domestic firms and households, relative to other countries.[15]

15 On the other hand, we note that unlike the ISK and the OMXI15 index, the volatilities of Icelandic five-year bond yields are about double those of the 5-10 year bonds in the same countries. This suggests that there is actually considerable underlying stability in the nominal exchange rate. That may be due to monetary policy: see below.

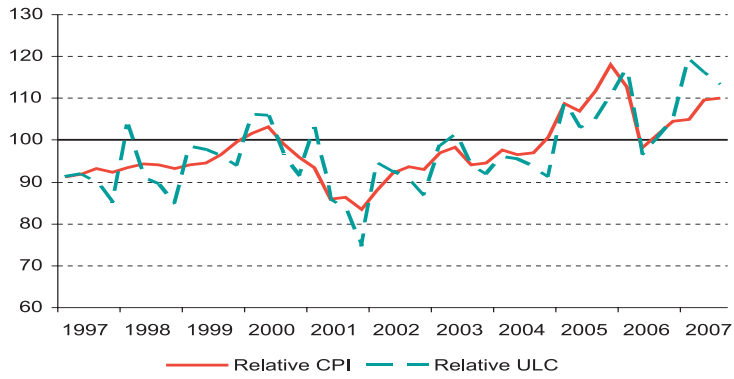
FIGURE 24
EXCHANGE RATE VOLATILITIES



Source: Central Bank of Iceland and authors' calculations

Moreover, whereas the exchange rate dropped precipitously in early 2006, it has been much more stable in the recent turmoil. ISK/EUR depreciated by 12% from 24 July to 17 August; in the following week it recovered half that and has since been fairly flat. Again, this is a strong sign of Icelandic financial resilience in the face of market shocks.

FIGURE 25
REAL EFFECTIVE EXCHANGE RATE (2000 = 100)



Source: Central Bank of Iceland

3.2.2 The Real Effective Exchange Rate

The real effective exchange rate (REER) shows a clear upward (appreciating) trend over the past seven years (see Figure 25). This is to be expected for a fast-growing economy. The REER appreciation came mainly from nominal ER appreciation during 2002-05, but mainly from differential inflation in 2006-07 (until July).

According to the IMF, CPI-linked measures of the REER suggest overvaluation by 7-16%, unit labour cost (ULC) measures by 18-25% (the latter do not fully take account of productivity increases). These estimates were based on 2006 data, when the average level of the index was at 104.2; but at the end of August 2007 it was 106.4. So the required adjustment to reach 'equilibrium' was in the range 9-27%. But the IMF methodology is debatable, as it uses three different methods, one of which gives an overvaluation of only 6-9 % on the basis of 2006 data. Moreover, the required adjustment (or degree of overvaluation) assumes that all the correction to the current account deficit

must come through the trade balance. An improvement in the income balance deficit (which has indeed occurred in 2007) would reduce the estimated overvaluation.

So the degree of REER overvaluation lies in a wide interval that might indeed include zero. If real depreciation is necessary, the ideal adjustment path is clear: a gradual fall in interest rates, a gradual fall in the carry trade, and a gradual nominal depreciation, with the inflation differential disappearing as inflation goes to its target level. But that would not be easy to manage.[16]

3.2.3 Correlation between the ISK and domestic share prices

Iceland having its own currency does not seem to entail significant funding constraints for the banks. Foreign-currency bond issuance, glacier bonds, and the carry trade[17] have provided market funding. But there are equity funding barriers – i.e., foreign investors are generally unwilling to take on both equity risk and currency risk, as long as bank equity is denominated in ISK. Normally, one would also find country limits on foreign institutional investors that are in part constrained by the size of the currency area.

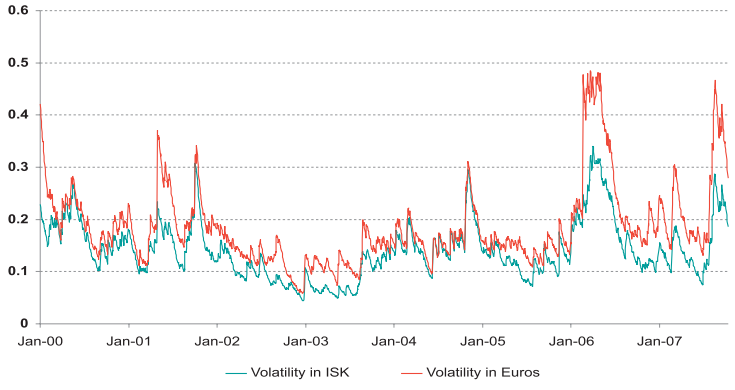


FIGURE 26
OMXI15 INDEX VOLATILITY IN ISK VS. EUR

Source OMX Iceland and authors' calculations

The ISK exchange rate is strongly positively correlated with the OMXI15 index. Thus a currency depreciation is associated with a fall in equity valuations. In fact, we have a stronger result: excess returns (on theOMXI15 relative to either DJ EuroSTOXX or the S&P 500) are positively correlated with the exchange rate (ISK/EUR and ISK/USD, respectively).[18] It is also evident that the volatility of the ICEX index is greater in euros than in ISK.

This is a further strong disincentive to foreign investors who combine equity risk and FX risk. That is, an investor choosing between Icelandic and US or euro-area equities would avoid Icelandic ones, unless he or she were highly risk-loving. According to most participants in the Icelandic financial markets, this is in fact a major reason why it is difficult to attract foreign portfolio equity investment

16 In this context, there are attractions of Goldstein's (2002) proposal for 'managed floating plus' – a regime that combines inflation targeting with some exchange-rate management. And as we suggest below, the CBI seems to have some inclinations in this direction, but its actual policy is open to question.

17 E.g., Glitnir in September 2007.

18 The coefficients are significant at the 5% and 1% levels, respectively. This result is the opposite of that observed for 17 countries (individually and pooled) relative to the United States for the period 1995-2001 in Hau and Rey (2006). This is a further example of the highly distinctive features of the Icelandic financial markets.

to Iceland. And the data bear this out: at end-2006, Iceland's holdings of foreign equity were valued at ISK 904 billion, while foreign residents (some of whom are Icelanders living abroad) held only ISK 354 billion of Icelandic equity, just 16% of the total Icelandic market capitalization.

3.3. Euroisation

We have just seen one reason why the Icelandic financial markets and institutions have increased their use of the euro in various contexts. Some indeed support official adoption of the euro, either as an effect of accession to the European Union, or in explicit euroisation of the economy.

Bank lending in foreign currency is already 63% of total domestic bank lending to businesses (end-August 2007). It is natural for firms that derive a substantial part of their income from exports to finance themselves in foreign currency – the loans are then naturally hedged. But many firms that do not have substantial foreign currency income also borrow in foreign currency, because of the large interest rate differential between Iceland and its trading partners. This does not appear risky to them since the real exchange rate has appreciated over the past several years.

Firms listed on the stock exchange – all of which have a substantial share of foreign income – increasingly keep their accounts in foreign currency in order to avoid the adverse effects of volatility of the ISK.[19] Kaupthing Bank announced on 26 October 2007 that it intends to adopt the euro as its 'functional currency' (in accordance with IFRS) from 1 January 2008. The board of the bank will propose to shareholders that the bank's shares be redenominated in euros.

A new phase in this development is that firms are moving to list their shares on OMX ICE in foreign currency: Straumur Investment Bank has already asked to be listed in euros, Kaupthing Bank has announced that it would list its shares in euros as soon as possible. Other firms such as Bakkavor Group – whose income is wholly in foreign currency – intend to follow suit.[20] This may have little substantive implication for adoption of the euro economy-wide, because these firms are already largely foreign companies; but there will be a psychological impact.

An important reason behind this development is the positive short-term correlation between prices on OMX ICE and the exchange rate, which leads to volatile share prices in foreign currency terms. Not only does this make shares of listed companies less attractive as an investment, but also employee stock options on krona-denominated shares become relatively unattractive.

Icelandic households have traditionally borrowed in ISK. They have increasingly begun to borrow in foreign currency as well, however, in particular to finance their homes and cars. The share of

19 The IMF points out that 'a bank which prepares its accounts in krona may find it difficult to attain the corresponding ratio of foreign items in its Own Funds and RWA without building a positive net currency position' and cites the FSA as saying that to attain the required balance, the three big banks would have had to increase their net foreign currency position by around USD 3.2 billion (IMF, 'Iceland: Selected Issues', Country Report 07/296, August 2007). In fact, however, this increase has already taken place. The FSA calculated that the banks would have to increase their currency holdings by ISK 230 billion over the end-2006 position of ISK 188 billion. They have already raised them by ISK 258 billion.

20 The CBI has delayed these moves on the ground that it cannot clear euro-denominated securities trades because it is not a member of the European System of Central Banks (ESCB). Therefore OMX (the securities registry) has asked the Bank of Finland to take on this role in cooperation with the CBI, but the Bank of Finland cannot provide this service until May 2008. There is also a degree of legal uncertainty regarding whether institutions other than the CBI can do the clearing. It is likely that a provisional solution is reached until the legal basis is clarified.

banks' foreign-currency linked loans to households is still low, at 14%, but 42% of the increase in loans to households over the year to 31 August 2007 were foreign-currency linked. The main driving force behind this development is the high domestic interest rate. Foreign borrowing creates a risk for most households, since generally their income is in ISK. The natural response is for households to hedge that risk by taking some of their wages in foreign currency. Some firms with a substantial foreign currency income already offer this as an option for their employees, and it is likely that labour market partners will discuss such contracts in the coming round of wage negotiations.

There has been a discussion in Iceland for some time about the costs and benefits of adopting the euro as its currency, either through membership of the EU and subsequently EMU or unilaterally. But regardless of policy, the euro is evidently becoming more important in Iceland.

3.3.1 Unilateral euro adoption

Policy-makers in Iceland will have to consider explicitly the option of formally adopting the euro. Euroisation[21], using a stable currency issued by a monetary authority outside the country whose domestic supply is limited to that earned through balance-of-payments surpluses, would be feasible for Iceland. At the end of October 2007, foreign exchange reserves were ISK 157.6 billion, much more than enough to cover base money of ISK 91 billion. Euroisation would have potential advantages relative to a currency board or a pegged exchange rate regime, neither of which would be appropriate for Iceland (indeed, the latter was only recently abandoned). In the euroised economy, speculative attacks are no longer possible, so there is no currency risk, and domestic interest rates no longer incorporate that premium. There are typically lower transaction costs and greater transparency in policy. Using a stable foreign currency may itself implant or reinforce a 'stability culture' in monetary affairs and in private expectations.

There are clear costs as well: the loss of seigniorage revenues, which for Iceland come to between 0.5 and 0.8% of GDP[22]; the absence of a lender of last resort; and the definitive renunciation of an exchange-rate 'escape clause' from overvaluation (an exit option). Moreover, in the short term, a move from the current policy rate of 13.75% to the euro area rate of 4% would be highly destabilising – the Icelandic policy rate would have to converge substantially beforehand.[23]

The European Central Bank and the European Commission oppose euroisation, at least for countries that are members of or might accede to the EU (and thus to EMU, in due course). The Council (Ecofin) opinion of 7 November 2000 asserts that before finally adopting the euro, candidates must fulfill the Maastricht criteria: "any unilateral adoption of the single currency by means of 'euroisation' would run counter to the underlying economic reasoning of EMU in the Treaty. [It

21 The extensive literature on this issue normally speaks of 'dollarisation', but in the Icelandic context it would clearly mean a move to the euro rather than the dollar. The weight of the euro in the 2006 'narrow' trade-weighted effective exchange rate basket was 44.8%, with the pound sterling at 12.8 % and the US dollar at 9.8 % (http://www.sedlabanki.is). A recent, comprehensive paper on dollarisation is Levy Yeyati (2006).

22 Jonsson (2007).

23 A recent IMF conference saw 'little support for Iceland adopting the euro'. In particular, participants stressed that 'the Icelandic economy is not well synchronized with continental Europe and instead faces large idiosyncratic shocks.' On the other hand, 'the high degree of labour market flexibility in Iceland reduced the need for independent monetary policy.' ('Iceland: selected issues', IMF Country Report 07/296, para. 79). And one might add that an active fiscal policy might be easier to operate in a small country like Iceland than in most others. Buiter (2000) claimed that 'the economic arguments favour membership in the EMU, but not the unilateral adoption of the euro…The lack of institutions for ensuring the political accountability of the ECB in Iceland means that euroisation of Iceland is unlikely to happen, except as part of Icelandic membership in the EU.' Much has happened since then – not least, floating the ISK and internationalisation of the Icelandic financial sector.

would] be a way to circumvent the stages foreseen by the Treaty for the adoption of the euro." The DG ECFIN paper for Ecofin, *Exchange Rate Strategies for EU Candidate Countries* (22 August 2000) went further, claiming that the "sequencing entrenched in the Treaty for the adoption of the euro" would be altered, the "principle of equal treatment between present and future as among future member states would be violated" and that negotiating euroisation would alter the *acquis communautaire*.

It is true that once a country enters the EU, its exchange rate policies become legally a matter of common concern – but not before. And using the euro in no way prejudices or impinges on the accession process or the subsequent process of entering into Monetary Union. It cannot run counter to any legal provision of the Treaties. Using the euro is not equivalent to participating in the European Monetary Union (EMU), nor 'unfairly' getting a 'head start', nor does it implicate the European Central Bank in any significant way, except insofar as the euroising country is providing seigniorage to the ECB. Unilateral euroisation cannot affect the credibility of the euro, since the euroising country cannot participate in the economic institutions of EMU.

Iceland is in the position, along with Norway and Liechtenstein ,of being a member of the EEA but not yet, at least, a candidate for EU membership. Thus it should not encounter the EU-ECB opposition suggested above, and indeed there are countries that use the euro and are not (yet) EU members or 'accession countries' (Kosovo, Montenegro). This, however, is perhaps not a 'club' to which Iceland would wish to belong.

The CBI sees relatively little cause for concern regarding informal euroisation, except insofar as it might lead to withdrawal of the banks from the ISK money markets and FX market.

There is an untidy alternative: international companies (and their employees) could shift to using the euro, while the rest of the economy stays on the ISK. This degree of domestic liability dollarisation would be an emerging-market response, not appropriate for Iceland. Moreover, the dynamics of partial euroisation could be unstable: if exchange-rate adjustment is needed, a diminishing local currency base would have to support the required change, which could make people switch even more aggressively out of the currency. And if it were believed that this was a prelude to adoption of the euro, that could provoke major, destabilising capital inflows.

That listed firms have adopted the euro or the dollar as their unit of account or chosen to list in euros does not create a significant problem for monetary policy. Indeed, in some ways it can support the CBI's actions. Currently, the positive correlation between ISK-denominated shares and the ISK discussed above implies that a rise of interest rates leading to an inflow of foreign currency and a rise in the exchange rate may actually be expansionary to some degree, rather than restrictive as intended. A weakening of this correlation may therefore make monetary policy more effective. The correlation, as long as it continues, must be a factor of financial instability: for example, exchange rate depreciation would be accompanied by falls in share prices, both of which have negative wealth effects, and the two could be self-reinforcing in a downward spiral.

3.4 Monetary policy in this external environment

Before the ISK was set afloat in March 2001 its exchange rate was an 'intermediate target' of monetary policy: the exchange rate was seen as one of the primary channels by which policy was transmitted from interest rates to prices, and the bank expressly set an interval within which it allowed the ISK to float.

After floating the krona, the CBI's own description of its monetary policy and instruments does not express any policy regarding the exchange rate of the ISK – there is no official exchange-rate policy. It is quite clear from various statements the Bank has made recently, however, that it still sees the exchange rate as an extremely important part of the monetary transmission mechanism. It has stressed that a sharp fall in the exchange rate would raise inflation and inflation expectations and that this poses a serious risk to the inflation outlook. The Bank has also repeatedly indicated that it would respond to such a fall.[24]

The Bank has lived up to its promise: as Icelandic banks came under pressure in early 2006 and the krona fell sharply the CBI – predicting near-term inflation in double digits - raised interest rates aggressively. The policy rate rose by 0.75 percentage points in March, May and July of 2006 and subsequently by 0.5 percentage points in August and September. To underpin its credibility the CBI, as of *Monetary Bulletin* 2007: 1, publishes not only a predicted policy-rate path, but also a predicted exchange-rate path which it sees as consistent with its inflation forecast. The predicted path of July 2007 saw a near-term strengthening of the krona – predicting more or less exactly the current exchange rate – and then a subsequent gradual weakening of about 5.5% per year through 2010. The most recently predicted path (Nov. 1) is consistent with this forecast.

By its statements the CBI may be regarded as having adopted a policy regarding the exchange rate, *viz*. that of "responding firmly" should the krona fall, in order to restore it to a level the bank sees as consistent with its inflation target. Given the published most likely path for the exchange rate and the absence of statements regarding what the Bank would see as an overly strong krona, this amounts to ensuring that with a reasonable degree of certainty, the krona may be sold at a certain value throughout the forecast interval. With some risk of oversimplifying, the CBI may be seen as having issued a free put option on the krona.

One result is the carry trade, which has added to the difficulties of the CBI in taming inflation. Issuance of so-called glacier bonds began relatively late, in August 2005, but has increased rapidly and the total amount of such bonds now stands at one-third of GDP. Since issuers always hedge against currency risk, the glacier bonds end up – in one way or another – as demand for Icelandic paper. This puts a downward pressure on interest rates, especially in the medium-term range of the spectrum. This may explain why the yield differential Icelandic 5-year T-notes with trading partners' bonds has increased by only 1-1.5% since the CBI began raising its policy rate in 2004, while the policy rate differential has increased by 4.5-5.5% over the same period (see Fig. 27).

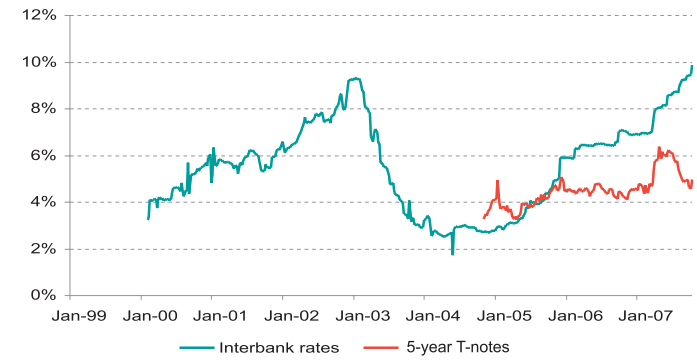


FIGURE 27
INTEREST RATE DIFFERENTIAL
WITH WEEKLY DATA

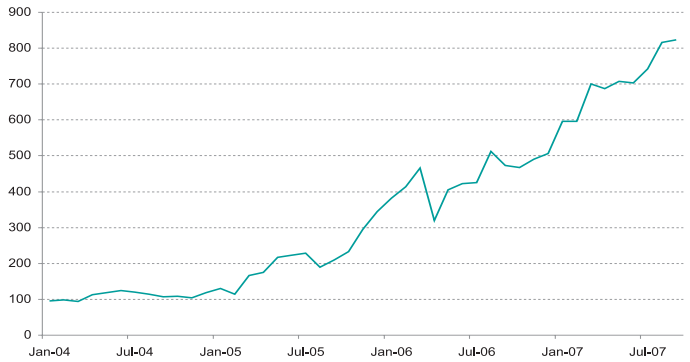
Source: OMX Iceland, Central Bank of Iceland

24 See several recent monetary policy statements in the CBI *Monetary Bulletin*.

The glacier bonds are a part of a larger picture: there has been substantial position-taking in the krona through other channels. The banks' net position in foreign currency-denominated forwards and options, now at 69% of GDP, provides an indication of the overall level of position-taking in the krona (see Fig. 28). Interestingly, the rapid rise of this measure began at the same time as the differentials on short- and medium-term interest rates parted ways, at the end of 2004[25], and it also seems related to the carry-to risk ratio (see Fig. 18 on p.46). This rapid inflow of foreign currency has limited the effectiveness of monetary policy by halting the progression of the policy rate throughout the spectrum of (non-indexed) interest rates, as well as through the wealth effect of exchange-rate appreciation.

The well-intended forthrightness of the CBI regarding the exchange rate has probably undermined its fight against inflation. A rational response of market participants to the implied krona put is of course to utilise the differential between domestic and foreign interest rates. Carry-traders have responded strongly, which has weakened transmission of the policy rate. Furthermore, Icelandic households and firms now borrow increasingly in foreign currency.

FIGURE 28
NET POSITION OF BANKS IN CURRENCY FORWARD AND OPTIONS CONTRACTS



Source: Central Bank of Iceland

3.5 Effectiveness of monetary policy

All aggregate indicators of economic activity in Iceland over the last few years show buoyant growth; average annual demand growth 2004-2006 was 11%, and GDP grew by 5.8% annually over the same period (see Table 12). Aggregate credit measures tell a similar story: annual average credit system lending growth was 21% over these years. Despite a substantial inflow of immigrant labour, since mid-2005 the labour market has been extremely stretched, with registered unemployment below 2%; the measure of the balance between production capacity and output – a key indicator used by the CBI – shows a similar picture.

The task of the CBI is to keep inflation in check; more precisely, it has the mandate to aim for an annual rate of inflation of 2.5% as measured by a 12-month increase in the CPI. This has clearly not been an easy task (see Fig. 29). Inflation, as measured by the CPI, has been high since early

25 The total position-taking on the krona at end-December 2004 was ISK 111 billion, and by September 2007 it had risen to ISK 823 billion. This measure is thought by market participants to be closely related to the carry trade, for which there are no agreed estimates (see Bank for International Settlements Quarterly Review, September 2007).

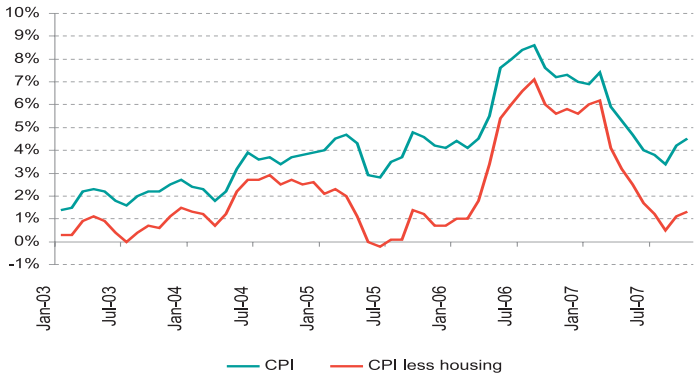
TABLE 12: MACROECONOMIC INDICATORS
VOLUME CHANGES ON PREVIOUS YEAR UNLESS OTHERWISE STATED

GDP and its main components	2004	2005	2006	2007e
Private consumption	6.9	13	4.4	3.6
Public consumption	2.2	3.5	3.9	3.2
Gross fixed capital formation	28.5	33.9	19.8	-19.5
National expenditure	9.9	15.4	9.2	-3.4
Exports	8.4	7.2	-5.1	4.2
Imports	14.4	29.4	10.1	-8.6
Gross domestic product	7.7	7.1	4.2	0.9
Other key aggregates				
Current account balance, % of GDP	-9.8	-16	-25.5	-18
Fiscal balance, % of GDP	0.2	5.2	7	4.8
Unemployment, % of labour force	3.1	2.1	1.3	1.1
Inflation, 12-month %-change in CPI	4	4.4	6.9	4.8

Source: **Central Bank of Iceland**

2004 and in excess of the set 4% upper tolerance limit since mid-2006.[26] By far the most important single driver of CPI-inflation has been a sustained rise in housing prices. Annualised inflation less the housing component has been 2.7% since May 2004 when the CBI began the process of raising its policy rate,[27] whereas the overall measure for the same period is 5.3%. In particular, since May 2007 CPI-inflation less housing has been at or below the target of 2.5% (see Fig. 29).

FIGURE 29
12-MONTH CHANGE IN CONSUMER PRICE INDEX



Source: Statistics Iceland

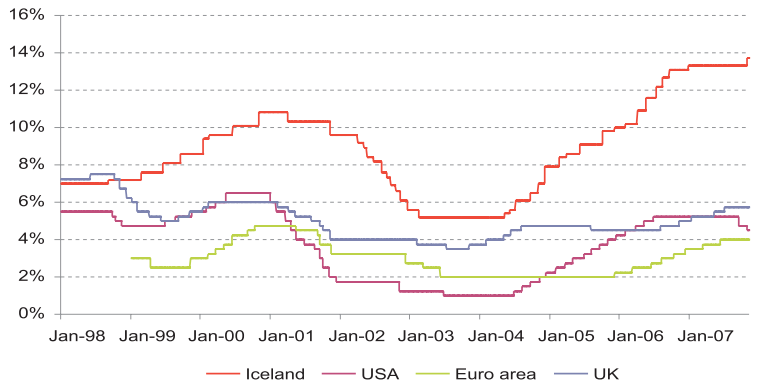
In an effort to combat inflation, the CBI has raised its policy rate, in steps, by a total of 9.4% since May 2004. The current nominal interest rate is now 13.75% (see Fig. 30).[28] This steep rise has brought short-term interest rates to rather extraordinary heights when compared with Iceland's main

26 If inflation deviates by more than 1.5% from the 2.5% target, the Central Bank is obliged to submit a report to the Government of Iceland where it explains the reason for the deviation, how it intends to respond and when it expects the inflation target to be reached again. The report is made public.

27 CBI Monetary Bulletin 2007:3 (CBI forecast).

28 As of July 2007 the bank announces its policy rate in terms of nominal interest rate rather than yield.

FIGURE 30
CBI POLICY RATE



Source: Bloomberg

trading partners and short-term real rates are at approximately 10%, a very high level which is bound to entail substantial costs in terms of output and jobs if sustained over a longer term. Yet, the inflation measure the CBI focuses on has remained rather stubbornly at around or over 4%.

The CBI has had a difficult task. Fixed business investment grew by an average of 25% per annum in 2004-2006. While fiscal policy cannot be said to have been slack – the average annual public sector surplus was 3.6% of GDP in these years – it has been procyclical: the government has used part of its surplus to lower personal income taxes, boosting private consumption which increased by 8% on average over 2004-2006. Furthermore, a more-or-less sustained rise in important asset markets – housing, land and stocks – has supported and fuelled growth in private consumption. This year, however, overall demand is set to fall and GDP is predicted to grow by only 0.9%. This should help the CBI in its endeavour.

The CBI has been fighting an uphill battle and has not been helped much by fiscal policy. Yet, even under these circumstances, monetary policy seems to have been rather ineffective; the current policy with real short-term interest rates at 10% would seem to be likely to lead to an abrupt halt of economic growth in most developed economies.

It is important to consider the underlying reasons for this ineffectiveness. One important sector to look at in this regard is the housing market. Prices of residential housing have grown at 20% p.a. on average since August 2004, when the commercial banks entered a market until then dominated by the Housing Financing Fund (HFF) and started competing with the state-owned Fund.[29] The rise in the price of housing has slowed down considerably, to 5-10% this year from its peak of 40% around mid-2005, but housing is still the most important component of inflation.[30] Apparently, monetary policy has had very limited effect on this important component of prices and the underlying demand for housing which drives the price developments. The reason for this anomaly is that the policy rate has, at least until very recently, had little impact on the financing of residential housing. Most existing residential housing loans are indexed with fixed indexed interest rates. Also, the HFF, still the single most important lender in the residential housing market with approximately the same market share as all the banks combined, has raised its indexed rate to a very limited degree – it is now lower than

29 The housing component of the CPI has not risen this fast. The reason is that it takes real rates on HFF loans into account when rent on owner occupied housing is imputed.

30 It is of course debatable whether the price of housing and other assets should be included in the reference measure of inflation. Most European countries use the Harmonised Index of Consumer Prices, which does not include housing inflation.

it was before the entry of the banks into the housing market.[31] The banks have, however, recently upped rates on their krona indexed loans. Households have responded by borrowing increasingly in foreign currency to complement HFF loans. Households have therefore been able to circumvent interest rates influenced by the CBI to finance their investments in housing.

Demand for housing has continued to rise, driving prices steadily upwards. Supply has also been on the rise, and if residential housing price inflation should slow down or even be reversed in the coming months it is caused as much by increased supply as by reduced demand due to restrictive monetary policy. It is obvious that the HFF – financing about one-half of all housing investments – is a serious obstacle for the effective transmission of monetary policy to this important market. It is also clear that foreign borrowing of households also limits the CBI's ability to influence, not only the housing market, but also households' overall demand. Of the increase in households' debt to banks over the last year (August 2006 – August 2007) 42% of the increase was due to a rise in foreign-denominated loans, whereas 63% of the increase was in indexed loans; noting that these two percentages sum up to more than 100% it is clear that non-indexed ISK-denominated debt of households decreased over this period.

The widespread practice of indexation – very much related to the problem regarding the HFF – also limits the effectiveness of monetary policy in fighting inflation. Indexation was initially introduced in Iceland to neutralise the adverse effects of inflation on financial assets; now it tends to neutralise the intended effect of monetary policy. It has proven to be hard for the CBI to influence indexed interest rates, although an effect has been seen recently, especially on the shorter end of the spectrum. The underlying reason is that non-indexed rates such as the policy rate of the CBI only influence indexed rates indirectly. As explained in the following section, managing inflation expectations is crucial in affecting indexed rates. Since the longer-end of the non-indexed spectrum has also been relatively unaffected by the policy rate it is even more difficult to manage indexed rates.

31 The current rate on HFF indexed loans is 4.85%. The fund actually lowered interest rates in April 2007. The HFF is able to do this by selling indexed bonds with very long maturities – mostly 40 years.

Indexation of financial contracts in Iceland

Indexation of deposits and loans has a long history in Iceland. It began as a response to the hyperinflation of the late 1970s and early 1980s. Bank deposits at regulated interest rates had been rapidly eroded by inflation, and savings were falling along with confidence in the krona as a store of value. An important purpose of indexation was to re-establish that confidence. Even if hyperinflation is a thing of the past, indexation is still very important in domestic credit in Iceland, especially on long-term contracts. For example, at commercial banks, indexed loans account for almost 60% of domestic krona lending.[32]

Indexed loans and deposits carry an indexed – often referred to as real – interest rate which comes on top of inflation adjustments to nominal values. To take a simple example, suppose a loan of 1 million kronur is to be repaid with 4% indexed interest after one year. The CPI is 100 when the loan is issued and there is 5% inflation, so it stands at 105 when then loan is repaid. At repayment date the inflation-adjusted principal amounts to ISK 1.05 million (the inital 1 million plus 5%, or ISK 50,000) and the interest payment is ISK 42,000 (4% of 1 million = ISK 40,000, adjusted for 5% inflation). Therefore, the total payment is ISK 1.092 million. Alternatively, the total nominal payment with 4% interest would be ISK 1.04 million, which, adjusted for 5% inflation, becomes ISK 1.092 million.

There should of course be a relationship between indexed and non-indexed rates on corresponding contracts: the indexed rate plus inflation expectations plus a compensation for inflation risk should equal the non-indexed rate. For example, if a five-year indexed bond has a 4% indexed rate and inflation expectations over the five year term are 2.5% then a corresponding non-indexed five-year bond must have at least a 6.6% nominal rate to be competitive with the indexed bond with no premium for risk. The more volatile and uncertain is inflation, the larger the additional risk term will be. Given a certain non-indexed interest rate, high-inflation expectations and/or a volatile inflation outlook (the two usually go hand-in-hand) will tend to push the indexed rate down. Conversely, in order for a rise in non-indexed rates to be translated into a rise in indexed rates the former must rise by more than the combined change in inflation expectations and risk premium. It is obvious that for monetary policy to work in a highly-indexed system it must be able to influence inflation expectations – no easy task.

32 Krona lending is approximately 50% of total domestic lending of the commercial banks.

CHAPTER 4

CONCLUSIONS AND RECOMMENDATIONS

4.1 The banks: successful and resilient

The internationalisation of the Icelandic financial sector proceeded from market liberalisation, European integration, and privatisation, on the base of a strong, funded pension system and an exceptionally healthy institutional framework. The banks have been highly entrepreneurial without taking unsupportable risks; good supervision and regulation have contributed to that, using EU legislation. And they have grown spectacularly fast. Nevertheless, the rapid financial sector expansion and growing cross-border activities, together with macroeconomic tensions, led to market suspicion and the mini-crisis of early 2006.

After the initial shock, the Icelandic financial sector responded quickly and decisively:

- deposit ratios are higher
- market funding has longer and more dispersed maturities
- cross-holdings have been mainly eliminated
- there is much greater transparency and information dissemination about the banks' structure and activities.

On the same criteria, Icelandic banks come out well in a comparison with Nordic peers – and their overall and core profitability is higher. That is despite the high CAD and Tier 1 ratios with which they counterbalance their equity exposure. They are well hedged against volatility in the krona. Stress tests by the FSA indicate that the banks can withstand quite extreme movements in market variables specific to Iceland. The banks have negligible exposure to the US subprime market, structured finance products, and related financial vehicles that have hit many financial institutions hard recently. Most fundamental, the banks exploit strong competitive advantage, arising from their entrepreneurial management, flat management structures, and unusual business models.

Yet in spite of their strong performance, Icelandic banks have lower ratings than their Nordic peers, and a much higher risk premium is being placed on their debt during the present turmoil. We see no justification for this in their risk exposure. This suggests that either the markets are not fully aware of their situation or markets place a *country premium* on the banks.

4.2 Macroeconomic imbalances and the country premium

A large current account deficit and negative net international investment position are no doubt important reasons for the country premium. One might say the economy is running at an excessive pressure of demand, but the fiscal balance is positive and the government has very little net debt. The external imbalances are therefore due to decisions of firms and households, and it is often maintained that private decisions are optimal and should not be a cause of concern, whatever their aggregate effect.

In principle, however, there are legitimate reasons for concern. Asymmetries of information can lead to herding effects that initially exaggerate capital inflows, then exacerbate the 'sudden stop' if investors react to news by reversing the flows. Informational problems can also lead to self-fulfilling speculative attacks on the currency. And deposit insurance or the expectation of lender-of-last-resort bailouts can create moral hazard in the banking system, hence overborrowing and the accumulation of *excessive private debt* – that is, the private decisions are not in fact optimal. Down the road could be a currency crisis, a debt crisis, or both.

Our analysis concludes, however, that it is *reasonable to see the Icelandic current account deficit and negative net international investment position (NIIP) as sustainable*, assuming appropriate policies are followed. There are also important issues of measurement that lead us (like other observers) to regard the official data as overestimates of these deficits.

There is very high uncertainty attached to estimates of returns on Iceland's foreign assets. This matters enormously, because of the exceptionally high leverage of the Icelandic economy. Our own efforts to estimate the returns on various categories of foreign assets and liabilities yield implausible results. For *all* types of investments, Iceland *appears* to earn lower rates of return on its foreign investments than foreigners earn on their investments in Iceland. The difference is particularly marked for direct investment. This simply does not correspond to the outstanding profitability and growth of the Icelandic banks and large companies over the past five years.

One example of misleading aggregate data is that the NIIP has deteriorated much more since 2000 than the cumulative current account deficit for 2000-2006 would indicate. The difference is ISK 200 billion. This is partly because the official statistics value FDI at book value even when it has just been purchased for considerably more – it is in effect immediately written down to book value. Again, we find it implausible that the Icelandic investors are systematically overpaying.

4.3 Resilience and stability

We conclude that analysis should focus less on the current account deficit and NIIP numbers and more on the *resilience* of the financial system – which has proven to be excellent – and the flexibility of the economy, where Iceland has a proven track record over many decades. The resilience, demonstrated both in early 2006 and since the summer of this year, is based on a strong institutional structure, flexibility, the quality of supervision and regulation, the quality of assets, and a good funding structure.

In an economy so small and so highly leveraged in international financial markets, one might expect high volatility of financial variables – the exchange rate, equity prices, and bond yields. We do not find especially high volatilities. We focus in particular on the Icelandic krona, which many see as an important risk factor for Iceland and the Icelandic banks. In fact, the krona is not much more volatile against major currencies than the currencies of New Zealand, Sweden and Australia. So this is not a particular source of instability for domestic firms and households, relative to other countries. The banks are now hedged more or less perfectly against currency volatility, so their exchange rate risk is primarily associated with loan quality. Icelandic firms have a long history of borrowing in foreign currency. For many this provides a natural hedge, others are in a strong market position and can pass exchange rate effects into prices. Households have increasingly been borrowing in foreign currency, but it is still only a minor share (7-8%) of overall lending, so the overall risk is rather small.

The krona does represent a disadvantage for listed firms because it tends to fluctuate with equity prices. Exchange rate volatility is therefore added to stock market volatility. This makes shares in firms listed in ISK less attractive for foreign investors, so equity financing is more costly for firms. These firms are now moving to adopt the Euro as their listing currency and to use the euro rather than the krona in other ways as well.

4.4 Recommendations

There has been a discussion in Iceland for some time about the costs and benefits of using the euro as its currency, and the euro is evidently becoming more important in Iceland. Iceland is not a member of the EU, so at present the option of joining the European Monetary Union is not open to Iceland. The possibility remains, however, of unilateral adoption of the euro as legal tender – 'euroisation'. Euroisation would have potential advantages. In the 'euroised' economy, speculative attacks are no longer possible, so there is no currency risk, and domestic interest rates no longer incorporate that premium. There are typically lower transaction costs and greater transparency in policy. Using a stable foreign currency may itself implant or reinforce a 'stability culture'.

There are clear costs as well: the loss of seigniorage revenues, which for Iceland come to 0.5-0.8% of GDP; the absence of a lender of last resort; and the definitive renunciation of an exchange-rate 'escape clause' from overvaluation. Moreover, in the short term, a move from the current policy rate of 13.75% to the euro area rate of 4% would be highly destabilising – the Icelandic policy rate would have to converge substantially to the Euro rate beforehand.

We do not recommend for or against unilateral euroisation. This is an issue that requires extensive political as well as economic debate. We do, however, caution against the *possible destabilising consequences of a gradual shift to using the euro*.

The CBI is on an inflation target of 2.5%. Inflation driven by housing prices has however remained above the target for some time.[1] The CBI has not had an easy task given the strong demand growth in Iceland in the last few years. And fiscal policy has not been supportive of monetary policy. Yet the policy rate of the CBI is very high compared with trading partners of Iceland, and monetary policy appears to be ineffective. There are several underlying reasons. First, the Housing Financing Fund is a major obstacle to the transmission of monetary policy. We agree with many

1 Mishkin and Herbertsson (2006) recommended targeting the HICP (as in the euro area and the UK), which excludes house prices.

other commentators, including the IMF, that *the HFF's role should be changed so that it no longer competes with banks in mortgage markets*. Second, price indexation of financial contracts is widespread and tends to weaken monetary policy. Third, the CBI has undermined its own policy by linking its decisions to exchange rate developments. The high policy rate leads to distortions in the financial system, such as the large carry trade. If only for that reason, *we urge the CBI to reconsider its strategy*.

We strongly recommend efforts to improve the collection of data to *account better for the balance of international income and the international investment position*. Some of the problem may be due to international standards that are inappropriate for countries with the financial structure of Iceland. In that case, the authorities should seek a reconsideration of those standards. The CBI should also publish parallel accounts for items such as equities where the most glaring inconsistencies arise.

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