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Lessons from a collapse of a financial system

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1 Introduction

The collapse of Iceland's banking system in October 2008 became one of the symbols of the world financial crisis. This paper describes the development that lead to the build up of a large internationally active banking system in a nation of 300 thousand inhabitants in just over five years. More importantly, we analyse this development to draw lessons for other countries. Iceland is a microstate with very small bureaucracies and a small pool of experts in finance and economics, yet fully integrated into the world economy and we discuss the unique problems this causes for policy making. The Icelandic experience also casts light on the task of regulators when a government is actively trying to foster the creation of an international financial centre. We also address the implications of the Icelandic financial system for cross-border banking regulation and supervision and the European passport for financial services. . Finally, we analyse the dangers that free capital flows pose to small economies, the lessons to be learned about the costs and benefits of having a floating exchange rate. Finally, the experience shows the dangers that free capital flows pose to small economies. In particular there are lessons to be learned about the costs and benefits of having a floating exchange rate.

The rapid rise of the Icelandic banks is unprecedented in the recent history of banking. This was a nation with no history of international banking, with both recently privatised banking system and liberalised capital market allowing perfect capital mobility for the first time in its history. The pace of the expansion of Iceland's banks was dramatic by comparison to other countries that have experienced capital inflows and turbulence following market liberalisation and the privatisation of financial firms, such as Finland and Sweden in the early 1990s. The total assets of the banking system went from amounting to 150% of GDP at the end of 2003 to 744% of GDP at the end of 2007, a period during which real GDP rose by 5.5% each year on average.[1] We will explain how this could happen, why the banks' owners decided to let it happen and why the authorities did not intervene, and instead acted as cheer leaders for the process.

The rapid growth of the banking system created a rapid expansion of domestic credit. Average share prices rose at an annual growth rate of 43.7% between 2003 and 2007. There was also a smaller scale housing bubble, where house prices grew by an average of

[1] During the first ten nine months of 2008 this ratio was to increase even further to around 1000% of GDP due to the depreciation of the currency which raised the value of foreign assets and debt of the banking system measured in domestic currency.

16.6% per year during this period. Simultaneously, aggregate demand increased also, private saving fell and the current account deficit was 14.3% on average over this period, reflecting rapid consumption and investment growth.

The emergence of Iceland's internationally active banking system offers lessons about political economy. The presence of firms and banks domiciled in such a small country but with an operating space in much larger countries opens the possibility for firms to outgrow the government institutions that are intended to monitor and regulate them. Iceland's banking regulator was seriously understaffed and lacking in the experience needed to adequately supervise the very large banking system. The same applies to government ministries and the political class who were out of their depth in managing an economy based on international finance.

We draw lessons from the Iceland experience for regulation and supervision and the European passport system. One of the Icelandic banks – the Landsbanki – set up branches in the U.K. and the Netherlands, two others – Kaupthing and Glitnir – set up subsidiaries in Scandinavia, the U.K. and on the mainland of Europe. Both Landsbanki and Kaupthing operated in the U.K. but the former chose to set up branches while the latter decided to acquire a local bank and turn it into a subsidiary. To the extent the analysis of Cerutti et al. (2007)[2] applies, this may mean that Landsbanki put greater emphasis on being able to shift funds and profits across borders.

Most international arrangements governing the conduct of member countries depend explicitly or implicitly on the presumption that member countries conduct their affairs according to some accepted norms. If member countries significantly violate these norms it undermines the integrity of the process, as research has confirmed.[3] The European approach to financial regulation has proven to be fragile as discussed for example by the de Larosière (2009) report, and recognized in the proposals for the European Systemic Risk Board, European Banking Authority, and European Securities and Markets Authority.

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[2] Cerutti et al. (2007) studied banks' choice whether to set up branches or subsidiaries using a database on the operations of the world's top 100 banks in Latin America and Eastern Europe. They find that foreign banks are less likely to operate as branches where regulation makes it difficult to establish new banks; branches are more common in host countries with high corporate taxes because of the greater ease allowed by this structure in shifting profits across borders; branches are more likely when foreign operations are smaller in size and do not have a retail orientation; branches are less common in countries with highly risky macroeconomic environments, where parent banks seem to prefer having limited liability provided by subsidiaries; finally, faced with risks stemming from possible government intervention and other major political events, parent banks are more likely to operate as branches.

[3] These norms can be in nominal terms as most of them were set forth in the Maastricht treaty or in real terms such as the convergence of laws, institutions and market structures (Wyplosz, 2006).

The Iceland experience sheds some light on this fragility. The failure of the Icelandic banking system – and the resulting economic crash of that country with spillovers in the United Kingdom and the Netherlands – demonstrates the inherent weaknesses in the European common market and European passport for financial services. The success of this arrangement depends on the proper recognition of the externalities inherent in common regulatory systems coupled with proper monitoring and enforcement mechanisms.

Finally, there are lessons about the conduct of monetary policy. The response by the Central Bank of Iceland (CBI) operating in a regime of flexible exchange rates and an inflation targeting is a case study of the difficulties faced by small open economies that have chosen to maintain independent currencies. The post-collapse experience is also an example of how an independent currency stops being a part of the problem and becomes a part of the solution in reducing the extent to which employment has to contract to establish a current account surplus.

2 Past and present

In this section we will briefly describe developments in Iceland as a background to the sections that follow where the lessons from the episode will be drawn.

2.1 From rags to riches

Iceland used to belong to be among the less developed European countries until the early 20th century and remained one of the least financially developed ones until recent banking adventures. However, the country enjoyed economic growth throughout the 20th century that propelled the country to one of the richest societies in the world. In 1904 the PPP-adjusted GDP per capita was similar to that of Ghana today while at the beginning of the 21st century it had surpassed that of Denmark, the results of growing at 2.6% on average in the 20th century (Gylfason et al., 2010). This growth was fuelled by access to foreign finance through a private bank founded at the turn of the 20th century making possible the mechanisation of the fishing fleet; the extension of the fishing limits from three miles in 1904 to 200 miles in 1976; the utilisation of hydroelectric energy; and long working hours of a labour force whose education was steadily improving.[4] In

[4] See OECD, Labour Force Statistics.

addition, the country took advantage of international trade by joining EFTA in 1970 and the European Economic Area in 1994.[5]

2.2 Privatisation and liberalisation

Before the liberalisation of Iceland's credit markets in the 1990s, capital was rationed between different industries, nominal interest rates were set by the central bank which was controlled by the government, and real interest rates were kept negative until the late 1980s. This resulted in excessive investment where capital was available, for example in the fishing industry, and the existence of unproductive, unprofitable firms with easy access to capital in addition to chronic inflation and periodic devaluations of the currency. The banking system was heavily regulated and politicized, consisting of large state-owned banks along with smaller private banks. The largest banks were each affiliated with a political party or parties. The same political structure applied to the central bank, with its three governors each representing one of the political parties. Prior experience or education in the fields of finance and economics, central banking, banking or business was not required. Although economic growth remained robust, inflation remained high and volatile until the 1990s along with sporadic exchange-rate devaluations. While the domestic currency thus did not do well as a store of value the CPI indexation of loan contracts and even bank deposits managed to induce supply of long-term lending and protect saving.

The 1990s saw the liberalisation of the economy. Capital markets were established, capital controls abolished and the commercial banks privatized. This followed the decision to make interest rates market determined in the early 1990s. By joining the European Economic Area (EEA) in 1994, Iceland became a part of the European single market in goods, services, capital and labour and adopted EU laws and regulation.

The decision to join the EEA affected the development that followed by making Iceland remove capital controls; by allowing Icelandic banks to set up branches in EU countries; and by paving the way for the banks to borrow from foreign banks because they were, supposedly, subject to EU regulation.

[5] The EEA is a sort of half way membership of the EU. The members of the EEA besides Iceland are Norway and Liechtenstein, and membership in the EEA provides many benefits for member countries, including full participation in the European passport.

2.3 A bridge too far

The expansion of Iceland's banking system did not occur impromptu in a vacuum. In the 1990s a new generation of politicians came to power. A glimpse of their mindset can be found in a manifesto from 1979 titled "The Revolution of Libertarian Thought"[6] where they explain the attraction of free markets and private enterprise. These were young libertarians who revolted against the state-run and corrupt system they had been raised in. In the 1990s they had the chance to implement their agenda in a systematic fashion. By the end of the decade a programme of privatisation and liberalisation of the economy had been all but completed, it only remained to privatise the state banking system. This process was similar to that of many countries, transforming their economies from heavy state control to a more free market system.

Around the turn of the century the idea surfaced that banking could become the third pillar of the economy, the first two being fishing and energy-intensive industry. One of the contributors to the 1979 manifesto and an informal adviser and confidant of Iceland's prime minister at the time (also a contributor) published a book in 2001 titled "How Iceland can become the richest country in the world"[7] were he articulates the idea that Iceland could become rich by having low taxes and develop an international financial centre. However, while many countries decided to promote finance, Iceland's financial sector soon became too big and lacking in supervision.

Gylfason (2010) discusses the problematic privatisation of the banking system 1998-2003 when the two large state banks, Landsbanki and Bunadarbanki – later Kaupthing – were privatised. The banks were sold to individuals who were related or affiliated with the two parties in power. Interestingly, the new owners of Landsbanki borrowed a large part of the cost of from the Bunadarbanki and vice versa.[8] Gylfason maintains that the close ties between the banks and the political parties convinced the civil service not to interfere with the banks' operations.

The prime minister appointed a commission in 2005 to evaluate how Iceland could become an international financial centre. The committee was headed by the chairman of the board of Kaupthing Bank and its report came out in October 2006 with the title *International financial operations in Iceland*. The report was presented, perhaps fittingly in the

[6] Gunnarsson (1979).
[7] Gissurarson (1991).
[8] According to BGH (2010) the owners of Landsbanki borrowed 2/3 of the purchasing price from Bunadarbanki, later Kaupthing (chapter 5, BGH, 2010).

National Theatre on 10 November 2006 and three government ministers were subsequently given the task to implement its policy proposals. This idea had become so ingrained by the time of the collapse that the then minister of commerce stated on 10 April 2008, less than six months before the collapse: "The fact that the financial service industry has become bigger than the combined agricultural and fishing sectors tells us simply that derivatives and bonds have become our sheep and cows" (see Benediktsdottir, Gunnarsson and Hreinsson, 2010, BGH (2010) from now on).[9]

The expansion of Kaupthing, which turned out to be by far the largest bank at the time of the collapse, is described in Jonsson (2009), the bank's chief economist then and now. He describes how the ambitious plans of its chairman of the board were revealed at a meeting with employees in March 1999 when the chairman declared that he anticipated a 25-fold increase in equity and a roughly 15-fold increase in the bank's balance sheet within five years and that the bank would open offices in many countries. His business model was to combine investment and commercial banking – the joke among the employees was that their bank was going to be as if Danske Bank and Goldman Sachs had a child. The bank engaged in highly profitable and risky proprietary trading. According to Jonsson, this was based on the belief that credit risk tended to be undervalued by banks all over the world while the risk of holding equity positions was overvalued. Jonsson describes how at the end of the chairman's speech the audience was left in a state of disbelief, to which he responded by saying "If you think you can, you can."

But as Hyman Minski pointed out, every bubble needs a story to justify it. The President of the Republic was one of those who best articulated the story and the reasons for the successes of Icelandic businesses. The following quote is taken from a speech he gave at the Walbrook Club in London in 2005:

> Recently, I have often found myself cornered at various functions, especially here in London, and pressured to explain how and why daring Icelandic entrepreneurs are succeeding where others hesitate or fail, to reveal the secret behind the success they have achieved…
> How has it been possible to achieve such success in so many different fields and in

[9] His predecessor uttered the following even more revealing comment on 26 April 2007: "What would Egill Skallagrimsson have said about this? Egill did in his day appreciate material wealth. There is no doubt that this old chieftain and Viking will smile when he observes the current generation of business Vikings. The nation is proud of their great success and enjoys the tangible and intangible benefits that are brought home by their enterprise. I wish Icelandic financial firms and organisations good luck and continued success in their foreign expansion" (see BGH, 2010). For anyone who is not familiar with the Icelandic sagas, Egill Skallagrimsson was one of the great Viking warriors, capable of fighting seven men at the same time.

> such a short time, in areas where we definitely had no prior competitive advantage, areas such as pharmaceuticals and prosthetics, banking and finance, retail and fashion – to name only a few.
> Of course, many factors have contributed to the success of this voyage, but I am convinced that our business culture, our approach, our way of thinking and our behaviour patterns, rooted in our traditions and national identity, have played a crucial role. All of these are elements that challenge the prevailing theories taught in respected business schools and observed in practice by many of the big American and British corporations.
> We are succeeding because we are different, and our track record should inspire the business establishment in other countries to re-examine their previous beliefs and the norms that they think will guarantee results. The range of Icelandic success cases provides a fertile ground for a productive dialogue on how the modern business world is indeed changing.

In conclusion, he summarised his argument:

> The track record that Icelandic business leaders have established is also an interesting standpoint from which to examine the validity of traditional business teaching, of the theories and practice fostered and followed by big corporations and business schools on both sides of the Atlantic. It enables us to discuss the emphasis on entrepreneurial versus structural training, on process versus results, on trust versus career competition, on creativity versus financial strength.

Before saying: "You ain't seen nothing yet."

Thus a myth was created that everyone had vested interests in believing until the economy collapsed in 2008 after which the heroes of previous years became the villains and such speeches were not repeated.

2.4 The failure of economists

Although many analysts observed and warned about the dangers of the general macroeconomic imbalances that developed in the pre-crash period, many of the warning signs were missed. From reading papers and reports from this period[10] one can conclude that the economics profession did identify some of the critical problems that made Iceland vulnerable to the international financial crisis. [11] An insightful report by Merrill Lynch published in early March of 2006 says that "With prospects for a soft landing for the Icelandic economy uncertain, we foresee credit pressures building and the potential for further spread widening at the banks." [12] The conclusion however was that the banks

[10] Some of these papers are included in Aliber and Zoega (2010).
[11] IMF Country Report No. 05/366, Iceland: Selected Issues "Corporate Leverage: How Different is Iceland?" August 2005. Finds that Icelandic firms are much more leveraged, no matter which indicator is used, than firms in the other Nordic countries. Debt-to-equity ratio was for example more than three times higher in 2003. CDS spreads for the banks increased in late 2005 and the European bond market became increasingly inaccessible for the banks.
[12] Merrill Lynch, Richard Thomas. 7. March 2006. „Icelandic Banks. Not What You Are Thinking"

would receive sovereign support if crises would arise, and that the sovereign was also able to give that support. They also concluded that this fact was still boosting the senior debt rating of the banks above what their stand-alone financial strength indicated. The IMF discussed the risks to the financial system in their staff report later in 2006, reporting that "views differ regarding the risks to the outlook, with staff and the central bank concerned that in the absence of decisive and coordinated policy actions, financial market turbulence could lead to a sharp and severe downturn. The fiscal authorities, however, saw this risk as low, given their view that market turbulence early in the year reflected a temporary misreading of Iceland's fundamentals."[13]

A key shortcoming of the economic analysis and advice during the period until the beginning of 2006 is an under-appreciation of the risks posed by the rapidly expanding banking system. Thus most economists providing analysis on Iceland, while aware of the macroeconomic imbalances, appear not to have spotted the danger caused by a banking system that lacks a credible lender of last resort until the expansion was well underway in 2006. As Buiter and Sibert pointed out in 2008, the banking system was for this reason unstable, but by 2008 the fate of the banking system had been sealed.

Another shortcoming was not to link the rapid growth of asset prices sufficiently strongly with the danger of bank insolvency. The imminent dangers posed by solvency issues were only first highlighted by Aliber in May 2008 (see Aliber, 2010). While the analysts realized that the bursting of an asset price bubble would damage banks' balance sheets, it was not realized to what extent the asset price bubble and the expansion of the banking system were interrelated. The banks were also heavily dependent on foreign financing, to the degree that a sudden stop to the inflow of capital would translate into a modern bank run rendering the banks insolvent regardless of the value of their assets. Perhaps more importantly, it was not realised at the time how the banks had used accounting tricks to inflate their equity base, making the buffer that they had against losses almost entirely illusionary. We devote Section 4 to the discussion of these activities. Information on the extent of related party lending was also not available.

2.5 Exploding banking system

The combined balance sheet of the three biggest banks grew by a factor of eight from the beginning of 2004 to the middle of 2008.

[13] IMF August 2006 „Iceland: 2006 Article IV Consultation—Staff Report; Staff Statement; and Public Information Notice on the Executive Board Discussion."

Table 1. Annual asset growth in euros 2004-2008

	Glitnir	Kaupthing	Landsbanki
Average annual asset growth	50%	61%	51%
Average annual organic growth	41%	39%	47%

Source: BGH (2010).

The banks grew both by acquiring foreign financial institutions and organically,[14] as can be seen in Table 1. Lending expanded most notably to foreign firms[15] and domestic holding companies. Table 2 shows changes in the ratio of the assets of the banking system to GDP from end of 2003 to August 2008.

Table 2. The size of the banking system

Date	Total Assets (ISK billions)	GDP (ISK billions)	Assets/GDP
2003*	1,293	841	1.54
2004*	1,796	928	1.93
2005*	3,105	1,026	3.03
2006*	4,552	1,168	3.90
2007*	9,739	1,309	7.44
2008M02	10,172	1,478	6.88
2008M04	11,730	1,478	7.94
2008M06	12,574	1,478	8.51
2008M08	12,787	1,478	8.65

Source: Central Bank of Iceland and Statistics Iceland. * end of year value. 2008M02 refers to February 2008.

During their initial expansionary phase, the banks financed their growth by borrowing extensively in the European bond market. This borrowing was made possible by credit rating based on their high CAD ratios and supported by the sovereign's good AAA rating. In the two-year period 2004-2005, the three biggest banks borrowed around 21 billion EUR in foreign debt securities markets, or about two times Iceland's annual GDP at the time. Most of the issuance was in the form of debt securities with a maturity of 3 to 5 years with interest rates of only 15 to 25 points over the benchmark interest rate (BGH (2010), chapters 7 and 21).

[14] Most notably in 2004 and 2005 when Kaupthing acquired the Danish bank FIH Erhversvsbank and the British bank Singer & Friedlander. Around the same time Glitnir acquired the Norwegian BN Bank in 2005.

[15] Foreign listed firms, this does not indicate the nationality of the owners of the firms, who the SIC commission found often to be Icelandic (chapter 8 BGH 2010).

Following the publication of negative reports by ratings agencies at the beginning of 2006[16] the banks access to the European securities market became increasingly limited, and did not open up fully again. Later that year, however, the banks had good success in selling securities in the U.S. medium term note market, where they issued bonds amounting to over 6 billion euros. The cost of financing had however gone up by 50-60 basis points, which was hefty in the very liquid financial market at the time. The Icelandic banks were now paying interest rates comparable to emerging market financial institutions, which had much lower credit ratings than the Icelandic banks. This made their bonds attractive as components of CDO structures[17]

When the global crisis of 2007 gathered momentum, foreign deposits – the Icesave accounts by the Landsbanki and the Edge accounts by Kaupthing – became an important source of financing. Icesave retail deposits were primarily used to finance a sharp decline in the more rating-dependent wholesale deposits in the UK and Netherlands, while the deposits in Kaupthing Edge were a new source of funding for Kaupthing.[18] The banks also resorted to short-term collateralised borrowing from the CBI and the Eurosystem. The latter borrowing was done through the Central Bank of Luxembourg, where all three of the largest banks had subsidiaries.

Over the almost five year period from the end of 2004 until the failure of the three large banks they issued bonds amounting to almost 50 billion euros. This is about four times the GDP of Iceland at the time. The banks managed to borrow this much because they were commercial banks with a high CAD ratio domiciled in a country where the sovereign had a good credit rating. In addition the country enjoyed solid annual GDP

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[16] A Fitch Ratings published report published on February 22 says that Fitch has revised the outlook on Iceland's long-term sovereign rating to negative from stable. Fitch describes the macroeconomic imbalances and raised concerns about how well the broader financial system would cope if the economy suffered a hard landing. Moreover, Fitch points out that the rest of the economy is significantly indebted, yet Icelandic banks and businesses continued to pursue ambitious expansion plans abroad funded by borrowing abroad. Fitch notes that Iceland's net external debt is higher than virtually any other Fitch rated sovereign, while its external liquidity ratio is among the weakest. Lastly, they point out that the banks remain heavily dependent on foreign funding and could ill afford to be shut out of international capital markets for any length of time. Another report written by economists at the Danske Bank (Christensen et al.), appeared in March 2006 titled "The Geyser Crisis" is also quite explicit in warning about the dangers facing the country. They say that Iceland's economy is the most overheated in the OECD area and that there has been a stunning expansion of debt, leverage and risk-taking that is "almost without precedents anywhere in the world."

[17] „Lehman exposure was included in around 2,600 so-called mezzanine CDOs that were rated by Standard & Poor's. WaMu exposure is included in 2,100 such instruments and Icelandic banks are part of several hundred, Mahadevan noted." "Corporate CDO threatens bank capital, credit spreads." Reuters, 22. October 2008. and (BGH(2010), chapter 7)

[18] BGH (2010), chapters 7 and 18

growth of about five percent.[19] The implicit sovereign support was factored into the ratings of the banks, as earlier mentioned, so they were rated above what their financial strength would have suggested.[20] Similarly when it came to foreign deposits financing, the banks advertised that the accounts were covered by the Icelandic deposit insurance fund in accordance with EEA (European Economic Area) regulations. Here again there is free riding on assumed security of the payback of the financing.

Several factors combine to make the Icelandic case unique and explain why the Icelandic banks failed so spectacularly. First, unlike many other nations with an outsized banking system such as Switzerland and Luxembourg, the institutional memory of running a modern banking system spans years not centuries, affecting both the quality of supervision and the management and internal operations of the banks. [21] Secondly, in contrast to Switzerland which also has a very large banking system, the stock of external debt was very high and denominated in foreign currency. Third, in contrast to some other countries with outsised banking systems like Luxembourg, all banks were headquartered in Iceland. Fourth, the Icelandic banks grew very rapidly which affected the quality of their loan portfolios In addition to that a significant part of the capital appears to have been weakened by the banks themselves financing it, creating a false impression to creditors and depositors for a shield against losses. Fifth, the Icelandic banks lacked a lender of last resort since their balance sheet had outgrown the foreign reserves of the CBI and the ability of the sovereign to recapitalise the banks. Finally, the quality of banking supervision turned out to be woefully inadequate, as discussed below.

2.6 Risk-seeking behaviour

The expansion of the banking system cannot be explained by the president's mythology and the government' stated intent of creating an international financial centre alone. The owners and managers of the banks must have an economic incentive to borrow and enlarge their balance sheet.

Risk-seeking behaviour lies at the heart of the expansion of Iceland's banking system. In particular, the risk of a depreciation of the currency, and the credit risk directly connected to that, was not reported in the accounts. This created an interest-rate spread

[19] Consolidated general government gross debt at nominal value, outstanding at the end of the year, was only 26% of GDP at the end of 2005 (Source: Eurostat).
[20] Merrill Lynch, Richard Thomas. 7. March 2006. „Icelandic Banks. Not What You Are Thinking"
[21] Mark J. Flannery: Iceland's Failed Banks: A Post-Mortem (SIC report 2010)

between Iceland and many other countries, which the banks exploited to generate very high accounting profits. It also made monetary policy ineffective as we will discuss below.

2.7 Looting the banks from the inside

The Icelandic banks shared some of the features that according to Black (2005) characterise banks that are being looted from the inside: They grew very fast; made bad loans at high yields; they were highly leveraged; and had low bad-debt reserves. The distinction between looting, on the one hand, and profiting in the short run from the underreporting of risk, on the other hand, by the definition of Black (2005), depends on whether the owners anticipated the eventual bankruptcy of the banks. It is very doubtful that the owners and managers of the Icelandic banks anticipated eventual bankruptcy in the banks' expansion phase, while they may have done so in the last year of the banks' existence.

Akerlof and Romer (1993) describe how banks can take advantage of deposit insurance and other implicit or explicit backing by the state. The owners can take in deposits, pay themselves dividends greater than the net worth of the business, and then leave the government to pay off the resulting debts. There are various strategies used for exploiting deposit insurance and other explicit and implicit state backing; make high-interest high-risk loans, buy junk bonds, buy highly leveraged firms where a large part of their value is accounting goodwill, and then pay high salaries and dividends from the false accounting income. Akerlof and Yellen (1993) add to this list other methods of extracting resources from a firm; making loans to outsiders who then share the proceeds with the owners and asset purchases or exchanges at exaggerated prices involving the bank's owners. These methods all sound familiar to those with knowledge of the Icelandic banks.

Akerlof and Romer (1993) describe the credit expansion in Chile as resulting from looting by the owners of banks and the associated businesses under their ownership. The government of Chile had fixed exchange rates in 1979 while allowing unhindered capital inflows and outflows but inflation persisted and soon created an overvalued real exchange rate and the expectation of a depreciation of the nominal exchange rate. The interest rate differential that was required to maintain the fixed exchange rates provided a profit opportunity for the banks and their owners. A bank could borrow abroad in a foreign currency and due to its state guarantee enjoy low interest rates. The bank could

then lend out the money in loans denominated in foreign currency at somewhat higher interest rates to a local firm that then created a currency mismatch on its balance sheet when it invested in domestic assets profiting from either the much higher domestic interest rates or rising asset prices. Clearly, the firm enjoyed accounting profits created by the difference between the interest rate on its outstanding loans and its loan from the bank and this profit is recorded on its books but there is no allowance for the expected loss due to exchange rate depreciation; hence accounting profits exceed economic profits. The same applies to the bank. It does not increase its allowances for bad debt in spite of having lent money to the firm that is likely to default if the currency depreciates. The owners of both the bank and the firm can now extract resources from their companies because of the inflated accounting profits. In the Chilean case, as in the Icelandic case, the bank owners were frequently among the firm owners – the banks were related to the borrowers ensuring that all the gains from the transaction accrued to the owners of this group of firms.

As a matter of fact, the Icelandic banks did not make allowances for losses on their foreign currency loans in excess of what they did in the case of their domestic currency loans despite the fact that many of the borrowers did not have any cash flow in foreign currency, adding currency risk to the credit risk. Much of the loans in foreign currency were to holding companies, in fact they lent more to these companies than they did to households.[22] The holding companies then often invested in stocks, typically Icelandic krona stocks, which rose rapidly in value during the credit expansion. These unrealised capital gains were recorded in the company accounts and contributed to very high accounting profits, which were extracted through dividend payments. This behaviour constitutes a underreporting of risk in the short run but has the effect of exaggerating the accounting profits of both banks and the holding companies.

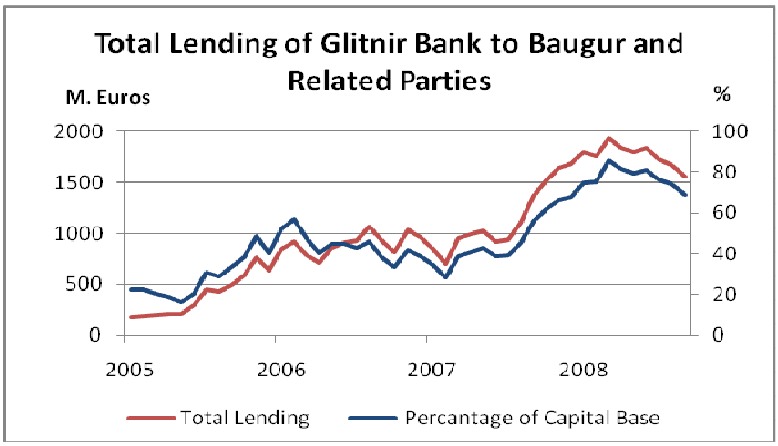
The owners of the Icelandic banks presumably did not anticipate their demise during the banks' expansionary phase. However, as the collapse approached, the behaviour of the banks' owners can only be characterised as looting in the definition of Akerlof and Romer; the owners trying to extract resources from the banks to serve their own interests at the expense of foreign creditors and the Icelandic taxpayers.

Most obvious was the fact that the owners of the banks still had good access to borrowing despite the financing difficulties the banks were facing after mid- year 2007.

[22] The outstanding loans to holding companies were far in excess of one year's GDP at the time of the collapse when loans to households amounted to one year's GDP (CBI).

This is most blatantly obvious when it comes to the largest owner of the smallest of the three big banks, Glitnir Bank.[23] After this owner and related parties increased their stake in Glitnir significantly in the spring of 2007, lending to the group grew by leaps and bounds, more than doubling in euros from June 2007 to June 2008, see Figure 1.[24] During the same period Glitnir bank's liquidity position in foreign currency became increasingly dire.

Figure 1. Total lending of Glitnir to its main owner



Source BGH (2010), chapter 8.

In addition lending increased from money market funds owned by Glitnir, where ownership of bonds issued by the owner doubled in the period from June 2007 to June 2008. During that same period the total assets of the funds declined (BGH (2010), chapter 14). It is worth noting that the owner defaulted on bonds owned by several money market funds as early as March 2008. More inventive ways were also used to fund firms related to the owner. One was to allow two holding companies to enter into a futures contract on one of the owners affiliate's[25] bonds, amounting to a total of 12 billion ISK (130 million euros using end of 2007 exchange rates), both firms had no assets and only posted collateral of 700 million ISK (7.6 million euros). This collateral was in large part borrowed from a small Icelandic bank, Iceabank. To hedge the contract Glitnir Bank bought the bonds in question, hence lending the affiliated firm the money,

[23] This is *Baugur Group Inc.*, the owner of many high-street stores in London; Baugur Group was a large owner of Glitnir through ownership of FL Group.
[24] Note the figure is in euros, the decline in debt in 2008 is hence to some extent due to decline in their Icelandic krona debt as the krona started to depreciate.
[25] The name of this company was FL Group. It was an investment fund formed when new owners of Icelandair, the national carrier, decided to split it into an investment fund and an airline.

hence with about 95% of the risk of the loan borne by the bank. This was not counted as a liability of the affiliated firm in Glitnir's large-exposure reports to the Icelandic FSA.[26]

A large owner of Kaupthing Bank[27] had been able to finance its shares in the banks through Citibank but as the share prices in Kaupthing went down Citibank started to demand payback or increased collateral. From the fall of 2007 to May 2008 Kaupthing lent the owner the money to pay up the debt with Citibank. During that time the owner's debt with Kaupthing rose from 250 million euros to over 500 million euros. Similarly Landsbankinn lent 50 million euros to a firm owned by one of its largest owners to pay a margin call made by Deutchebank in June 2008, with the final payment in September 2008.

Companies in Iceland were also "looted" by the definition of Akerlof and Romer (1993), both through the more traditional ways of excessive dividend payouts, high salaries and the provision of benefits such as expensive automobiles and private jets. There were also more blatant forms of resource extraction, such as the case where an owner of a limited liability corporation was bought out by other owners with money borrowed from the corporation.[28] These owners would then use their own holding companies as vehicles in order to avoid ever being held responsible for these loans. In this case one owner walks away with money taken from the company which later becomes bankrupt making the creditors foot the bill. There were also instances in which a corporation bought its own worthless shares from an owner, which is of course more straightforward.[29] In sum, a limited liability corporation borrows money from a bank, a way is found to tunnel the money to the owners of the firm via dividend payments, buybacks, wages or other means of tunnelling, and then the corporation defaults on its debt.[30]

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[26] In general the BGH (2010) report found that the banks violated laws by making their outstanding loans to related parties exceed 25% of the CAD. In so doing they used accounting tricks to define the term "related parties" too narrowly.

[27] This was *Egla Invest BV*.

[28] This happened when Ingunn Wernersdottir sold her share in Milestone. The payment came from Milestone, but was not accounted for as a deduction in equity. (Morgunblad 16. September 2009).

[29] When 1998 ehf. bought Hagar out of Baugur Group hf. in the summer of 2008, Baugur Group Hf. used 15 b.ISK of the purchasing price to purchase stock back from its owners. At the time Baugur Group hf. was already defaulting on some of its debt.

[30] One of the most publicised cases of rent extraction was the appearance of Elton John at a fiftieth birthday party in January 2007 of one of the banks' owners.

2.8 The collapse

Iceland's banking system collapsed over a period of two weeks in October 2008 and the stock market was almost completely wiped out with over a 75% decline in the main stock market index during those two weeks. At its lowest level the stock market index was less than 5% of its July 2007 high.[31] The currency market seized to function and the external payment system froze. Eventually, Iceland's banks were vulnerable because of their interconnectedness, weak capital base, and because the sovereign was unable to help in a crisis. The combination of an oversized banking system and the lack of a credible lender of last resort served to coordinate the run on the banking system.

The *Special Investigation Commission* delivered its report on 12 April 2010 (BGH (2010), see http://sic.althingi.is/). The report describes the causes of the collapse of Iceland's banking system in vivid detail. [32]

2.9 Losses

The total assets of the banks were 182 billion dollars three months before the crash which is about 1.8 times the assets of WorldCom before its failure in 2002 and almost three times the assets of Enron before its failure in 2001. Taken as one entity the failed banks would rank third in the US history of bankruptcies, with Lehman (691 billion dollars) and Washington Mutual (328 billion dollars) come in first and second. As separate entities, Kaupthing (83 billion dollars) would rank 5th, Landsbanki (50 billion dollars) 9th and Glitnir (49 billion dollars) 10th. The total loss to creditors was around 47 billion euros (Source: Financial Services Authority of Iceland, FME). Domestic deposits were fully government guaranteed – whether held by domestic national or foreigner – while the status of depositors of foreign branches remains uncertain. This is due to the emergency legislation passed in October 2008.

The collapse of the banks had consequences for foreign creditors and international relations. Deposits held by the Landsbanki Icesave accounts in the U.K. and the Netherlands amounted to around 7 billion pounds sterling or 8.5 billion euros (using current euro-sterling exchange rate) at the time of the collapse. Bondholders, mostly foreign banks, also suffered losses.

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[31] NASDAQ OMX Iceland (Icelandic: Kauphöll Íslands) or ICEX, index for all stock on the Icelandic stock exchange (OMXPI)

[32] See also Danielsson and Zoega (2009a and 2009b) and Zoega (2008) for a description of the collapse of Iceland's financial system and Gylfason (2010) on some of the lessons.

Relations with the governments of the U.K. and the Netherlands were strained by the episode. These governments decided to compensate depositors in their respective countries beyond the minimum required 20,887 euros but demanded that the Icelandic government take responsibility for the insurance up to the minimum amount of 20,877 euros by borrowing from the U.K. and the Netherlands the foreign currency needed to honour the deposit insurance.[33] Although it currently appears that the assets of the Landsbanki may cover the amount insured, negotiations about the terms of the loan are still ongoing. [34]

2.10 The external asset position of Iceland

In order to further explore the allocation of post-crisis losses we can compare the net external asset position of Iceland before and after the crash. The external debt of Iceland is currently close to 300% of GDP, about twice as high as the external debt of Greece, Latvia and Hungary, to take a few problematic examples. However, there are substantial external assets. Moreover, the gross external debt has fallen from the order of 500-600% of GDP in 2007.[35]

The figure below shows the evolution of gross external assets and debt as well as the net asset position as a share of GDP. The ratio of net external debt to GDP ranges between 50% and 100% between 2003 and 2005; exceeds 100% in 2006 and is 230% of GDP in 2008, the year of the collapse. When the banks are included, this ratio rises to 392% in 2009 and 387% in 2010 due to the collapse in the value of foreign assets. However, without the banks, the net external debt goes down to 52% in 2009 and 39% in 2010.

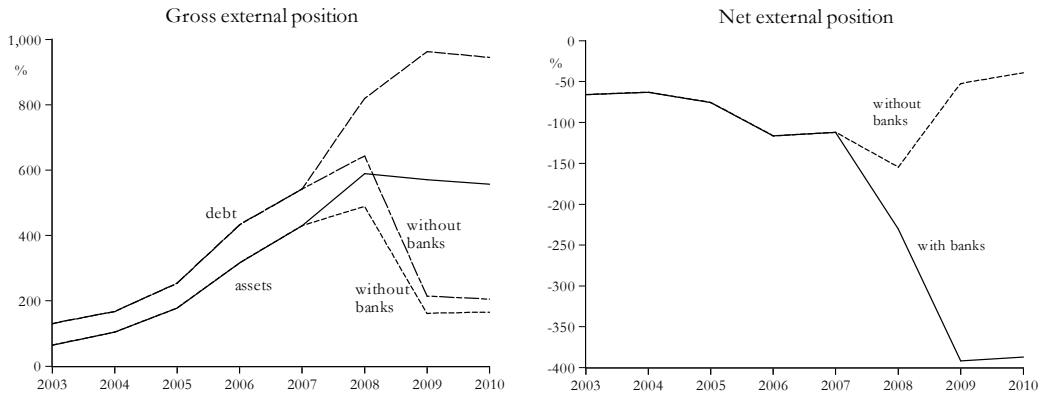
It is interesting to compare the current net asset position to the position at the beginning of 2003 when the banking adventure was starting. The net position measured in domestic currency in the second quarter of this year is -571 billion ISK or -3.5 billion euros. In comparison, the net asset position in the first quarter of 2003 was -544.7 billion

[33] In negotiations between the Icelandic government and the U.K. and the Netherlands, these countries have demanded that they will also be compensated for the amount that they have chosen to compensate depositors in excess of the 20,877 euros per deposit from the bank's recovered assets.
[34] Note that even though the assets of Landsbanki will suffice to cover the amount insured that does not include interest rates on the "loan" from the UK and the Netherlands. Those claims will not be priority claims on the estate of the bank. Hence the importance of the negotiations about the loan terms for the Icelandic tax payers.
[35] These and other numbers in this section are taken from the website of the Central Bank of Iceland, www.sedlabanki.is, unless other sources are cited.

ISK or -6.4 billion euros using the exchange rate at the end of that quarter. Put this way, the net debt has been slashed in half during this period.

It follows that the net asset position of the country may be somewhat better today than what it was at the beginning of 2003. However, it should be noted that these numbers do not take into account the foreign ownership of domestic-currency assets that stem from the failed banks – such as bank deposits – that are now under the ownership of foreign creditors. This amount is uncertain at the time of this writing.[36] It also does not include the Icesave debt to the U.K. and the Netherlands that still has to be negotiated.

Figure 2. The external position of Iceland



Source: Central Bank of Iceland.

Moreover, there are vulnerabilities that are described in a recent IMF staff report.[37] Thus there are imbalances between sectors; the government and the Central Bank have accumulated considerable debt and pay higher interest rates on this debt than they can earn on foreign assets; the pension funds have significant foreign assets (35% of GDP according to IMF (2010)); and while the new banking system has very limited foreign assets and liabilities, the business sector – having suffered losses on its asset side – has liabilities that exceed assets. For this reason it is not clear that the inflow of interest income will always match the outflow of interest expenditures.

On the other hand Iceland's position is better than what Figure 2 indicates for several reasons. First, there are some multinational businesses that are domiciled in Iceland and

[36] However, the leftovers from the carry trade are included in the figure.
[37] See IMF (2010).

the debt of these companies is apart of the country's gross external debt, yet their operations largely take place abroad thus a current account surplus is not needed to service their debt. This debt is about half of the external debt of the business sector (77% of GDP according to IMF (2010)). Second, the foreign direct investment liabilities are concentrated among exporters, especially in the energy-intensive industries. There remains the external debt of businesses that do not have foreign-currency earnings but this is only 5% of GDP (IMF, 2010).

The government's gross external debt now exceeds 80% of GDP (IMF, 2010), which includes loans from the IMF and the accompanying loans from the Nordic countries and Poland as well as the net present value of a government guarantee of the Icesave deposit insurance. The short term impact of this debt is partially mitigated by the fact that the IMF loans and the accompanying bilateral loans have not been spent.

The point can be made that the external position is surprisingly good in light of the losses that occurred and the accumulated current account imbalances in the previous five years. The country ran a current account deficit in every year between 2003 and 2009. These deficits are shown in the table below.

Table 3. The current account deficits

Year	GDP in billion ISK	Current account (% of GDP)	Current account in billion ISK	Current account in billion euros	Current account in billion euros*
2003	841	-4.8	-40.2	-2.2	-2.9
2004	929	-9.7	-90.3	-1.0	-1.2
2005	1027	-16.0	-164.0	-0.5	-0.6
2006	1169	-24.2	-282.7	-0.3	-0.4
2007	1309	-16.7	-217.5	-0.4	-0.4
2008	1478	-18.7	-276.5	-0.5	-0.5
2009	1501	-3.6	-54.6	-3.3	-4.4
SUM	8254	-93.7	-1125.8	-8.2	-10.4

Source: Central Bank of Iceland. * Denotes present values in 2009.

When summed up, the deficits come to 8.2 billion euros using July exchange rates for each year and 10.4 billion euros in present value (2009) terms using a 5% discount rate. If we convert this sum into Icelandic kronur using July 2009 exchange rates we get an accumulated debt of 1863 billion ISK kronur which is 124% of GDP (1501 billions in 2009).

The sum of the cumulative current account deficit and the change in the net external position provides a rough estimate of the contribution of capital inflows to the pre-crisis

boom. This is summarised in the table below where we also take into account the expected burden of a settlement with the U.K. and the Netherlands regarding the Icesave accounts.

Table 4. Foreign finance of domestic activities

	billion euros
Cumulated current account deficit 03-09	8.10
Change in net asset position from Q1 03 to Q4 10 (6.4-3.5 billion euros)	2.9
Net inflow	11.9
Icesave debt	-1.7
Corrected inflow	10.2

However, we should note that two of the largest commercial banks are now in foreign ownership; the country's credit rating has been shattered – government debt is now listed as non-investment grade by Fitch – and its access to international financial markets curtailed, at least for the time being; and the government has taken on very significant debt making drastic expenditure cuts and tax increases necessary.

We should also note that there is uncertainty about the form of any eventual agreement with the U.K. and the Netherlands regarding the compensation of the depositors of the Icesave accounts. The present value of the likely debt coming out of such as agreement is around 17% as shown in Table 4 of GDP (IMF, 2010). Ongoing renegotiations which include an interest holiday for some years, suggest that the ultimate cost could be significantly lower (IMF, 2010). However, uncertainty will remain about the value of assets recovered from the failed bank and hence eventual liability of the government. A bad asset recovery will further damage the credit rating of the government.

2.11 Domestic losses and the government debt

The collapse of the banking system has caused significant redistribution of wealth within the country. The collapse of the stock market has reduced wealth and the collapse of the currency and the ensuing inflation has increased both household debt and business debt because of indexation to the CPI and exchange rates. The market capitalisation of the stock market was equal to 200% of GDP at the end of 2007 (Olafsson and Petursson, 2010), with a 75% decline in the stock market index, we can roughly estimate that the wealth lost amounted to 150% of GDP. More importantly, household debt was around

100% of GDP according to the Central Bank (225% of disposable income) of which 13% were foreign currency loans that doubled when measured in domestic currency from the beginning of 2008 to the end of 2009, which implies that the domestic value of the debt went up by 13% of GDP. Around 80% of household debt was indexed to inflation and the price level increased by 27% from the beginning of 2008 to the end of 2009, making the stock of debt go up by around 27% of GDP. Corporate debt was over 300 percent of GDP at end of 2007, and around 70% of bank loans to corporations are foreign exchange linked. Bankruptcies and debt forgiveness will lower these ratios over time in addition to debtors meeting their obligations. Foreign creditors take on losses due to the deterioration of the bank's loan books, while the sovereign may then have to inject capital into the new banks if actual losses exceed expected losses.

The government reduced its debt during the bubble years, and gross general government debt was only 29.3% at the end of 2007. The government has taken on debt during the crisis. It helped recapitalise the banking system by injecting an amount of 12% of GDP into the new banks and it was forced to recapitalise the central bank by an amount of 11% of annual GDP (see Olafsson and Petursson, 2010). In addition there is the Icesave debt, the gross debt to the U.K. and the Netherlands amounts to 40% of GDP (or 17% of GDP once expected asset recover has taken place, see IMF (2010)). Thus the direct cost of the bank crisis is 40% of GDP (using the 17% figure for Icesave) and the total liabilities of the government due to the crisis 63% of GDP (using the 40% figure for Icesave).[38] There are also the operational deficits in 2009 and 2010, amounting to 12.6% of GDP in 2009 and 9.2% in 2010. Total general government debt now stands at around 120% of GDP.

We can conclude that although the external debt situation appears to be manageable, the banking crisis has caused a very significant rise in the level of government debt as well as a redistribution of wealth within the country.

3 The small country syndrome

Backing up a banking system of 143 billion euros was an economy with an annual GDP of only 14 billion euros, which shrinks to 10 billion euros when we use current exchange rates. The country's currency, the krona, defined one of the world's smallest currency

[38] In comparison, the total cost of saving the Irish banking system amounts to 50 billion Euros which is around 25% of GDP.

area. The institutions set up to conduct economic policy and to monitor and regulate the monetary economy were miniscule in spite of having identical names to their sister institutions in much larger economies. The small population makes it necessary for individuals to do multi-tasking, to attend to a diverse set of tasks and have personal responsibilities that exceed those of individuals living in larger countries. Moreover, personal relationships and affiliations often get in the way of professional conduct and did so before, during and after the collapse of the banking system.

3.1 Economic policy in a very small currency area

Policy makers in Iceland faced a challenging task during the boom years 2003-2007 and the subsequent collapse. The Icelandic krona defined one of the world's smallest currency areas; the governmental institutions were small and the staff had limited experience in dealing with banking crisis; last but not least the foreign currency reserves were small in comparison to the size of the banking system.

3.1.1 Monetary and fiscal policy during the boom years

In line with prevailing orthodoxy at the time, monetary policy was assigned to use one policy instrument, the policy rate, to achieve the inflation target of 2.5%. As opposed to most other central banks, the CBI did not back up its interest rate target by evaluating the liquidity need or try to control the liquidity in the domestic financial system. Fiscal policy was not actively used to counter the business cycle, in fact the SIC report concludes that fiscal policy increased imbalances over the period leading up to the failure of the banks As in other countries, the macroeconomic implications of financial regulation and supervision were not fully appreciated.

Fiscal policy during the boom years 2003-2008 had the objective of lowering tax rates in order to spur investment and labour supply. The ruling parties were true believers in the benefits of low taxes, even sometimes showing signs of believing in supply-side economics. The government lowered corporate taxes from 30% to 18% at the end of 2001 and in February 2008 they were further lowered to 15%. The government also lowered the personal income tax rate by 1% in each of the three years 2005, 2006 and 2007, abolished property taxes and lowered the value added tax in 2007. However, the rising tax revenues that were generated by the booming financial sector, rising wages and import duties were used to increase government spending in addition to paying down the government debt. The combination of low tax rates and expanding tax revenue was

taken by some as a sign that a supply-side policy programme was working, such as Arthur Laffer who visited the country in 2007.

Monetary policy bore the brunt of containing domestic demand. However, businesses and to some extent households managed to evade the high domestic interest rates set by the CBI through foreign currency loans. The expected depreciation of the currency appears not to have been a deterrent to this development. Hence the increased undertaking of un-hedged exchange rate risk not only helps explain the rapid expansion of the banking system but also the ineffectiveness of monetary policy. As a result the CBI had to raise interest rates from 5.3% in 2003 to 15.5% in 2008. This had the unfortunate effect of inducing even more firms and households to borrow in foreign currencies – which made the CBI increasingly concerned about the balance sheet effect of any depreciation of the currency. Foreign banks also issued ISK bonds to sell to foreign investors, hence giving investors the opportunity of taking advantage of the interest rate differential through carry trade. Monetary policy was hence not effective at containing domestic demand, the creation of credit, increased leverage or the stock market bubble but it did cause an inflow of capital and currency asymmetries in the balance sheets of businesses and households. The capital inflow also made the currency appreciate which increased the current account deficit and debt accumulation abroad.

Inflation targeting has been a successful method for combating inflation in many small open economies, such as New Zealand and Sweden. Fundamentally, it is based on models directly linking interest rates to inflation. However, these models do not properly take into account the presence of international capital markets and hot money flows. In countries that use inflation targeting this is not much of an issue, either because they are large enough or they address the problem through different means.

What happened in Iceland was that inflation was measured as above target and that ultimately means that short rates should increase. However, the models did not take into account what followed. Above-target inflation created expectations of higher interest rates and an exchange rate appreciation. This had two direct impacts. First, it encouraged carry traders and domestic agents to borrow in foreign currency. Both of those are inflationary because the foreign money becomes a part of the domestic money supply. Second, the inflow of foreign money has a positive wealth effect on domestic agents. Last but not least, when borrowing is in foreign currencies, higher interest rates cannot curb domestic demand.

The inflation targeting appears to have made the Central Bank respond asymmetrically to falling and rising exchange rates; raising interest rates to counter depreciations and not lowering them to counter appreciations. An appreciation of the currency helped the bank reach its inflation target of 2.5% while depreciation made it miss the target by raising the domestic price of imports. The asymmetric policy response created an implicit put on the currency making the carry trade with Icelandic krona denominated bonds even more lucrative and less risky. This resulted in a huge increase in carry trade with the Icelandic krona as the high yielding currency. In the end the stock of bonds held by foreigners denominated in the domestic currency amounted to 40% of GDP just before the crash in October 2008 (CBI, Monetary Bulletin, 2009). Even worse for the Icelandic economy, this put lowered the perceived risk of borrowing in foreign currency with only krona income stream which is in a sense also carry trade, but usually with much less liquid assets like investment goods, cars and houses as collateral. This kind of carry trade is much more risky than carry trade with highly liquid financial assets due to the potential problem of unwinding them.

In Table 5 we describe the macroeconomic developments in Iceland during the expansion of the banking system. The real economy expanded during the years 2003-2008, mostly driven by the expansion of credit in the banking system. As a result, investment grew in excess of 20% per annum in 2004-2006, then collapsed in 2008 and 2009. Consumption, in contrast, only grew slightly more rapidly than real GDP in 2003; less rapidly in 2004 and 2006 and more rapidly in 2005. Imports grew much more rapidly than exports, leaving a gaping current account deficit. Unemployment declined from 3.4% in 2003 to 1% in 2007, there was solid real wage growth and real exchange rates reached record levels in 2007 only to collapse in 2008 and 2009.

Table 5. Macroeconomic developments

	00	01	02	03	04	05	06	07	08	09
Growth of GDP (%)	4.3	3.9	0.1	2.4	7.7	7.5	4.3	5.6	1.3	-6.5
Consumption growth (%)	4.2	-2.8	-1.5	6.1	7.0	12.7	3.6	5.6	-7.9	-14.6
Investment growth (%)	11.8	-4.3	-14.0	11.1	28.1	35.7	22.4	-11.1	-21.0	-49.9
Nat. expenditures (% of GDP)	5.9	-2.1	2.3	5.7	9.9	15.7	9.5	-0.1	-8.8	-20.1
Export growth (%)	4.2	7.4	3.8	1.6	8.4	7.5	-4.6	17.7	7.1	6.2
Import growth (%)	8.6	-9.1	-2.6	10.7	14.5	29.3	10.4	-0.7	-18.2	-24.0
Gov. Surplus (% of GDP)	1.7	-0.7	-2.6	-2.8	0.0	4.9	6.3	5.4	-13.5	-9.1
Unemployment rate (%)	1.3	1.4	2.5	3.4	3.1	2.1	1.2	1.0	1.6	8.0
Participation rate (%)	83.5	83.6	82.8	82.1	80.7	81.9	83.1	83.3	82.6	80.9
Real wage growth (%)	1.6	2.0	2.3	3.4	1.4	2.6	2.6	3.8	-3.8	-7.2
Inflation rate (%)	5.0	6.7	4.8	2.2	3.2	4.0	6.8	5.0	12.4	12.0
Real exchange rate	100.0	87.3	91.7	96.0	98.1	111.4	104.2	108.6	85.5	70.0
Interest rates (%)	12.7	9.4	13.7	9.4	8.3	10.7	10.9	14.3	9.1	7.2
M3 growth (%)	11.3	16.7	12.9	21.3	17.1	23.2	19.4	56.6	36.3	-4.9
Lending growth (%)	17.2	19.2	3.2	11.4	19.9	31.1	31.0	22.7	--	--
Current account deficit (% of GDP)	10.1	4.66	1.53	4.78	9.72	15.97	24.19	16.62	18.71	3.64

Source: Monetary Bulletin, Central Bank of Iceland.

3.1.2 Floating exchange rates and the recovery

The macroeconomic response to the crisis has been typical in that changes in output, unemployment, asset prices and government deficits and debt have followed the stylised pattern highlighted by Reinhart and Rogoff (2009). However, the ensuing recession has up to now been significantly milder than feared at the onset of the crisis.

Table 6 below shows real GDP growth and unemployment in Iceland and a group of euro-zone countries from the first quarter of 2007 to the first quarter of 2010 (seasonally adjusted). Note that cumulative negative growth since the first quarter of 2008 is much greater in Greece, Ireland and Spain than in Iceland which puts Iceland in the middle of the group in spite of the much larger shock that hit the Icelandic economy. The adjustment of the real economy is also reflected in the unemployment figures with unemployment being lowest in Iceland at the end of 2009 at 7.1%[39], which is only half the unemployment rate suffered by some of the other countries.

The reason for the mild downturn suffered by Iceland can be found in the flexibility of its real exchange rate. Net exports in Iceland went from negative 14% of GDP in the last quarter of 2006 to positive 14% of GDP in the last quarter of 2009, an improvement of 28% of GDP. It grew by 11.3% in 2008 and 11.7% in 2009; mostly because of lower imports which fell by 18.2% in 2008 and 24% in 2009 while exports increased by 7.1% in 2008 and 6.2% in 2009 (Source: CBI). The improvement in net exports manages to offset some of the effect of collapsing investment and consumption. Investment in real terms fell by 21% in 2008 and 49.9% in 2009 while consumption fell by 7.9% in 2008 and 14.6% in 2009 (IMF, 2010). This is not the case for the euro countries.[40]

[39] This refers to the survey based unemployment rate. Registered unemployment was 8.2% in December 2009 and reached 9.3% in February and March 2010. The differences are caused by the rather unusual definition of the number of unemployed and the workforce used by The Directorate of Labour. The number of unemployed is defined as the total number of working days paid by the Unemployment Insurance Fund regardless whether or not the person receiving benefits has a part-time job or not. The estimation of the work force is based on the number of working days rather than the number of people willing to work.

[40] This is consistent with the results of a recent study by Olafsson and Petursson (2010)who explain the variation in the post-crisis experience of a sample of 46 countries and find that greater exchange rate flexibility coincided with a smaller and shorter contraction at the same time increased the risk of a banking and currency crisis.

Table 6. Growth and unemployment in selected countries (Seasonally adjusted)

Year	2008	2008	2008	2004	2009	2009	2009	2009	2010
Quarter	1	2	3	4	1	2	3	4	1
Real GDP growth									
Greece	0.8	1.1	0.3	-0.7	-0.9	0.1	-0.3	-0.8	-0.9
Iceland	**1.7**	**-0.4**	**1.1**	**-2.6**	**-0.6**	**-2.7**	**-5.4**	**0.7**	**0.6**
Ireland	-1.6	-2.2	0.6	-6.4	-1.6	-0.6	0.9	-4.6	3.6
Portugal	-0.2	0.0	-0.4	-1.1	-2.3	1.3	0.1	0.6	0.2
Spain	-0.3	0.9	-0.4	-0.6	-3.1	-0.2	0.7	1.1	-2.2
Unemployment									
Greece	7.7	7.5	7.6	7.8	8.7	9.2	9.7	10.2	-
Iceland	**2.3**	**2.1**	**3.2**	**4.4**	**7.1**	**8.1**	**6.7**	**7.1**	**7.6**
Ireland	4.7	5.1	6.6	7.7	10.2	11.9	12.7	12.7	13.3
Portugal	7.6	7.6	7.9	7.9	8.8	9.6	10.1	10.2	10.4
Spain	9.3	10.5	11.6	13.8	17.1	18.1	18.2	18.7	19.7

Source: IFS and Statistics Iceland.

However, the floating currency has been a mixed blessing during the post-crash phase. As previously stated the outstanding Icelandic krona currency bonds used for carry trade amounted to about 40% of GDP at the time of the collapse, which made capital controls necessary as well as high interest rates which were raised to 18% after the collapse in order to stabilise the currency because of likely balance sheet effects of further depreciation. If the capital controls were to be lifted, the expectation is that a substantial amount of funds would flow out, causing a large and sustained fall in the exchange rate, which would have further damaging effects on the balance sheets of firms and households. Initially it was also thought to be necessary to have very high interest rates in order to reduce leakages, which would weaken the currency and deepen the debt crisis faced by households and firms. Interest rates have been coming down slowly, but are currently still considerably higher than in both Europe and the U.S. As a result, Iceland has not benefitted from the low interest rates that belong to the standard tool kit used to alleviate the strains of a debt crisis. Concerns about the currency crisis have for this reason hampered the post-crash policy response.

3.2 Size and quality of institutions

The institutions that were supposed to manage, supervise and regulate the economy and the financial sector were not up to dealing with an international banking system. Instead, their size reflected the size of the local economy. In contrast, the banks became large in just a few years and dwarfed the local institutions.

Table 7. Number of employees at the three large banks, end of 2007

	domestic	foreign	Total
Glitnir	n.a.	n.a.	2248
Landsbankinn	1512	1302	2814
Kaupþing	1262	2072	3334
Total	n.a.	n.a.	8396

Source: Icelandic Financial Services Association, FME.

The prime minister's office was officially responsible for economic policy. However, it had only 20 employees before and during the banking collapse. The Ministry of Commerce was in charge of the Financial Services Authority (FME), the setting of rules and regulations and their application. While the ministry only had 20 employees, the FME, which had only about 50 employees in September 2008, increased the number of employees to about 68 during the crash, compared to the 3000 or so employees at the British financial services authority, the FSA. The Central Bank had a total of 115 members of staff.

Table 8. Economic policy making, number of employees (end of August 2008)

Office of the prime minister	26
Ministry of Commerce	20
Financial Services Authority (FME)	62
Central Bank	115
Total	229

Source: Ministry of Finance.

We should note that these numbers include all personnel, from security to catering to office workers to the economists and lawyers. There was also limited expertise in these institutions when it comes to managing a financial crisis since this was the first severe crisis to hit the economy.

3.3 Lender of last resort

The lack of a credible lender of last resort in foreign currency was one of the Achilles heals of the banking system. As shown by Calafell and del Bosque (2002), the ratio of reserves to external debt is a good predictor of a currency crisis. This ratio was only around 8% at the time of the collapse, which is far below the safe level, for example the

one given by the *Guidotti-Greenspan rule*[41] which dictates that reserves should equal short-term external debt (one-year or less maturity). The table below shows the ratio of reserves (excluding gold) and short term debt, the current account deficit and the net external position of the country.

Table 9. Reserves, current account deficits and the net external position

	2003	2004	2005	2006	2007	2008	2009
Reserves/short-term debt (%)	33	47	26	13	10	8	7*
Current account surplus (% of GDP)	-4.8	-9.7	-16.0	-24.2	-16.7	-18.7	-3.6
Net external position (% of GDP)	93.3	113.5	152.0	203.2	228.8	462.4	**

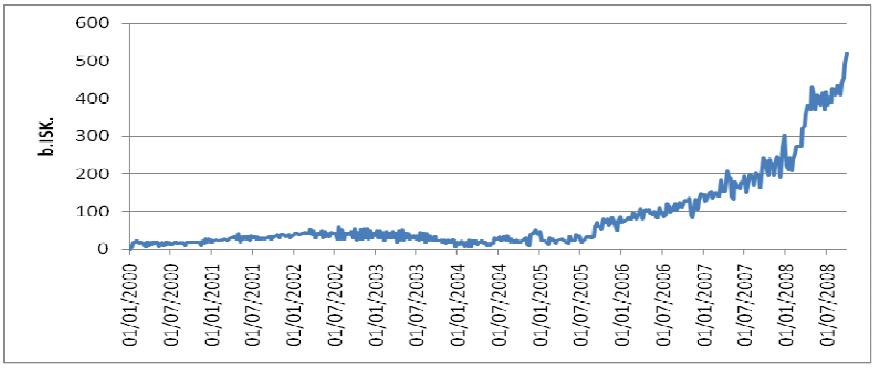
Source: CBI. * The short-term debt includes the debt of the banking system which is in receivership. ** Number missing because of the uncertain status of short-term debt of collapsed banking system.

The ratio of reserves to short-term debt was only 8% at the time of the collapse, far below the 100% dictated by the Guidotti-Greenspan rule. The current-account deficit was also staggering, close to 19% of GDP and the ratio of net external debt to GDP 462% at the time of the collapse, that is almost five fold GDP.

However, the central bank went to great lengths to support the banking system when it came to liquidity in the domestic currency. The support was in the form of a sharp increase in collateralized lending, shown in Figure 3.[42] The banks were borrowing around 150 billion ISK at the beginning of the year 2007, but that had increased to well over 400 billion ISK in the summer of 2008 and topping of at close to 500 billion ISK (3,5 billion euros) as the banks started to falter after the middle of September 2008.[43]

[41] Named after Alan Greenspan and Pable Guidotti, the Argentine former minister of finance. See also Jeanne and Rancière (2006).
[42] The Central bank executed monetary policy by setting the interest rates on week long collateralised loans to financial institutions, as mentioned before no effort was made to evaluate simultaneously the liquidity need in the financial system.
[43] BGH (2010), chapter 4.

Figure 3. Collateralised loans to the financial sector



Source: BHG (2010).

As this lending increased and started increasingly to take the form of direct liquidity support it seems that the CBI ignored the inherited systemic risk. The banks used bonds issued by each other as collateral in their borrowing from the central bank; they even went so far as to swap bonds to then use as collateral with the central bank.[44] This collateral was referred to as *love letters*.[45] Since the collapse of one of the three big banks would have almost certainly led to the collapse of the remaining two banks, this effectively amounted to lending without any collateral at all. This was however not considered when the central banks accepted bonds issues by one as collateral for a loan granted to another. As a result, the collapse of the banking system caused the bankruptcy of the CBI and necessitated a capital infusion by the government of 1.2 Billion euros.

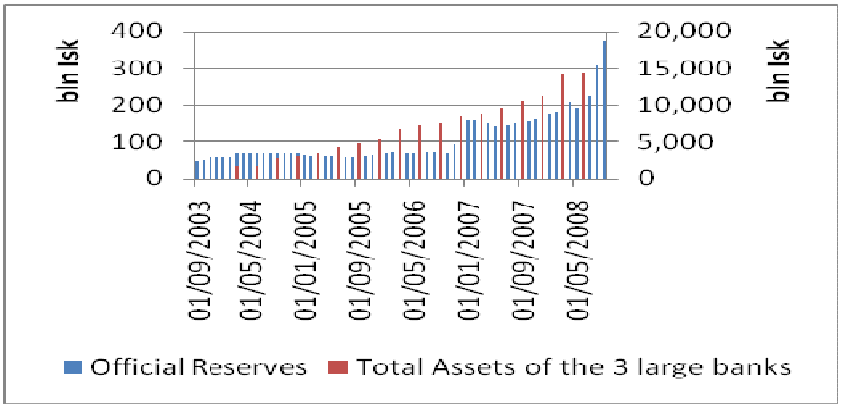
The three big banks also got the smaller financial institutions in Iceland to help finance their business. Icebank, for example, bought bonds issued by the three large banks and used them as collateral to borrow money from the CBI. At the end of June 2008 its biggest creditor was Landsbankinn, second Kaupthing and third Glitnir Bank. Their combined debt amounting to over 12 times the equity of Icebank. This was done with full knowledge of the CBI, and even the public, as the bank manager of Icebank declared that this was their business model, that is to help the large banks finance themselves with borrowed funds from the CBI using their own bonds as collateral.[46]

In early 2008 the international rating agencies started to increasingly mention the lack of a lender of last resort in Iceland. As a reaction to that the CBI tried to increase their

[44] BGH (2010), chapter 8.
[45] See Flannery (2009).
[46] Viðskiptablaðið (Icelandic newspaper) January 18. 2008, p. 29.

foreign reserves only to find most doors shut. The Bank of England, the European Central Bank and the Federal Reserve declined to open swap lines for the CBI in the spring of 2008. The CBI was able to get swap lines amounting to 1.5 billion euros with the central banks of Denmark, Norway and Sweden, but only after agreeing to unprecedented terms involving the government for example agreeing to a responsible budget policy, changes in the Housing Financing Fund and changes in union wage contracts.[47] In June it was clear that the terms for sovereign bond issuance in international markets were unacceptable to the CBI. The CBI then started boosting their reserves with short term – one to three month – note issuance. The only real loan came a few days before the failure of the banks when a German bank lent the CBI 300 million euros. [48]

Figure 4. Reserves and bank asset

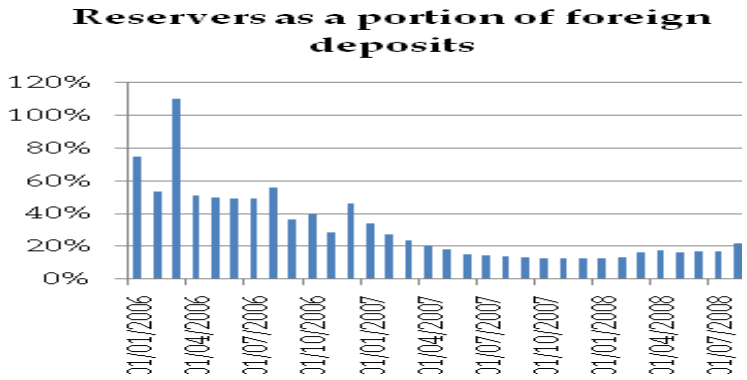


Source: BHG (2010).

In Figure 5 we show the ratio of reserves to foreign deposits of branches of the Icelandic banks. Clearly, the central bank did not have the resources to stop a run on these branches.

[47] BGH (2010), chapter 4.
[48] Three German banks lent the money together, but Bayern LB was the largest creditor with 255 million euros.

Figure 5. Reserves as a portion of foreign deposits

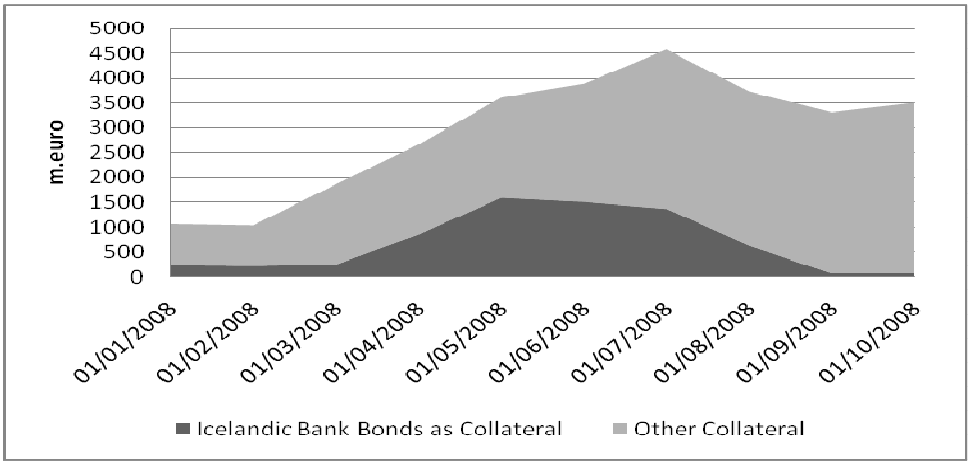


In the end, the CBI did all it could to save the Icelandic banks. It almost exhausted its foreign reserves in process and ended up in effect bankrupt on account of the above mentioned collateralized loans. But it did obviously not have the capacity to support the Icelandic banks.

The Icelandic banks got increasingly funding directly from the Eurosystem in 2008. The banks used among other things *love letters* as collateral for their loans with the Eurosystem. The ECB moved to limit those practices and abolished them completely by the end of July 2008. At the time the banks had borrowed around 4.5 billion euro from the Eurosystem with about a third of it collateralised with Icelandic bank bonds, or love letters. Among other assets used as collateral were bonds issued by special purpose vehicles (SPV) set up by the banks themselves. They transferred bonds into these SPV's, both foreign currency and Icelandic krona denominated, the SPV then did a currency swap with the Icelandic bank and the rating agencies rated the bond issued by them in euros. These bonds where used as collateral to get well over a billion euros from the ECB.[49] This practice infuriated the head of the Central Bank of Luxembourg as this of course meant that once the banks could not pay back their borrowings, they would also not honour swap agreements, hence the ECB would then end up holding collateral in ISK.[50] The governor is quoted as to have said "This practice will not go on – we will change the Eurosystem to avoid such practices."[51]

[49] When the banks failed they defaulted on the currency swap leaving the ECB with krona assets.
[50] Meeting note drafts from the Central Bank of Iceland from a meeting conducted in the Icelandic Central Bank July 4th 2008 with Yves Mersch, Nicolas Weber and Frank Bisdorff (BGH (2010), chapter 7.)
[51] See Sibert (2010).

Figure 6. Collateralised borrowing from the Eurosystem



3.4 Small population and personal relationships

Personal relationships and histories matter a lot in Iceland's small population. High quality individuals are in very short supply and these often end up with very diverse tasks through their working careers. In most cases they share a similar background when it comes to education and careers. Both mean that over time a strong web of alliances and personal networks is formed.

Instead of describing the details of these intricate relationships and alliances, we let Armann Thorvaldsson, the former CEO of Kaupthing's subsidiary Singer & Friedlander, describe the close-knit society:[52]

> "Iceland's biggest problem throughout the crunch was a lack of trust; the internecine fighting in a small country, full of jealousy, pride and long-held grudges. People only joined forces when we had stepped off the precipice. The CEOs of the three banks didn't particularly like each other and didn't divulge much information. The relationship between Hreidar (Kaupthing's CEO) and Sigurjon of Landsbanki (CEO of Landsbanki) was particularly bad. The governor of the Central Bank didn't trust any of the CEOs and thy certainly didn't trust him. To top it all Oddsson wasn't particularly fond of the Chairman of the board of the FSA and was at daggers drawn with Bjorgvin Sigurdsson, the Minister of Banking. When openness was most needed, meetings were conducted like poker games."

[52] Page 215.

4 Weak capital: the key to rapid expansion

Any explanation for the rapid expansion of Iceland's banking system and its ability to borrow amounts that were disproportionate to the local economy has to start with a description of how the banks managed to generate equity. Their relatively high CAD ratios made further borrowing possible in a world of cheap capital. Liquidity overflow in international markets and acceptance for increased leveraging assisted in this developments as did inadequate supervision.

4.1 Inadequate supervision

When Iceland became a member of the EEA Treaty it adopted the EU's directives into Icelandic law. These directives provided a minimum coordination relating to the establishment and operation of financial institutions and for the principle of mutual recognition. The directives did not prevent Member States from maintaining or setting stricter rules in relation to the credit institutions in the home country as long as they satisfied the main objectives required by the provisions of the EU and the EEA Treaty. Icelandic authorities chose not to lay down stricter rules concerning the authorisation of financial institutions. Apparently, their objective was to improve the competitive conditions of Icelandic financial institutions in the single market.

The changes implemented by the Icelandic authorities brought its financial regulatory structure to a level similar to many other European countries (BGH (2010), chapter 21). In particular it:

- Increased authorisation to invest in non-financial businesses,
- increased authorisation to extend credit to directors,
- increased authorisation to invest in real estate and real estate companies,
- increased authorisation to lend money to buy own shares,
- reduced requirements concerning the operating structure of securities companies,
- increased authorisation to operate insurance companies, and
- increased authorisation for ownership in other credit institutions.

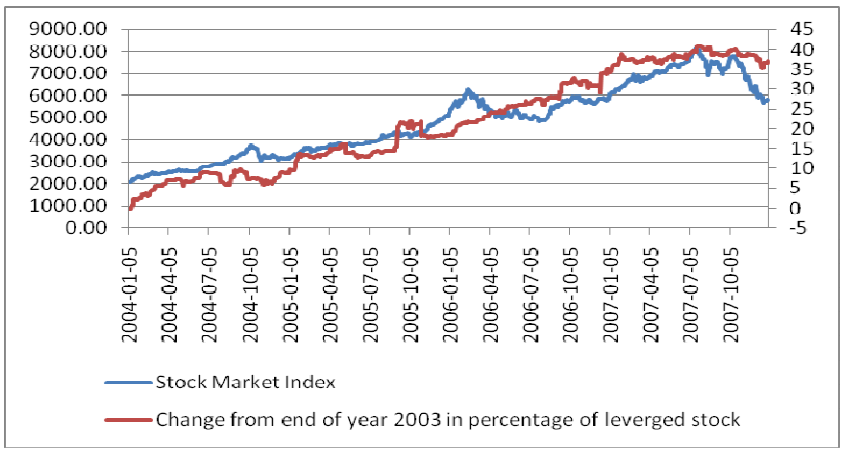
These changes amounted to relaxing requirements already in place in Iceland without violating the minimum requirements of the EU Directives. It is clear that these changes were not decreed by the directives. Rather the main objective appears to have been to improve the competitive position of domestic financial institutions and to make domestic

legislation at least no more restraining than legislation in neighbouring countries. In short, the regulatory changes were consistent with the policy of making Iceland a financial centre.

4.2 Leverage Cycle

Many of the changes implemented made it easier for commercial banks to increase leverage and to participate in investment projects with their clients, bringing their operations closer to investment bank operations. This set the stage for the rapid and unsustainable expansion of the banking system. As all assets prices continued to rise, the price increases were leveraged further, still increasing asset prices, creating a spiral of increased credit and higher asset prices. The stock market index quadrupled over the three year period from 2004 – 2007. At the same time average leveraging of stocks increased by 40 percentage points.[53]

Figure 7. Stock prices and the share of leveraged stock

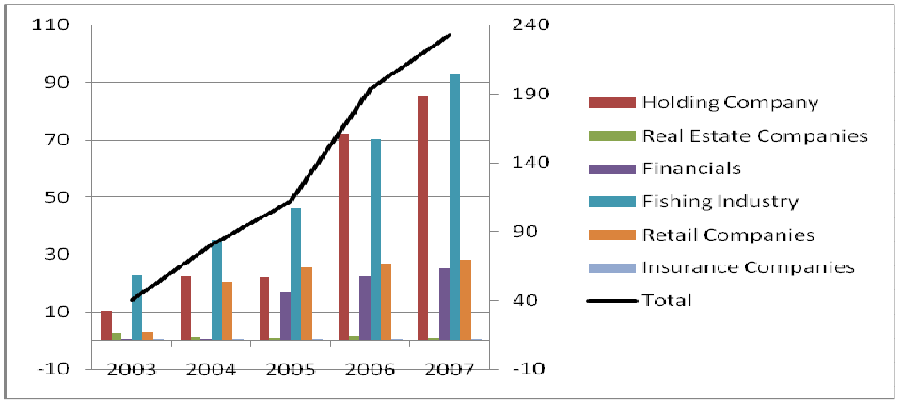


Source: BHG (2010).

Firms changed hands at prices well above their asset value, creating accounting goodwill. The growth of goodwill was fast, going up six fold in four years. It is worth pointing out that in 2006 holding companies had more goodwill than the fishing industry, where fishing quota – the industry's main asset – is accounted for as goodwill.

[53] Meaning credit to buy stocks increased at a much faster than the total market value of shares outstanding.

Figure 8. Goodwill by industry



Source: BHG (2010).

Banks participating by leveraging heavily these value inflated firms, and more often than not also participating in the investment. . Once the liquidity crises hit in the middle of 2007 it was clear to the banks that a collapse of asset prices would have a big impact on them, both through their direct ownership of assets and through their lending which was highly collateralized in these overvalued assets.[54,55]

4.3 Capital created

Financial institutions are required to hold capital, as a buffer against future losses. Over the period in question, the European capital adequacy directive (CAD), which is based on Basel I, was in force in Iceland. Under these regulations, financial institutions are required to hold a minimum amount of capital – broadly defined as the sum of tier 1 and tier 2 capital – equal to eight percent of risk-weighted assets. Tier 1 capital provides more loss absorption and is hence preferred to tier 2 capital, but it is more expensive for the banks.

Because the CAD limits banks' leverage, they would often like their capital-asset ratios to be lower than is specified by the directive. However, both supervisors and creditors would prefer them to be higher. Typically, banks in Europe operated with capital that was 12-13% of risk-adjusted assets prior to the crisis. In their annual accounts

[54] See Aliber (2010).
[55] A report by Merrill Lynch in March 2006 also describes how falling asset prices may affect the banks. The report says that: "We cannot recall of a single other instance in Europe of where banks hold such substantial stakes in the local market (not to mention significant holdings of their own shares, for whatever reason) or where they have to justify such an unusual state of affairs. Our point is merely that if the stock market were to decline rapidly, it would certainly impact the equities that the banks are apparently holding as hedges (such as they are), as well as the client portfolios, wherever they are. See Merrill Lynch, "Icelandic Banks: Not What You Are Thinking," 7. March 2006, page 12.

Glitnir and Kaupthing said that they aimed for over 11% while Landsbankinn aimed for above 10%. In the years prior to the crises the three Icelandic banks had on average Tier 1 capital ratio that was two or three percentage points higher than their internal aim and also two to three percentage points higher than other large Nordic banks (BGH, (2010) and Flannery (2010)).

In order to effectively increase leverage, and hence profitability, while still remaining compliant with the CAD, financial institutions have an incentive to manipulate both their capital and their risk-adjusted assets. This became an important problem during the financial crisis, where the markets mistrusted both the composition of capital and the risk assessment of assets. An inside look into the Icelandic banks gives the clear impression that their capital was not much of a buffer against losses. Some of this may have happened without the knowledge of the undermanned FME, but it also seems that the financial authority gave the banks unusual legroom for manipulating their capital, in some cases allowing, or not preventing, transactions that would be prohibited elsewhere.[56]

When a financial institution increases equity, it is essential that the funding come from outside the financial institution, because otherwise the loss absorption of equity becomes illusionary. For this reason, there are generally strict rules on such funding sources. In particular, it is generally considered unacceptable for a financial institution to lend money for the purchase of its own shares because this would increase the amount of core capital in a non-transparent way. Consequently, this is illegal in most jurisdictions, without that stock being deducted from capital. In Iceland however this colleterized lending was used to increase the banks equity. Initially the banks loaned money to employees to buy the bank's own stock, with the stock acting as collateral. Even though this would be a strict violation of the CAD rules, the FME did not prevent these loans, looking at collateral in the form of its own stock as equivalent to collateral in any other marketable and liquid stock. This type of loan was also extended to large customers, with the bank's stock continuing to be acceptable collateral. This dubious practice became more blatant as the liquidity crises progressed. As the banks felt compelled, without the knowledge of other market participants, to buy their own shares on the Icelandic stock

[56] The three big banks in Iceland were even permitted to follow different practices in computing their minimum capital requirements. Kaupthing, the largest of the three banks, subtracted from equity own shares held for hedging purposes, while Glitnir and Landsbanki did not follow these practices (BGH (2010), chapter 9). For these two banks these shares amounted to about 10% of their equity, hence it affected the amount of capital that they were required to hold considerably. It is curious as to why similar institutions being supervised by the same entity would be allowed to follow such different practices.

exchange to counteract the selling pressure there, their ownership repeatedly came close to being over 5% of outstanding shares. This would have obliged them to report their own shares to the exchange, or flag it. To prevent that from happening all three of them increasingly lent money to their clients to buy back their own shares from the banks themselves, often without any other collateral for the loan.[57](BGH (2010), chapter 12). Other means of enlarging the capital base included a pattern of cross ownerships, where individuals or businesses borrowed through a bank to buy shares in the bank and then used the bank to fund other investments (BGH (2010), chapter 21).

The banks were also inventive in their ways to increase equity. As early as 2001 the banks cooperated in financing equity for each other in a non-transparent way. At the time one of the banks involved was still under government ownership. Kaupthing sold its own shares to an offshore company under the control of Landsbankinn. Landsbankinn lent the company the funds to buy the shares. This would appear to transfer risk from Kaupthing to Landsbanki, but that was not the case here, as the banks finalized this transaction by promising to funnel all dividend payments back to Kaupthing and then Kaupthing promised to buy back the shares in 18 months. In addition there was a contract of difference made to cover changes in the price of the stock, but that contract was done between Landsbanki and Kaupthing because otherwise it would have been in breach of international accounting standards.[58] Hence all the risk of the own shares was transferred back to Kaupthing, and should have then been deducted from Kaupthing's equity. This transaction amounted to 5-7% of Kaupthing's issued equity at the time.

Other notable capital creation is that Landsbankinn hedged its employee's stock options in a number of offshore firms. These firms accumulated in less than 10 years more than 13% ownership in the bank. As Landsbankinn carried the risk of financing all these shares directly or indirectly, they should have been deducted from the banks equity base.

In all it has been estimated that the banks carried the risk of approximately 25% of their total capital on their own balance sheet, mostly through direct collateral with no other assets backing the loans. This amounted to approximately 50% of core capital (see BGH (2010)). There was also risk due to cross financing, that is bank A financing shares

[57] The banks could not continue to own the shares themselves as ownership of own shares over 5% would have to be reported to the stock exchange. In this manner this practice went on without the knowledge of market participants.

[58] As noted in an email between two employees of the banks, see BGH (2010), chapter 9.

in bank B. Under normal circumstances this may be considered to be standard practice. In a small system, with only three major banks, which are exposed to very similar risks, this becomes a problem. If this kind of cross financing is taken into account the weak capital in the three banks goes up to 70% of core capital (BGH (2010), chapter 21).[59,60]

5 The failure to react

The passivity of the authorities in the run up to the collapse of the banking system in October 2008 is noteworthy. They did ask for swap agreements with other central banks to boost the foreign exchange reserves and were turned down by the Federal Reserve, the Bank of England and the ECB but given a swap agreement with the Nordic central banks which was conditional on changes in macroeconomic policies, which the authorities never implemented. Instead, the governor of the Bank of England offered to coordinate a multinational effort by Central Banks to scale down the size of Iceland's banking system. The governor of the CBI turned down this offer which only increased the country's isolation in the summer months of 2008.

The passivity of the authorities as well as their unwillingness to coordinate actions with other countries requires an explanation. One explanation is that the authorities did not realise how fragile the banking system was since they had been led to believe by the banks that they had liquidity that would last until the end of 2009. The prime minister at the time says that he was repeatedly lied to. [61]

The internationalisation of the banking system provides another possible explanation. As the potential cost of a collapse of financial institutions was increasingly shifted outside the economy, the incentives to regulate the financial industry efficiently became lower. A disproportionate share of the rent went to Iceland, while the risk was increasingly born by foreigners. The Icelandic banking adventure may even have been net profitable to Icelanders, even if the internal distribution of the benefits and costs is quite uneven. In betting on resurrection, the authorities may have thought that the benefit to the economy was great if the banks could keep on going, while the cost of the collapse would be borne in part by others. The banks were betting on life, but we would like to argue that the

[59] FME "Rules on additional own funds items for financial undertakings", No. 156 of 26 January 2005 Article 4.
[60] In Iceland long term subordinate debt was allowed as of January 2005 to count towards 33% of tier 1 capital while in most other European countries this is closer to 15%.[60] Clearly, financing with long term subordinate debt is easier than with equity. (EU Directive 2006 –48-ec)
[61] Prime minister's response to parliamentary committee, September 2010.

supervisor, the CBI and the government may also have been betting on life towards the end. This moral hazard problem may be one of the side effects of shifting costs of financial crises outside the region where they occur. However, this explanation is purely speculative at this point in time.

The prime minister and the ministers of finance, commerce and foreign affairs – the last one being the leader of one of the two parties in government at the time – are at the time of this writing being charged for criminal negligence for not responding to the dangers of a collapse nor taking any action to avert it or minimise its magnitude. The prime minister was responsible for economic policy and economic stability.

The committee comes to the conclusion that the prime minister should have sensed the imminent dangers at the beginning of 2008 and that he should have asked for information, analysed the risks faced by the economy, made preparations and taken actions. Also, that he and the government should not have been as outspoken in their support of the banking system without asking for more information. They also criticise the government's inaction in not making the Landsbanki take action to convert its Icesave branches in the U.K. and the Netherlands into subsidiaries. The other ministers face similar charges in not assessing correctly the vulnerabilities of the financial system and government finances. The minister of commerce is criticised for not deciding and making clear to what extent the deposit insurance fund would receive state backing. The CBI governor is also found to be guilty of negligence by not responding to a request by the Landsbanki to consider ways of transferring the Icesave accounts into British jurisdiction as well as in its response to a request by Glitnir bank for liquidity support that triggered the October crisis.

6 Implications for EU financial regulation and stability

The collapse of Iceland's banking system and its effect on neighbouring countries has revealed weaknesses in the European passport system. The European passport system allows banks to compete and enjoy economies of scale by operating in other countries, hence diversifying risk and increasing competition. The regulatory structure around the system is intended to even the competitive position between institutions domiciled in different member states. A logical conclusion of the single market project is that financial institutions from one member state can operate in all member states. When the European passport was being developed, a key objection of the established banking nations was that a bank from a less developed country in terms of experience and

development could operate within their borders. However, the price they had to pay to expand abroad was to allow reciprocity.

The established financial centres in Europe have centuries of experience in cooperation in regulation and crisis resolution. For countries with long established financial centres, an optimal arrangement would have their banks operating in each other's jurisdictions and in the less financially developed countries, while banks from outside the club would not be allowed to operate within their borders unless subject to specific restrictions.

The European regulatory system has been severely criticized in recent official reports, such as Larosiere (2009) and Turner (2009), but here we would like to only identify those weaknesses that pertain to the case of Iceland. The primary issue here is the fragmented nature of supervision and the notion that the home supervisor is the only one possessing both information and adequate supervisory powers over the mother bank and its international bank branches, which puts considerable faith in the ability of national supervisors.[62]

A thorough analysis of the readiness of the EU to act in the eventuality of a crisis and its actions when the crisis occurs is provided by Pisani-Ferry Sapir (2010). They note that the internationalization of European financial institutions had been growing at a rapid pace while the institutional structure of the EU had not kept up. Supervision remained almost exclusively national while information sharing was limited, and even lending of last resort, conducted by the ECB, "In the case of cross-border banking institutions, it is the central bank of the host country which bears the responsibility, regardless of whether the foreign bank operates as a branch or as a subsidiary on its territory" and "there is a distinct risk of insufficient flow of information and too little cooperation between home and host authorities in case of market stress." The authors also find that this situation has been changing rapidly, the EU providing coordinated crisis response and attempting to remedy many of the precise failures, such as by the creation of the European system risk board.

6.1 Asymmetry in enforcement

A key flaw in the EU passport is that regulations are pan-European but supervision is mostly in the hands of the home regulator. In our view, the designers of the arrangement

[62] Subsidiaries are supervised by host country.

took the principle of a common market to an unfortunate extreme. It would be natural to assume that the home supervisor is the one with the best overview of the actions of a domestic financial institution but if the consequences of a collapse fall mainly on institutions in other countries, the home supervisor has an insufficient incentive to do proper supervision.

6.2 Asymmetry in ability

If the home supervisory authority has less experience or faces weaker incentives to do proper supervision than the supervisory authority of the established banking nations, significant risk may be created for these established banking nations. This is particularly acute when a smaller country attempts to establish an international financial centre, as was the case with Iceland. If the established nations create a common regulatory structure that they find suitable for their interests, it may be too sophisticated and rely on particular assumptions that are not fulfilled in practice for other countries.

The lack of interest by the government in proper financial regulation and supervision affected the resources available to the regulator. One example of the limited ability of the FME was its lack of software and computers that would enable it to track such things as related-party lending,. As it turns out the collapse of one large financial institution would have brought down the banking system but this was not acknowledged by the supervisor and not known by the government.

The banks themselves clearly attached some value to the Icelandic supervisory standards. The banks were faced with significant costs because they were domiciled in Iceland and higher costs of funding because the accounts were in Icelandic currency and not euros. However, the benefits of an advantageous tax environment and lax supervision seemed to have outweighed the funding disadvantages.

6.3 Legalistic versus a pragmatic approach

Financial supervision can be approached either from a legalistic or a more principle-based method. In the specific case of the introduction of one of the Icelandic banks internet accounts in Europe – the best known example being the Icesave accounts of the Landsbanki – the attitude of DNB (Dutch National Central Bank) were legalistic, while the Bank of France (BduF) clearly was more pragmatic when it kept delaying the

processing of the Landsbanki's application to set up its branch in France.[63] However, we should note that these countries could not have delayed infinitely because of the EEA agreement. Iceland's FSA followed a purely legalistic approach.[64] Such a legalistic, and in our view, inappropriate position creates problems for the European passport project and the philosophy of the common market.[65]

There are many indications that the level of enforcement of the Icelandic supervisor (FME) did not meet best practices in the EU, and that the Icelandic banks did not hold it in high regard. The head of the FME is on record claiming that his room to manoeuvre was limited to intervening until a financial institution's CAD ratio fell under a certain threshold. Thus if the letter of the law was not broken there was nothing that could be done. Foreign regulatory bodies and central banks seemed to work in a different manner. Thus the ECB refused to use *love letters* as collateral and the French kept postponing allowing branches to be set up.

6.4 The European passport system

The Icelandic banks had full access to international financial markets and the right to set up branches in the European Union by means of the European passport in financial services. The systematic failure of the Icelandic authorities to exercise adequate supervision points to an important shortcoming in the European financial regulatory structure. The banks were able to expand their branches across Europe based on the explicit assumption that host regulators were exercising adequate controls. They had unhindered access to European and non-European capital markets based on expectation that they were typical European banks subject to typical supervision. The strength of belonging to a passport member country implies a particular seal of approval that facilitates access to capital markets. The banks were also able to raise deposits in other European countries through branches in a way that should not have been allowed due to systemic risk. There appears to be an internal inconsistency in how the EU addresses the dual objectives of allowing unhindered market access and adequate supervision.

[63] See chapter 17 of BGH (2010). The chapter cites minutes from a meeting of the governing body of the Icelandic Deposit Insurance Fund where it says that its French counterpart did not want to agree on assuming any responsibilities for deposit insurance (top up) when it came to the operation of the Icelandic banks in France. There were also delays in reaching an agreement with Sweden.
[64] The former head of the FME (FSA) when asked on TV what the purpose of this institution was responded by saying "ensuring the banks obey the law".
[65] Similar view is set forth in "The Turner Review," page 7, „Regulatory and supervisory coverage should follow the principle of economic substance not legal form."

The European Union is currently proposing to set up bodies tasked with monitoring and supervising financial institutions in Europe. These are the European Systemic Risk Board (ESRB), and European Banking Authority (EBA) and European Securities and Markets Authority (ESMA).[66] These may go some way in solving the problems described in this paper. Another option is to scale down the European passport by, for example, not requiring member countries to allow foreign branches or even subsidiaries. Such activities would be left to member countries to allow and supervise. A third option is to modify the European passport to specifically take into account the externality identified by the case of the Icelandic banks. First, deposit insurance should be in the home currency. This would reduce the attractiveness of branches of foreign banks – that is to say those domiciled outside the euro area – to depositors. Also, if a host supervisor provides deposit insurance that exceeds deposit insurance in the home country it should have shared supervisory responsibilities. This includes monitoring and the ability to refuse or scale down certain activities. Second, the systemic implications of any financial institution should be monitored. If a financial institution opts to operate in more than one member country, supervision needs to be exercised by either the sharing of supervision across countries or the establishment of a pan-European supervisor addressing those cross-border institutions. In this case, one could either ring fence the international operations or have common budgetary or resolution process. In discussing Landsbanki, Lord Turner (2009) said, "'Faced with that reality we either need more European coordination or more national powers – more Europe or less Europe – we can't stay where we are.'"

The key problem is what might be termed as the elephant in the closet is the fact that ultimately supervision depends on taxpayer support and taxpayers are unwilling to help

[66] Proposal for a Council Decision entrusting the European Central Bank with specific tasks concerning the functioning of the European Systemic Risk Board http://register.consilium.europa.eu/pdf/en/09/st13/st13645.en09.pdf.

Proposal for a regulation of the European Parliament and the Council on Community macro prudential oversight of the financial system and establishing a European Systemic Risk Board http://register.consilium.europa.eu/pdf/en/09/st13/st13648.en09.pdf.

Proposal for a regulation of the European Parliament and the Council establishing a European Banking Authority http://register.consilium.europa.eu/pdf/en/09/st13/st13652.en09.pdf.

Proposal for a Regulation of the European Parliament and of the Council establishing a European Insurance and Occupational Pensions Authority http://register.consilium.europa.eu/pdf/en/09/st13/st13653.en09.pdf.

Proposal for a Regulation of the European Parliament and of the Council establishing a European Securities and Markets Authority http://register.consilium.europa.eu/pdf/en/09/st13/st13654.en09.pdf.

institutions that have gotten into trouble in the third country. Since supervision follows the money, it has to remain at home. This has frustrated all attempts at creating a European supervisor, and is likely to continue doing so, unless the EU acquires significant budgetary powers. That said, both the European systemic risk board (ESRB) and the European System of Financial Supervisors (ESFS) is an important step forward. Many of the problems associated with the cross-border activities of the Icelandic banks would have been checked much more early if adequate information sharing had been in place.

7 Policy conclusions

The Icelandic banks profited from interest rate differentials by not properly accounting for the risk of depreciation. Also for this reason, monetary policy could not contain the credit expansion and accompanying asset price bubbles using interest rates as a tool.

The episode reveals the dangers of using inflation targeting in the presence of capital inflows. Higher interest rates attract carry traders, increasing further the capital inflow, strengthening the currency and increasing macro imbalances. An asymmetric policy response of interest rates to exchange rate developments – an appreciation helps the central bank reach an inflation target but depreciation makes it deviate from it! – creates even more carry trade. In a microstate there is the additional risk of the volume of inflows created in the carry trade overwhelming the capacity of the state and the currency to suffer a sudden outflow. With perfect capital mobility, interest rate differentials can create inflows that dwarf the gross domestic product of the country and the currency market.

High interest rates also invite the danger of foreign currency loans creating currency mismatches on the balance sheets of households and businesses. This also has the effect of making the central bank respond asymmetrically to changes in exchange rates: raising interest rates when the currency depreciates but not decreasing them in response to an appreciation. The asymmetric policy response would then induce individuals and firms to increase their balance sheet mismatches further, as they realise that the central bank is helping to reduce the currency risk.

An important lesson of the episode is a demonstration of the dangers of oversized banking systems. A banking system that lacks a credible lender of last resort is prone to bank runs and inherently stable. The ability of the state to inject capital to maintain solvency is also important.

The post-collapse real economy is helped by the depreciation of the currency. However, it was hurt before the collapse by the appreciation of the currency. The appreciation both hurt the export industry and helped foster an unsustainable growth of the non-tradable sector. Thus the post-collapse depreciation helps cure the damage that was incurred before the collapse. However, damaged balance sheets and a currency crisis make capital controls necessary and also high interest rates which delays the recovery.

In managing the crisis Iceland was also affected by symptoms of the small country syndrome. The governmental agencies charged with operating economic policy were miniscule and the experience of the staff often limited in dealing with a crisis of this proportion. The history of conflicting loyalties and rivalries has also created problems and prevented agencies from cooperating and sharing information.

The Icelandic banks had full access to international financial markets and the right to set up branches in the European Union by means of the European passport in financial services. The systematic failure of the Icelandic authorities to exercise adequate supervision points to an important shortcoming in the European financial regulatory structure. The banks were able to expand their branches across Europe based on the explicit assumption that host regulators were exercising adequate controls. There appears to be an internal inconsistency in how the EU addresses the dual objectives of allowing unhindered market access and adequate supervision.

In order to specifically take into account the externality identified by the case of the Icelandic banks. First, deposit insurance should be in the home currency. This would reduce the attractiveness of branches of foreign banks – that is to say those domiciled outside the euro area – to depositors. Also, if a host supervisor provides deposit insurance that exceeds deposit insurance in the home country it should have shared supervisory responsibilities. This includes monitoring and the ability to refuse or scale down certain activities. Second, the systemic implications of any financial institution should be monitored. If a financial institution opts to operate in more than one member country, supervision needs to be exercised by either the sharing of supervision across countries or the establishment of a pan-European supervisor addressing those cross-border institutions.

Information sharing, coupled with some additional powers, can remedy many of the problems demonstrated by the Icelandic banks. Fundamentally, a dispute with the U.K. and the Netherlands arose because of the conjunction of failed home supervision and the ability to conduct unchecked cross-border banking. If host supervisors, and especially

some European institution, such as an ESRB or ESFS had the same information as the Icelandic supervisor, FME, and more importantly the ability to ask the questions the FME failed to ask it would have been a good first step in providing the necessary information. Secondly, the knowledge that the FME was not doing its job properly could trigger extra powers by host supervisors and increased levels of information gathering, coordinated by the EU. We think that such a remedy could be put into place even within the current constraints imposed by the financial trilemma.

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