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GAMBLING FOR RESURRECTION IN ICELAND: THE RISE AND FALL OF THE BANKS

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Fridrik Mar Baldursson, Reykjavik University
Richard Portes, CEPR and London Business School

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Centre for Economic Policy Research
77 Bastwick Street, London EC1V 3PZ, UK
Tel: (44 20) 7183 8801, Fax: (44 20) 7183 8820
Email: cepr@cepr.org, Website: www.cepr.org

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ABSTRACT

Gambling for resurrection in Iceland: the rise and fall of the banks*

We examine the evolution of the Icelandic banking sector in its macroeconomic environment. The story culminates in the crisis of October 2008, when all three major banks in Iceland collapsed in three successive days. The country is still struggling to cope with the consequences. The paper follows on our report of autumn 2007. The macroeconomic boom that peaked in 2007 led to severe imbalances. The banks had expanded at a rapid pace and reported healthy profits, capital ratios and liquidity until their collapse. An official report (SIC, 2010) has, however, exposed severe weaknesses in the banks' assets and governance. The Icelandic Financial Services Authority (FSA) clearly knew little of the magnitude of large, single exposures and lending to the banks' owners, although they strongly maintained otherwise in autumn 2007. Neither the FSA nor the Central Bank of Iceland (CBI) saw the systemic risks created by lending to owners and related parties, which increased greatly from September 2007.

With the financial turmoil that began in August 2007, the banks' access to capital markets was curtailed. They then gambled on resurrection, expanding their balance sheets and refinancing the investments of their owners and other big borrowers, while they should have been deleveraging and securing their liquidity positions in foreign currency. The banks also prevented their share prices from collapsing by purchases of their own shares in the stock market, offloading accumulated shares in private deals, usually financed by themselves. All this went on apparently unnoticed by regulators. The Icelandic banks did not buy toxic securities – but together, they administered their own potent mix of systemic poison.

Only a month before the collapse of October 2008 the banks all reported strong liquidity positions. These reports were misleading, but we also show how financing unravelled over the course of a few days, and collapse became inevitable. The rapid evaporation of liquidity and market funding is one of the key lessons of the story.

Whereas the United States, the United Kingdom and other countries had the resources to bail out their irresponsible and illiquid banks, Iceland did not, and it received little foreign help or even sympathy. Iceland's response to the crisis, with its heterodox policies and aid from the IMF, has been relatively successful.

JEL Classification: E44, E52, E63, F31, F32, F65, G01, G15 and G21
Keywords: banking crisis, carry trade, currency crisis, financial crisis of 2008, Icelandic banks and liquidity

Fridrik Mar Baldursson
School of Business
Reykjavík University
Ofanleiti 2
103 Reykjavik
ICELAND

Email: fmb@ru.is

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Richard Portes
Professor of Economics
London Business School
Sussex Place
London NW1 4SA
UK

Email: rportes@london.edu

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Submitted 22 September 2013

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[In writing Money,] Zola …read also the official government records of the trial of Bontoux…in December 1882. These documents prove that the fall of the bank was due to mismanagement of its funds. In the face of a general slump on the market, the Union Générale tried to maintain its stock at a high level by purchasing its own shares, an illegal as well as a stupid act. It soon became a hollow shell that collapsed overnight. R.Grant (1955)

'Speculation – why, it is the one inducement we have to live…Without speculation…there would be no business of any kind. Why on earth would you have me loosen my purse strings and risk my fortune, if you do not promise me some extraordinary enjoyment…? With the mere legitimate, moderate remuneration of labour…with nothing but well-balanced equilibrium in all transactions, life becomes a desert of dreary flatness…But…just make some dream flare up on the horizon, promise men that with one sou they shall gain a hundred…why then the race at once begins, all energies are increased tenfold…birth is given to great and beautiful living things. It is the same in love. In love as in speculation there is much filth; in love also, people think only of their own gratification; yet without love there would be no life…'
Aristide Saccard, in E. Zola, L'argent, 1891.

1 Introduction

Our purpose is to examine the causes and evolution of the Icelandic banking crisis, which culminated in the crisis of October 2008 when all three major banks in Iceland, Landsbanki, Glitnir and Kaupthing, collapsed in three successive days. A severe economic, political, and moral crisis ensued. The country is still struggling to cope with the consequences.[2]

The story can be read as a consequence of the bankers' dishonesty or the authorities' ignorance. We stress the importance of information, transparency, disclosure - but it may be that no regulation and supervision seeking to enforce transparency can succeed against a determined strategy of concealment by very clever bankers. The great complexity of the story admits either interpretation, most likely both.

Iceland is a very small, albeit affluent, economy, representing about 0.03% of OECD output and 0.025% of OECD population. But the collapse of its banks was by no means a negligible affair: considered as a whole, it would amount to the third biggest bankruptcy in US history, and that of Kaupthing bank, the largest of the three, the fifth largest.[3] Moreover, some lessons from the story are far-reaching.

[2] There are many possible perspectives on the crisis – philosophical, psychological, social, political, etc. Ours is economic and financial.

[3] Lehman Brothers, Washington Mutual, WorldCom, General Motors, and CIT are the five largest US bankruptcies with assets of $691, $328, $104, $91, and $71 bn, respectively. In June 2008 Kaupthing, Landsbanki, and Glitnir had assets of $83.3, $50.1, and $48.7 bn, respectively; in total $182 bn.

One such lesson is the importance of information and disclosure. A milestone on the road to understanding the Icelandic banking crisis was the report published by the Icelandic Parliament's Special Investigation Commission (SIC) in April 2010 (SIC, 2010a). The report is of majestic proportions – approximately 2,400 printed pages with considerable additional material published in electronic format only – and contains a wealth of information, much of which was previously hidden from the public eye.[4] While the macroeconomic causes and symptoms of the crisis were readily observable from publicly available information, most of the underlying micro behaviour – what went on inside the banks, at regulatory institutions, and at the highest level of government – was not. Importantly, the Parliament gave the SIC unlimited access: the Commission could demand information from any source – banks, regulators, officials, politicians. The report provides unprecedented detail on what went on inside the banks and government of a country in financial crisis.

What happened inside the banks and government was to a large extent hidden from analysts until the SIC published its report. For us this is of particular relevance: we wrote a report on the Icelandic Financial Sector which was published in November 2007 (Portes and Baldursson, 2007).[5] From publicly available information, such as their audited financial statements, financial stability reports published by the Central Bank of Iceland (CBI), and stress tests published by the Icelandic Financial Surveillance Authority (FSA), the banks had performed impressively and had responded well to the weaknesses revealed in the mini-crisis of early 2006. In particular, they had apparently reduced both large exposures and taken measures to forestall "detrimental effects of concentrated ownership" (CBI, 2007b). Hence, on the basis of publicly available information and data we wrote in our report that the 'internationalisation of the Icelandic financial sector is a remarkable success story that the markets should better acknowledge.' In important respects, this was wrong: the 'success' rested on weak foundations, which were fatally undermined by the 2007-08 global financial crisis and the actions of the bank owners and management. On the other hand, publicly available data on the macroeconomic picture were much less favourable. We expressed our concern regarding severe imbalances and distortions in the economy at large and summarised the risks as follows: 'Down the road awaits currency crisis, debt crisis, or both.' Sadly, this was too true, and exacerbated by the downfall of the banks.

The SIC report illuminated lending practices inside the banks. The FSA clearly had a very imperfect idea of the magnitude of large, single exposures and related party lending, although they strongly maintained otherwise in autumn 2007. And the CBI – responsible for financial stability – apparently had little insight into the systemic risks created by such lending. To name but one example: it is now known that by early 2007 a group of firms connected to a single businessman and his holding company had managed to borrow what amounted to half

[4] Unfortunately, international access to the report is still somewhat restricted: it is written in Icelandic with only a few chapters published in English; see SIC (2010b-e) and Flannery (2010).

[5] Aliber and Zoega (2011) reproduces our 2007 report and several other reports and papers written on the economy and financial sector of Iceland before the crisis.

of the combined regulatory capital of the three large banks.[6] More broadly, lending to owners and related parties increased greatly from September 2007. Information gathering and exchange between regulatory institutions must have failed utterly. The consequence was that the highest level of government – not to speak of outside analysts – operated on the basis of seriously faulty information.

Failure to gather adequate information and the moral hazard created by such failure was of supreme importance. The owners of the banks were in all cases also involved in international investments in other sectors as well and had to a considerable extent financed these investments in international markets. As the international financial crisis became more severe in late 2007 and early 2008 these owners found their access to international financing curtailed. They then turned to their banks in Iceland for refinancing their investments; this at a time when the banks' access to international capital markets was also closed. By the end of 2007 the banks faced liquidity constraints and were at risk of inability to service their foreign debt. They should have been retrenching and securing their liquidity positions in foreign currency rather than refinancing the investments of their owners. We must ask whether the Icelandic authorities would have intervened much earlier had the relevant information been available to them.

A number of papers and books have already appeared on the Icelandic crisis,[7], and others will doubtless follow. Jonsson (2009) is written by the former Chief Economist of Kaupthing Bank and gives a valuable inside view of the crisis. It suffers, however, from being written before the publication of SIC (2010a) and therefore lacks important information on actions and events leading up to the crisis. Benediktsdottir *et al.* (2011) covers some of the same ground as we do and also offers some historical and cultural background relating to Iceland. One of the authors was a member of the SIC. We go into considerably greater depth regarding the banks' lending practices and their collapse. We also suggest an analytical framework within which to situate the story and a discussion of the macroeconomic background. We indicate below some key differences in our analysis and conclusions, but we do not discuss the implications they draw for the EU financial regulatory system (in our view, unwarranted and impractical).[8]

We start with the dénouement. The details are complex, as in any financial scandal. But it is a riveting story, and it clearly exhibits the fundamental issues that we explore in the following sections. So Section 2 describes how the funding of the banks unravelled in late September 2008 leading to their collapse. Section 3 sketches an analytical framework for the Icelandic banking crisis. Section 4 gives a brief overview of the rise of the Icelandic financial sector and its status at the outset of the international financial crisis in August 2007. Section 5 discusses developments of funding and lending at the banks. Section 6 briefly examines the aftermath of

[6] This was Jon Asgeir Johannesson and his holding company Baugur Group; this was in turn the majority shareholder in Glitnir through its holdings in FL Group.

[7] We only mention those written in English.

[8] Sigurjonsson and Mixa (2011) compare the Icelandic crisis to the Scandinavian banking crisis of the early 1990s. Vaiman *et al.* (2011) trace the roots of developments in Iceland to weak business culture.

the crisis and the present situation in Iceland. Section 7 concludes, with policy recommendations.

2 The panic and collapse of September-October 2008[9]

We describe in this section how liquidity and funding of the Icelandic banks collapsed in the wake of the fall of Lehman Brothers on 15 September 2008 and the subsequent evaporation of interbank lending globally.

In their public presentations in August 2008 of results for the first half of the year the three major Icelandic banks all claimed to have liquid assets to cover loan payments for the next 12 months (Glitnir 2008, Kaupthing 2008, Landsbanki 2008). These presentations had little detail, and it is now clear that they were very optimistic. In their liquidity reports to the Central Bank of Iceland (CBI) at the end of August, the banks claimed to have adequate liquidity over the next two months at least. Table 2.1 shows liquidity as reported by the banks to the Central Bank, overall and in foreign currency.[10] The high share of assets that could supposedly be used – directly or indirectly – to obtain loans from central banks against collateral is worth noting. This, as well as credit lines which turned out to be impossible to draw on and loan covenants dependent on the banks' credit ratings, is key to understanding how their liquidity situation could unravel in a few days. True, the fall of Lehman a few weeks later was very damaging to the liquidity position, especially as regards the scope for borrowing against collateral, but these reports already hid serious weaknesses. The CBI was responsible for monitoring liquidity and had full powers to call for more information. But it is unlikely that any prescribed liquidity coverage ratio based on the reported information could have prevented the collapse.[11]

[9] The main reference for this section is SIC (2010a) Vol. 7. Jännäri (2009) provides a brief account in English.

[10] Payments on interest and amortisation of loans were expected to equal or exceed lending at all banks.

[11] As we shall see, the issue is how 'liquid' assets respond to extreme market stress, and liabilities too (*e.g.*, acceleration clauses and variable margin or collateral requirements). Only a highly restrictive criterion for 'liquidity' might have given a warning signal.

Table 2.1 Reported liquidity at Icelandic banks at end of August 2008[12]

Flows are those expected for September-October 2008. Amounts are in € bn

	Glitnir	Landsbanki	Kaupthing
Total			
Liquid assets	7.3	12.0	22.5
Known outflows	4.3	8.5	15.2
Balance	3.0	3.5	7.3
Foreign currency			
Liquid assets	5.4	9.8	20.2
Known outflows	2.9	7.0	13.2
Balance	2.5	2.8	7.0
Included in liquid assets			
Repoable assets	1.9	4.3	2.2
Credit lines w.o. MAC	1.0	0.2	3.5
Total	2.9	4.5	5.7

Source: SIC (2010a). Authors' calculations

2.1 Nationalisation of Glitnir

The collapse began with Glitnir. It claimed to have sufficient liquid funds to cover payments over the next two months at least: liquid assets in excess of known outflows in foreign currency were €2.5 bn (Table 2.1). After the Lehman collapse, however, this dried up quickly. Bayerische Landesbank refused to roll over loans to Glitnir amounting to €150 mn, giving as a reason that the CBI had recently borrowed €300 mn from the bank and that its Iceland limit had been reached;[13] as a result of falling asset prices and depreciation of the krona margin calls amounting to €200 mn were made and international 'wholesale deposits' of at least €150 mn were withdrawn.

Taking the cancelled loans, the margin calls and the deposit withdrawals into account, the €2.5 bn liquidity margin in foreign currency had been reduced to €2 bn. In addition a €1 bn credit line from Deutsche Bank, which Glitnir must have reported as liquid funds, had such severe terms that the bank would always try to borrow from almost any other source rather than using it.[14] It would appear, however, that the bank still had a margin of €1 bn. We do not know, but can conjecture, that access to lending against collateral had been curtailed so that this margin was considerably reduced.[15] The management of Glitnir informed the CBI on Thursday September 25 that Glitnir would probably be unable to meet payments on loans due

[12] SIC (2010a) does not publish the liquidity reports, so the table is put together from information collected from the main text of Vol. 2, pages 68-72.

[13] Bayerische Landesbank made the decision on 23 September. Perhaps coincidentally, on that day Nordea had told Glitnir that it would not buy assets from Glitnir's Norwegian subsidiary which Glitnir had been trying to sell for some time.

[14] See Section 5.2.4. for details.

[15] Glitnir management may also have foreseen that payments on loans would not follow schedule.

on October 13-15, in total €600 mn. Glitnir asked for an emergency loan to that amount.[16] This was almost a quarter of gross foreign currency reserves, which at this time were €2.6 bn.

The CBI considered Glitnir's request but found the collateral offered to be inadequate. Furthermore, Glitnir had large repayments due in January 2009, which the bank would in the CBI's judgment not be able to meet either. So rather than granting the loan it was decided by the CBI and government ministers that €600 mn of new equity would be injected into Glitnir and existing equity would be written down by 85%. After this action the government would have a 75% stake in the bank. This decision was announced before the opening of markets on Monday 29 September 2008.[17] The media were aware of meetings at the CBI with participation of Glitnir's top management, so the bank had to accept this offer – not doing so would have led to an immediate run on deposits at the bank and its failure. The acceptance was, however, subject to confirmation of a shareholders' meeting, which was to be held on October 11. So the actual transaction was postponed until that time.

2.2 Liquidity evaporation

Glitnir's nationalisation precipitated an avalanche of bad news. Rating agencies downgraded sovereign debt, noting that the government was at risk of having to assume foreign liabilities of the banks. Standard and Poor's lowered Glitnir's rating immediately and Moody's followed suit on September 30, lowering Glitnir's rating by three notches, from A2 to Baa2. This triggered covenants in loans and credit lines, which were contingent on a certain rating. For example, loans from DZ Bank and Sumitomo Bank totalling €425 mn came due immediately. The aforementioned €1bn credit line from Deutsche Bank, which was useless in any event, was cancelled. Meanwhile, asset prices as well as the exchange rate of the krona fell further (Fig. 2.1) resulting in margin calls which on Friday October 3 amounted to €1.1 bn in total, of which €640 mn from the European Central Bank (ECB).[18] Given that Glitnir originally needed €600 mn in liquid funds, the hole had now widened to over €2 bn.

It seems there was little analysis before the decision was taken by the government to invest €600 mn in the bank – neither of Glitnir's situation, nor of the implications of the decision. Thus the Chairman of the Board of Governors of the Central Bank first saw the loan book of Glitnir and, *inter alia*, discovered the extent of lending to Baugur Group and related parties the day after the decision was made. Apparently no prior analysis of the loan book had been done within the Central Bank. On October 5, a week after the decision to nationalise Glitnir,

[16] Communications were for the most part oral. It is typical of the state of affairs at this time that a formal written request was never made, so it is unclear whether the loan was to be €500 mn or €600 mn. Neither has it been documented why Glitnir needed the loan at all (the SIC does not provide an explanation). Conversely, the state never confirmed in writing that the equity injection subsequently decided on was to be made.

[17] The dramatic events of the preceding weekend are described in detail in Vol. 7 of SIC (2010a). The 75% share appears to have been to some extent an arbitrary number – the intention was to have a controlling majority on Glitnir's board, but a lower stake would have sufficed for that. Contagion effects on other banks would thereby have been reduced.

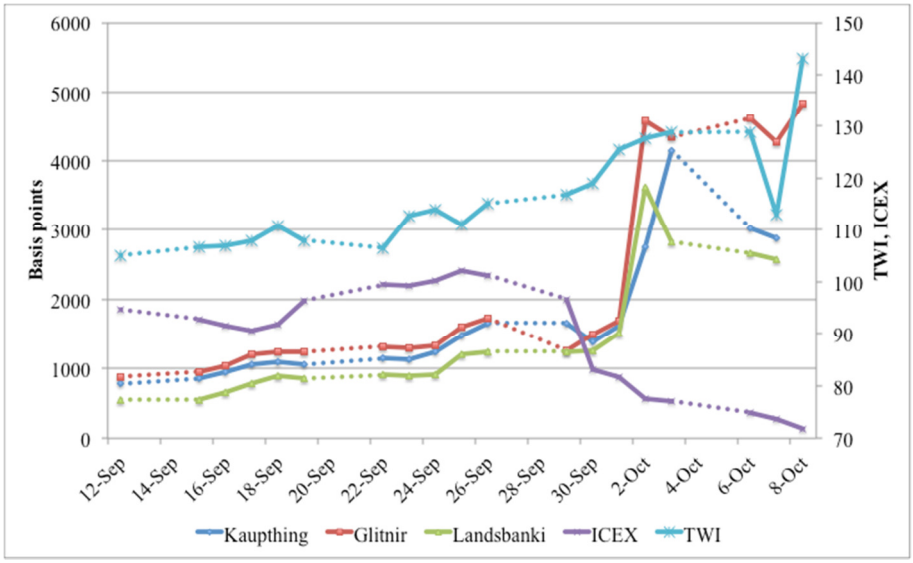
[18] The ECB postponed its margin call late on Sunday evening October 5.

the CBI's chief accountant found that losses on loans with Glitnir shares as collateral would amount to approximately €470, so most of the €600 mn equity injection was bound to be wiped out directly. Neither was contagion to other banks analysed first hand by the CBI before the decision was made.[19] The implications for downgrades on the banks' financing were not known to the CBI and, according to the Chairman of the CBI, the downgrades were unexpected.

Contagion ensued. Landsbanki's loan book was hit directly since it had financed the purchase of shares in Glitnir by the previous main owners; the holding company in question (Stodir, formerly FL Group) applied for moratorium on September 29. Withdrawals from Landsbanki's internet-based Icesave accounts in its London branch, which had begun increasing after the fall of Lehman, now intensified. Overall, about £270 mn (€340 mn) flowed out of UK Icesave accounts during the period September 1 – October 3 (Fig. 2.4).

These developments affected the exchange rate and asset prices: over the week September 29-October 3 the exchange rate depreciated by 10% and the stock exchange fell by 20% (Fig. 2.1). This triggered margin calls from the ECB on loans extended to Icelandic banks' subsidiaries in the Eurozone against collateral in Icelandic kronur which no longer sufficed to cover the loans. Confidence in the banks – already at a very low level – weakened greatly: the credit default swap (CDS) spread of Glitnir more than tripled over this week, and the spreads of Landsbanki and Kaupthing more than doubled (Fig. 2.1).[20]

Figure 2.1 CDS spreads of banks, the Icelandic Stock Exchange (ICEX) main index, and the Trade-weighted exchange rate index (TWI)
Daily data. Weekends are indicated by dotted lines



Source: Datastream, CBI

[19] Landsbanki and Kaupthing were asked how they would be affected and answered that they could withstand the shock.

[20] The CDS spread of a bond indicates the annual cost of insuring against default on that bond. It is therefore an indicator of the perceived riskiness of a borrower.

On Friday October 3 Landsbanki was informed by the UK Financial Services Authority (UK FSA) that it had to increase reserves held at the Bank of England against Icesave deposits to 20% of callable deposits. This, together with a similar demand in relation to Landsbanki's subsidiary, Heritable Bank, implied that Landsbanki had to come up with an additional £250 mn (€320 mn) in cash. After markets closed on Friday the ECB made a margin call on Landsbanki too, in the amount of €400 mn.[21] This was a double blow since Landsbanki had counted on the underlying collateral for up to €800 mn in loans from the ECB. Taking the €340 mn that had been withdrawn from Icesave accounts into consideration, this implies that Landsbanki's liquidity position had tightened by at least €1.5 bn from that shown in Table 2.1. As in the case of Glitnir the remaining liquidity margin of €1 bn seems to have been wiped out as well; in fact Landsbanki was unable to meet the demands of the FSA and the margin call from the ECB.

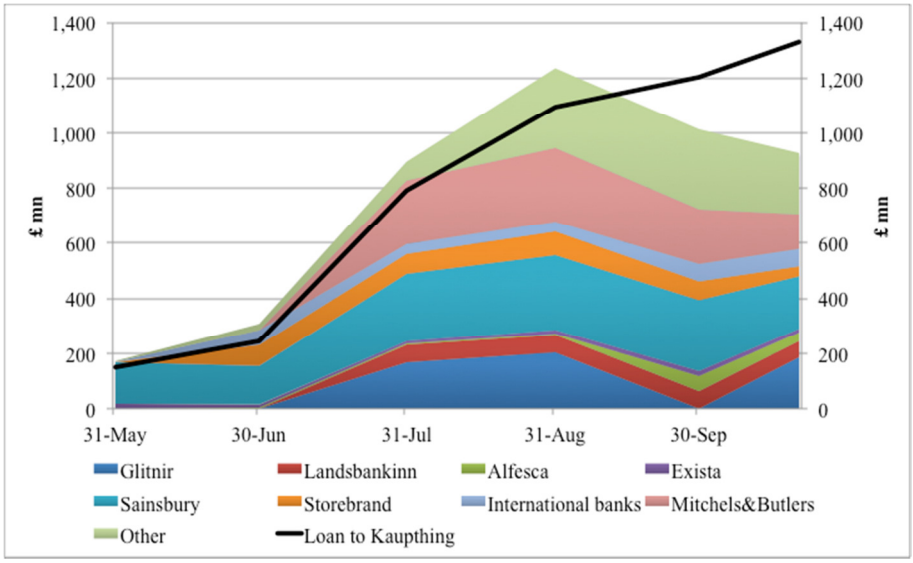
Judging from Table 2.1, Kaupthing was in by far the best position of the banks with what appeared to be ample liquidity. But the key to understanding the fall of Kaupthing are events relating to its UK subsidiary, Kaupthing Singer and Friedlander (KSF). Cross-default provisions in loan agreements and bonds issued by the parent bank implied that if a subsidiary of Kaupthing came into default, the loans and bonds would come due.

Beginning in March 2008 KSF had collected £2.8 bn (€3.5 bn) into its internet-based Edge retail deposit accounts in the UK. As withdrawals intensified from Edge deposits following the nationalisation of Glitnir on 29 September (withdrawals that day were £37 mn), the UK FSA demanded on October 3 that KSF draw on a liquidity swap contract with Kaupthing worth £1.1 bn (€1.4 bn). This swap contract was counted among liquid funds in liquidity reports from KSF to the UK FSA, which had demanded that KSF keep 95% of Edge deposits in liquid funds. In addition, by September 30 Kaupthing had borrowed £1.2 bn (€1.5 bn) from KSF against collateral (Fig. 2.2). That loan exceeded the collateral by £200 mn (€250 mn) on September 30; by Friday October 3 this shortfall is likely to have widened considerably – perhaps close to the £0.4 bn shown for October 21 in Fig. 2.2 – since the UK FSA demanded a payment of £0.5 bn (€0.6 bn) to compensate for the shortfall. In total the payment from Kaupthing to KSF demanded by the UK FSA was £1.6 bn (€2 bn), to be made no later than Monday October 6.[22] The FSA also imposed several other restraining measures on KSF to prevent it from helping the parent bank. Kaupthing was unable to meet the demands for payment to KSF, the liquidity numbers in Table 2.1 notwithstanding.

[21] As in the case of Glitnir, the ECB postponed its margin call late on Sunday evening October 5.

[22] Communication between the FSA and Kaupthing from September 29 2008 as well as testimony by FSA and HM Treasury staff before UK courts is documented in SIC (2010a) (vol. 7, pp. 159-175).

Figure 2.2 KSF lending to Kaupthing against collateral
Monthly data 2008. Last datapoint from October 21 2008. The coloured bands show the value of the different assets placed as collateral.



Source: SIC (2010a)

On Friday October 3 it was clear that all three banks needed emergency funding:

- Glitnir needed well over €2 bn, of which €0.64 bn to meet a margin call from the ECB.
- Landsbanki needed €0.72 bn, €0.32 bn to pay the UK FSA and €0.4 to meet a margin call from the ECB.
- Kaupthing needed €2 bn to meet the demands of the UK FSA.

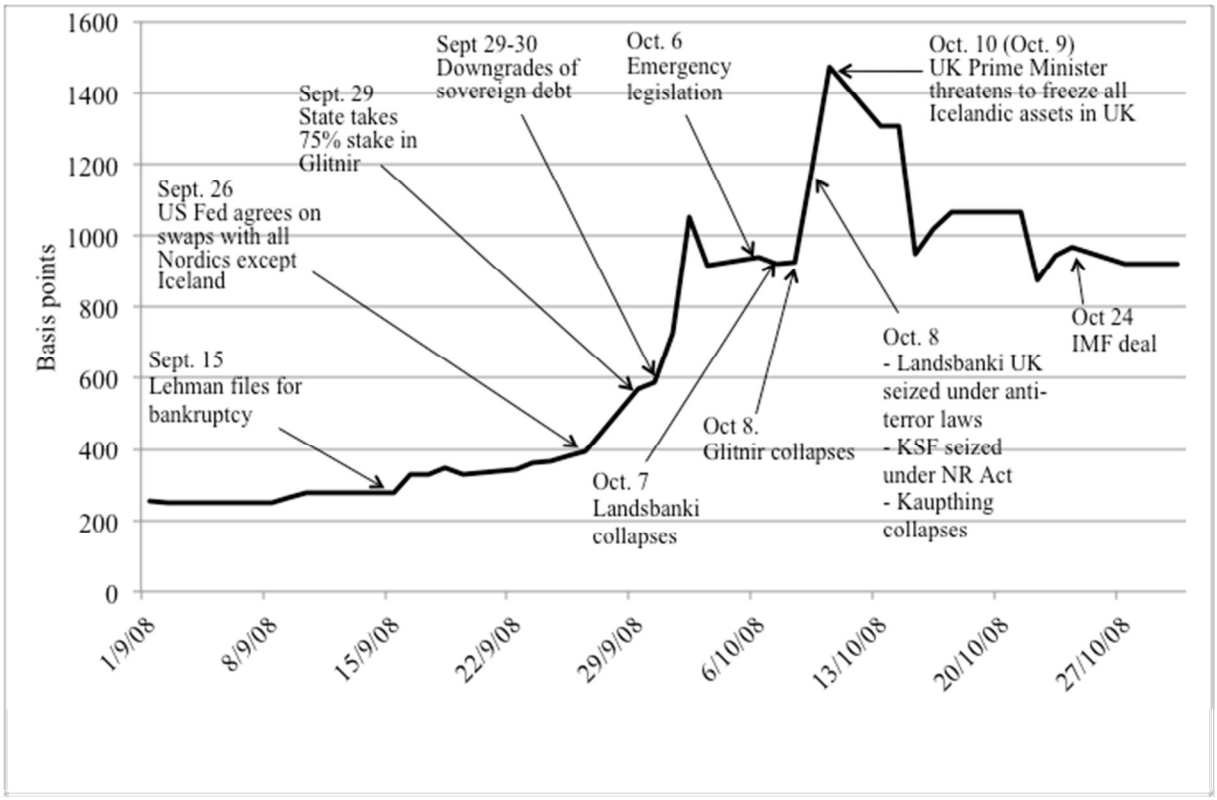
In total, approximately €5 bn were needed in emergency funding; about €2.3 bn were due to the UK FSA and €1 bn to the ECB. Icelandic authorities followed these developments closely and were now faced with the question of how to respond. Gross currency reserves were approximately €2.6 bn, so there was no way the CBI could come up with the cash in the absence of external funding. Furthermore, it was likely that there would be a run on international deposits at all the banks; these amounted to €15 bn in total at this time. And there were big payments on loans ahead in 2009, about €5 bn in each half of the year.

During the months leading up to October 2008 Icelandic authorities had made some attempts to obtain external funding which – except for €0.5 bn credit lines from Nordic central banks negotiated in May 2008 – had failed. The utter financial isolation of Iceland was crystallised when, on September 26, the US Fed signed swap contracts amounting to $30 bn with all Nordic central banks outside of the Eurozone except the Central Bank of Iceland (Fig. 2.3).[23] The CBI was the only Western European central bank without recourse to such funding or, indeed, to any external funding. In any case, foreign reserves were not the key issue. Rather, it

[23] The Australian Central Bank was also included in this set of swap contracts. The CBI said in a press release on September 26 that it had sought such a contract with the US Fed without success.

was whether the Icelandic state could risk taking on the associated liability. The immediate needs of the banks amounted to approximately half Iceland's GDP at current exchange rates. Assuming that deposits and payments on loans over the next year would have to be funded as well brought the contingent liability up to threefold GDP.

Figure 2.3 CDS spread of the Icelandic state and events in September and October 2008



Source: Datastream (for CDS spread) and various news sources

2.3 Preparations for the collapse

By the morning of Saturday October 4 it was clear at the highest level of government that the banks were going to fail. What was not clear was what was to be done about it. Some preparatory work had been undertaken during the preceding months in a coordination group with representatives from the Ministries of Commerce and Finance, the CBI and the Icelandic Financial Services Authority (FSA; see Section 4.3 for details). But there was no agreed plan on what to do in a systemic banking crisis. Furthermore, there was mistrust and lack of coordination between the two parties in the coalition government, the Independence Party (IP) and the Social Democratic Alliance (SDA),[24] and very deep mistrust between the CBI and the

[24] It was symptomatic of the lack of coordination between government parties that on Saturday morning one of the authors of this paper, Fridrik Mar Baldursson, received a call from the Ministry of Economic Affairs and was asked to come to a meeting where the situation of the banks was to be discussed. A little later he received a second call, now from the Prime Minister's Office, where he was asked to come to a similar meeting at that ministry. The Minister of Economic Affairs was from the SDA whereas the Prime Minister was from the IP.

SDA.[25] Fairly soon, however, the two parties of government were working together. The aforementioned coordination group was not convened, but a new working group, based at the FSA, was set up. This group in cooperation with the FSA worked on an emergency plan. In relation to that work the Emergency Legislation that was passed by Parliament on Monday evening October 6 (see below) was finalised, mainly at the Ministry of Commerce.[26] Initially, the CBI was not directly involved in these crisis preparations. By Monday morning, however, it may be said that the different parties were working together. The CBI was still not directly represented in the working group at the FSA, but banking consultants from JP Morgan, who had been brought in as advisors late on Sunday evening by the CBI, participated in the work. Remarkably, the Ministry of Finance played a minimal role in these preparations.

The government at this time focused on legislation that would protect the Icelandic economy at least partly from the inevitable fallout of a collapse of the banks. The idea was to ring-fence the domestic part of the banking system to the extent possible, allowing the international part to fail. Key to this was to place deposits foremost in the line of claims – until Monday evening October 6 they were on the same footing as bonds and loans – and to give the government authority to intervene in the banks and move domestic assets and liabilities to other entities.[27] Initially the authorities thought that the requisite legislation had to be passed by Sunday evening, and they had made preparations for calling a special meeting of Parliament to enact it. After the ECB postponed margin calls against Glitnir and Landsbanki on Sunday evening, there was a temporary illusion that the immediate crisis had passed. But the ECB's margin calls were only a fifth of the liquidity shortfall and on Monday morning work resumed on preparations for the collapse. Trading in the banks' shares was stopped on the Icelandic Stock Exchange (ICEX).

There were extensive interactions during October 4-6 between the government and the banks as well as other stakeholders, including social partners and pension funds who were under pressure to liquidate foreign holdings and bring foreign exchange back to Iceland in order to boost reserves. In particular, each of the banks argued that while it was inevitable that the other banks would collapse it should be saved and the other banks, in full or in part, should be merged with itself.

The media had become aware of the meetings that took place over the weekend. On Monday at 4 PM Geir Haarde, Prime Minister of Iceland, gave a speech broadcast live on national television. The speech was intended to inspire confidence, *e.g.* by stating unequivocally that

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Baldursson became member of the working group working at the FSA. By Thursday October 9 he was leading negotiations with the IMF on Iceland's behalf.

[25] The Chairman of the Board of Governors of the CBI was former Chairman of the IP. He was Prime Minister 1991-2004 and Minister of Foreign Affairs 2004-2005 before he became the Chairman of the CBI in 2005.

[26] There existed previous drafts for the Emergency Legislation which had been prepared by some of the people who participated in or were connected to the coordination group mentioned earlier in this paragraph.

[27] Initially, Glitnir – which at this time was considered to have been *de facto* nationalised, even if the formal decisions and transactions were yet to made – was to receive domestic assets and liabilities from Landsbanki and Kaupthing. The decision to create new banks rather than use Glitnir was taken on Monday October 6.

deposits would be protected. But he also declared that the banks would not be supported by the government, because this would entail too much risk for the state. The speech concluded with a call for unity and, finally, the words "God bless Iceland". Rather than raising confidence in the general public, the result was quite the opposite.

On Monday evening at 11:18 PM the Parliament enacted Act 125/2008, usually referred to as the *Emergency Legislation*. The Act changed several important pieces of legislation. Most importantly, the law on financial undertakings was changed, giving the FSA virtually unlimited powers to intervene in the operations and financial structure of a bank. The FSA could take over the role of a shareholders' meeting, transfer assets and liabilities to other financial undertakings or merge a bank with another financial undertaking. In short, in a crisis the FSA could do whatever it wanted with a bank in trouble.

The Emergency Legislation gave the government the power to create new banks and supply the necessary equity. The law on deposit insurance was changed so that claims of deposit insurance funds into the estate of a bank would have priority over other claims such as those of bondholders and other lenders. With the passing of this legislation the impending threat to Icelandic society had been minimised to the extent possible. The ground was now prepared for the collapse of the banks.

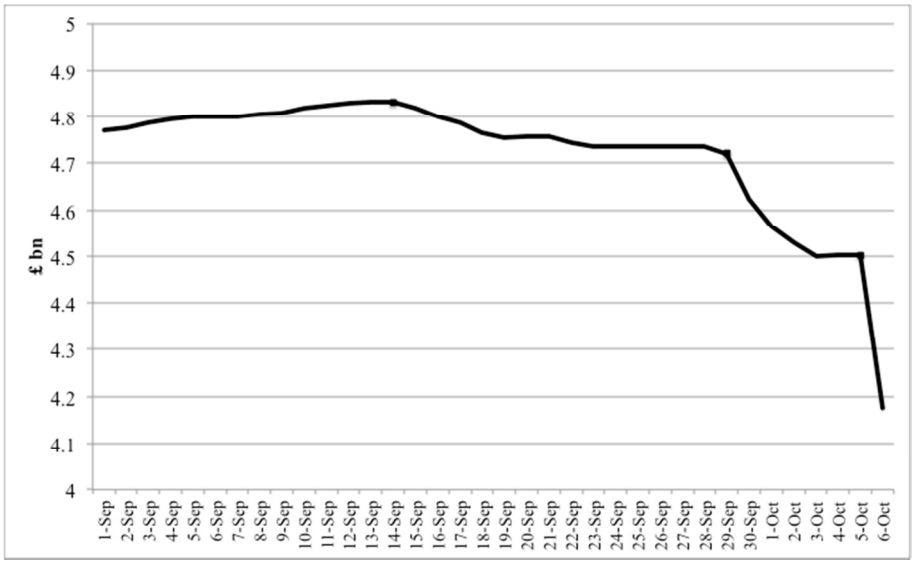
2.4 The fall of Landsbanki

Even if the ECB had postponed its margin call against Landsbanki on Sunday evening there remained the £250 mn demanded by the UK FSA. Landsbanki had sufficient liquidity in Icelandic kronur, but the currency market was *de facto* closed for transactions of this size. Moreover, on Monday October 6 its situation was rapidly deteriorating, with intensifying outflows from Icesave accounts (Fig. 2.4). After the Icelandic Prime Minister's speech on Monday October 6 there was a run on the Icesave deposits, 40% of which were callable. The Icesave accounts were internet-based, so a run was possible at any time of the day. Landsbanki requested permission to halt payments for 60 days, as provided in the terms of the accounts, but on October 6 the UK FSA denied Landsbanki permission to do this. Daily data for the overall international deposits at Landsbanki, including Icesave deposits in the Netherlands as well as wholesale deposits, are not available. Monthly data indicate, however, that during the period September 30 – October 6 deposits dropped by €1.4 bn. Judging from the development of the UK Icesave deposits much of the drop is likely to have taken place on Monday October 6.

Following a sharp drop after the takeover of Bear Stearns in March 2008 the Icesave deposits were on a stable upwards trend. Underlying this stability was, however, another trend: the number of accounts rose steadily while the average amount in each account fell (cf. footnote 106, Section 5.2.2). We conjecture that many UK depositors with holdings in excess of the maximum amount guaranteed per bank by deposit insurance considered all banks risky and therefore spread their holdings among several banks. The upwards trend of total deposits reversed following the fall of Lehman on 15 September, but only slowly. When bad news

began coming from Iceland after the announced nationalisation of Glitnir, there was a more rapid decline of approximately 5% over the next week.[28] Yet it was only on October 6, as news came of the impending collapse of Iceland's banks, that a full-scale run began. To the extent that depositors reduced the amount of each deposit below the guaranteed level, their behaviour was rational. Their faith in deposit insurance for Icesave was evidently greater than that of depositors in Northern Rock a year earlier, perhaps because of changes in the scheme implemented just after the Northern Rock bank run.[29]

Figure 2.4 'Icesave' deposits in Landsbanki's London branch



Source: SIC (2010a)

Landsbanki management formally requested a loan of £200 mn from the CBI on Monday October 6. That request was denied, since earlier that day the CBI had granted a loan of €500 mn to Kaupthing which was deemed to have a chance of surviving. In the evening it was clear that Landsbanki could not raise the cash demanded by the UK FSA, and the authority decided to close the London branch of Landsbanki. In the early hours of Tuesday October 7 two board members of Landsbanki came to the Icelandic FSA and said the bank could no longer meet its obligations. The FSA then seized control of the bank and put it into receivership by force of the Emergency Legislation passed a couple of hours earlier.

[28] Considering other possible explanations for the decline, the blanket guarantee issued by Ireland on 30 September 2008 on all liabilities of the Irish banks may have had an adverse effect on the Icesave deposits, but this would probably have been felt by all deposit-taking institutions in the UK. Furthermore, we find it unlikely that the rise in the maximum amount covered by the UK deposit insurance scheme (FSCS) to £50,000 on 3 October would have had much impact, except possibly to counteract the effect of the Irish guarantee: Landsbank subscribed and paid premiums to the FSCS for membership in a so-called top-up scheme which brought the maximum insured amount in the Icesave accounts up to the UK level. The Emergency Legislation gave the claim of the FSCS and other deposit insurance schemes priority status as claimants to the assets of Landsbanki. Their claims are set to be covered in full.

[29] The Northern Rock episode in mid-September 2007 took place when UK deposit insurance covered fully only the first £2000 in a deposit, with 90% cover for the remainder, up to a £35000 deposit limit. From 1 October 2007, there was full coverage up to the £35000 limit, which rose to £50000 on 3 October 2008, and most recently to £85000 on 1 January 2011.

Icesave depositors in the UK and the Netherlands were left outside of the 'ringfence' created by the Emergency Legislation: when Landsbanki was put into administration by the Icelandic FSA, deposits in Icelandic branches only were transferred into the 'New Landsbanki' that was created as a receptacle for domestic assets and liabilities of the collapsed bank. Icesave depositors were therefore left with claims to deposit insurance. Since the Icesave accounts were located in branches of Landsbanki (rather than subsidiaries), it was the Icelandic deposit insurance fund – the Depositors' and Investors' Guarantee Fund – that was responsible for covering deposit insurance. That fund contained only a small fraction of the €4 bn worth of insured deposits and was unable to pay out the insured amounts to depositors. The UK and Netherlands authorities, however, covered the guaranteed portion of Icesave deposits, including the amount guaranteed by the Icelandic deposit insurance fund, in full soon after Landsbanki collapsed.

On Tuesday morning October 7 the UK Chancellor of the Exchequer and the Icelandic Minister of Finance had a telephone conversation. The Chancellor wanted a firm commitment from Iceland to support the Icelandic deposit insurance fund in paying deposit insurance to UK depositors in Icesave. The Icelandic minister said he hoped this would be possible, that Icelandic authorities were working towards a solution but that he could not promise that it could be done. As became clear, the UK minister was very dissatisfied with those answers. The next morning, on October 8, he declared on BBC Radio 4 that Iceland had 'no intention of honouring their obligations'. He also said that 'we are pursuing Iceland and we will pursue it vigorously to make sure that we get the money due to us back'.

On October 8 British authorities seized the UK subsidiary of Landsbanki (Heritable Bank) and the Landsbanki London branch. UK authorities also issued a freezing order on assets of Landsbanki as well as assets related to Landsbanki but owned by Icelandic authorities. This was done by force of the Anti-terrorism, Crime and Security Act, 2001. The following day the UK Prime Minister was interviewed on BBC and stated: [30]

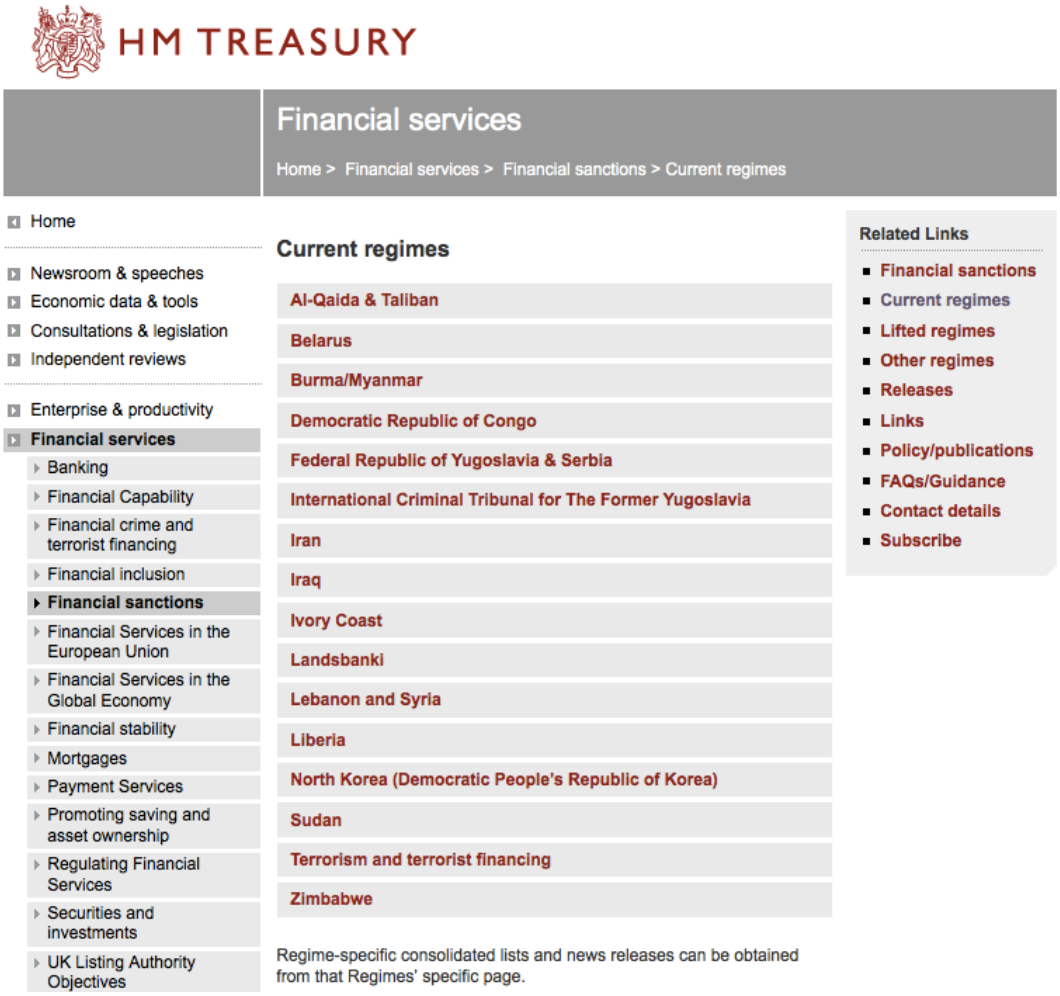
> What happened in Iceland is completely unacceptable. I've been in touch with the Icelandic prime minister. I said this is effectively illegal action that they have taken. We are freezing the assets of Icelandic companies in the United Kingdom where we can. We will take further action against the Icelandic authorities wherever that is necessary to recover the money. […] But this is fundamentally a problem of an Icelandic-registered company, Icelandic-registered financial services authority – they have failed not only the people of Iceland, they have failed people in Britain.

A freezing order for all Icelandic companies in the UK was never issued. The freezing order against Landsbanki and Icelandic authorities was, however, in effect until June 6 2009. The HM Treasury website (Fig. 2.5) displayed Landsbanki on a list of rogue states and terrorist

[30] As cited in SIC (2010a)

organisations such as Al-Qaeda and the Taliban on until October 22, when it was transferred to a special category of non-terrorist organisation subject to freezing orders. These actions caused enormous difficulties for the Icelandic authorities.

Figure 2.5 Landsbanki on HM Treasury's list of regimes under financial sanctions



Source: HM Treasury website, October 10 2008

The House of Commons Treasury Select Committee report on the impact of the Icelandic banking crisis (2009) acknowledges this, and more:

> '49. During the collapse of the Landsbanki bank in October 2008, the Chancellor of the Exchequer took steps to safeguard the deposits of UK investors. We note that his comments regarding the intentions of the Icelandic authorities had a serious impact on the confidence held in the remaining solvent Icelandic bank, Kaupthing, and it has been suggested that this may have contributed to its collapse. We note that the published transcript of the Chancellor's conversation with the Icelandic Finance Minister does not confirm that the Icelandic Government had stated that it would not honour its obligations…[31]

[31] The Chancellor has subsequently written that in this call, he 'got an assurance that they would compensate British investors [depositors] in Icelandic banks', but he did not believe it (Darling 2011, p. 154). A meeting in

50. Although the Icelandic banking system was vulnerable to the crisis that has affected the international financial system since 2007, the actions of the UK Government in making statements on the capacity and willingness of the Icelandic Government to provide assistance to non-Icelandic citizens, whether or not such statements were accurate, turned the UK Government from being a seemingly passive observer of events, to an active participant in the market…

51. The use of the Anti-Terrorism, Crime and Security Act 2001 had considerable implications for the Icelandic authorities in maintaining a functioning financial system… The use of this Act inevitably stigmatises those subject to it and a less blunt instrument would be more appropriate.'[32]

2.5 The fall of Glitnir

On October 6, as it became clear that the banks would collapse and the Emergency Legislation passed, the owners and management of Glitnir asked the FSA to call a shareholders' meeting on October 7 rather than October 11 as had been decided a week earlier. Their hope was that by having the meeting immediately the government could be held to its earlier decision to inject new equity into Glitnir and that the decision could be made legally binding. These requests were ignored by the FSA.[33] Glitnir faced a financing shortfall of at least €1.5 bn (and probably more by this point). Glitnir was taken over by the Icelandic FSA and put into receivership late in the evening of October 7.

2.6 The fall of Kaupthing

As noted in Section 2.2, the UK FSA had demanded that Kaupthing close a swap contract and make up a margin deficit at KSF. In total Kaupthing would have to pay £1.6 bn (€2 bn). This was to be done no later than Monday October 6. There had been political pressure at the highest level for making this payment.[34] On Monday Kaupthing Bank was granted a €500 mn four-day loan from the CBI with Kaupthing's Danish subsidiary – FIH – as collateral.[35] The grounds for making this loan have not been clarified, but at this point the Icelandic authorities

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early September had 'coloured my subsequent dealings with Icelandic ministers' – *i.e.*, he didn't believe them from that day forward (pp. 137-138).

[32] The Chancellor wrote, apparently with some regret, that this action was indeed 'open to the mistaken impression that we regarded Landsbanki – or even worse, Iceland – as a terrorist organisation (Darling 2011, p. 166). But he seems to suggest he had no alternative – the UK authorities had to seize Landsbanki assets, not least because he did not believe the Icelandic authorities on anything. Even if that were justified, however, clever lawyers might have found a 'less blunt instrument'.

[33] By this time the CBI had realised that most of the equity injection would be lost due to losses on loans for the financing of Glitnir shares, cf. Section 2.2.

[34] SIC (2010a) documents conversations between the Icelandic Prime Minister and the British Chancellor of the Exchequer on October 3 and between the Icelandic and British Prime Ministers on October 6. Both UK ministers were pushing for payment from Kaupthing to KSF and said that Kaupthing had moved money out of Britain in an unlawful manner – probably meaning that Kaupthing had circumvented a demand from the UK FSA that 95% of Edge deposits must at all times be kept in liquid funds or instruments.

[35] The purchase price of FIH in June 2004 was €950 mn.

probably thought that Kaupthing had a good chance at surviving. The pressure from the UK is also likely to have played a role.

What happened to the CBI loan is unclear – according to Kaupthing's former CEO, it was mostly used to cover runs on subsidiaries of Kaupthing other than KSF. It is clear that the loan was not paid into KSF, however, since the requisite payment had not been made by the morning of October 7. On October 7 there was frequent communication between the UK FSA and Kaupthing, in which Kaupthing tried to delay the FSA in placing KSF into administration and tried to convince the authority that they could sell assets and undertake other measures in order to be able to come up with the money.[36] Kaupthing also asked the FSA for support for KSF from UK authorities from the £500 bn Bank Recapitalisation Fund. This request was summarily rejected.[37]

In the morning of October 8, after desperate attempts by Kaupthing management to come up with the £1.6 bn that the FSA required and to convince the FSA that the money could be brought forward in a few more days so Kaupthing should be given more time to meet the demands, HM Treasury decided, based on the Northern Rock Act, to transfer the Edge accounts to ING.[38] KSF was put into liquidation in the afternoon of October 8. At 12:33 PM this day the Chancellor of the Exchequer said in a speech in the House of Commons that Kaupthing had been "put into liquidation within the last hour" over an hour before that happened. SIC (2010a) documents some inconsistencies between HM Treasury and the UK FSA – the FSA does not seem to have been aware of the actions of the Treasury until after the fact.

Much remains unclear about these events. SIC (2010a) concludes that 'it is not obvious what is the cause and what the consequence in the minds of UK authorities in the sequence of events which they controlled' (our translation).

After KSF had been taken over by UK authorities, cross-default provisions in loan and bond covenants were triggered and a good part of Kaupthing's funding – how much has not been documented – came due. Default was imminent. Kaupthing's board resigned in the early hours of October 9 and the bank was taken over by the Icelandic FSA.

2.7 Bank split

Landsbanki collapsed early on October 7, a few hours after the Icelandic Parliament passed the Emergency Legislation. As noted above, the Act gave deposits and deposit insurance priority over other claims on the banks and gave the Icelandic FSA the authority to ring-fence

[36] There does not appear to have been much real basis for the promised actions and plans to raise the required funds on behalf of Kaupthing.

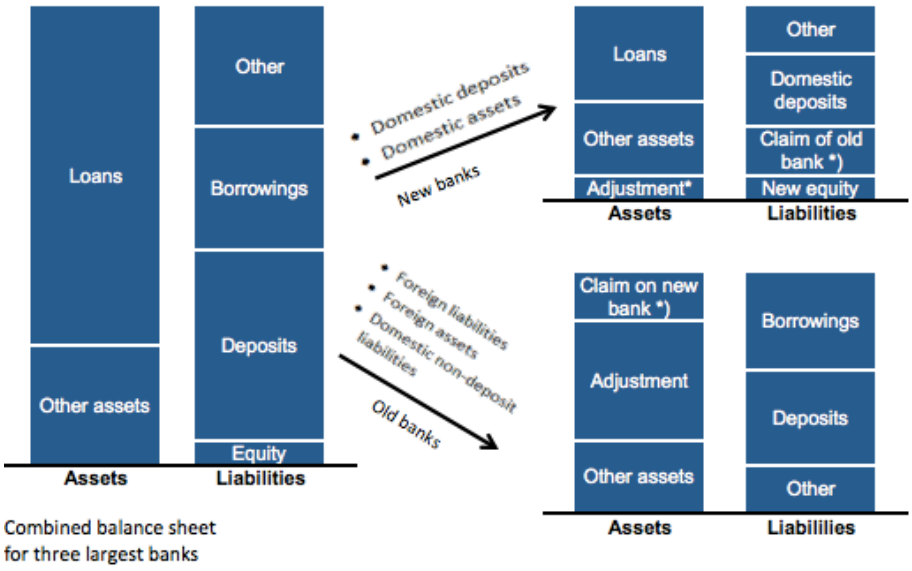
[37] A day earlier the CEO of KSF had asked for a loan from the Bank of England against collateral which was denied immediately.

[38] In October 2009 this decision, challenged in court by Kaupthing's Resolution Committee, was found to be lawful by the UK High Court of Justice.

the domestic part of distressed banks by transferring domestic assets and liabilities into new banks. This was then done as the banks fell one by one. All deposits in Icelandic branches went into the newly created banks. Deposits in foreign branches got priority status as claims on the old banks. Bondholders of the banks – including foreign parties but also Icelandic pension funds and the Central Bank of Iceland – were left with claims to assets remaining in the old banks, second in line after deposits and deposit insurance. Figure 2.6 shows the separation schematically.

In all three new banks there was a substantial margin of assets over liabilities, even after significant writedowns of the former. This margin became a claim of the old bank on the new. In the case of Kaupthing and Glitnir this claim was eventually turned into a majority equity share of the old bank. In the case of Landsbanki most of the claim was covered by a bond now held by the old bank. The old banks came under control of a so-called 'resolution committee', who functioned as administrators.[39] The Icelandic state supplied most of the new equity for New Landsbanki, but took a minority share in New Glitnir (now Islandsbanki) and New Kaupthing (now Arion banki). Foreign creditors are now, indirectly, majority shareholders in the two latter banks while Landsbanki is fully owned by the Icelandic state.

Figure 2.6 Split of banks into 'new' and 'old'



*) The claim of an old bank on the new bank can take the form of a bond (in the case of Landsbanki) or equity (in the case of Kaupthing and Glitnir)
Source: Icelandic Chamber of Commerce, amended by authors

2.8 Cross-border interaction

All the Icelandic banks were cross-border banks and had international subsidiaries. The Danish subsidiary of Kaupthing, FIH, was ring-fenced by Danish regulation and seems not to have experienced major problems during the collapse. FIH, which was pledged to the CBI

[39] The resolution committees were later replaced by winding-up boards when the banks entered formal bankruptcy proceedings.

against the €500 mn loan to Kaupthing, received assistance from the Danish government. First, FIH – as other Danish banks – was covered by a general government guarantee on deposits and loans which came into force on 6 October 2008 and lasted until 30 September 2010. Second, in June 2009, FIH received a capital injection from the Danish government of €255 mn (DKK 1.9 bn) under a Danish banking support program. In short, FIH received government support in the same way as other Danish banks and is still operating.[40]

As Glitnir collapsed, its Norwegian subsidiary was granted a liquidity loan of €590 mn (NOK 5 bn) from the Norwegian deposit insurance fund. The loan had a duration of seven days. The resolution committee of Glitnir, which wanted to preserve the value of the Norwegian subsidiary to the extent possible, asked that the loan be prolonged, but the request was turned down. Under strong pressure from the Norwegian deposit insurance fund the bank then had to be sold and was purchased for €35 mn, 10% of equity, by a consortium of Norwegian savings banks under the leadership of the CEO of Sparebanken SMN. A month later Sparebanken SMN estimated the purchased bank, now called BN Bank, to be worth €236 mn in its annual report (DN.no, 2009). The CEO of Sparebanken SMN was also the chairman of the board of the Norwegian deposit insurance fund. He did not, however, participate in the decision when the request to prolong the liquidity assistance was discussed and denied in the board (Morgunbladid, 2009).[41] BN Bank is still operating in Norway.

Thus the Swedish and Danish authorities supported the subsidiaries of Icelandic banks (Kaupthing in both cases), while Norwegian and UK authorities did the reverse. The role of UK authorities was crucial: almost half of the liquidity gap at Icelandic banks was due to demands from the UK FSA. It is understandable that the British authorities wanted to guard the interests of UK depositors and taxpayers and safeguard financial stability in Britain. On the other hand, one of the first acts of the new UK Prudential Regulatory Authority (on 1 April 2013) was to do precisely the opposite for Cyprus of what HM Treasury had done for Iceland: they transferred deposits from the UK *branch* of Laiki bank to the UK *subsidiary* of Bank of Cyprus, thereby giving UK deposit insurance coverage to those deposits.[42]

Cooperation with the Icelandic authorities might have avoided collapse of the Icelandic banks or at least have limited the damage without imposing undue risk on the UK. For example, based on information in reports of KSF's administrators (Ernst & Young 2012a) it seems a fair hypothesis that KSF could still be a going concern today if it had received liquidity support rather than being subject to the aggressive actions of 8 October 2008.[43] Whether

[40] The CBI sold its share in FIH in September 2010 for €670 mn. The price was, however, contingent on possible future impairments. As many banks in Denmark, FIH has been forced to write off loans to a substantial degree and the net payment appears set to be about €250 mn implying a €250 mn loss on the loan to Kaupthing.

[41] In January 2009 the Norwegian CEO in question was quoted as follows in the Norwegian press: "we knew [Glitnir's Norwegian subsidiary] well and knew it was a good bank" (DN.no, 2009).

[42] *Financial Times*, 'Bank watchdog warns on retail branches', 4 April 2013. Recall that the UK authorities had insisted on Icelandic responsibility for deposits in Icesave accounts in the London branch of Landsbanki.

[43] A similar conclusion holds for Heritable Bank, the former subsidiary of Landsbanki. Expected payments to non-secured non-preferential creditors are expected to amount to 86-90% of claims; 77% of such claims have already been paid out (Ernst & Young, 2013b).

Kaupthing would have survived is a more difficult question – from the loan data revealed by SIC (2010a) and discussed in Section 3.3 it seems unlikely, but the possibility cannot be ruled out. Indeed, Benediktsdottir *et al.* (2011) and Flannery (2010) both admit that the banks might have been solvent even at the end of September 2008 (so *a fortiori* in autumn 2007). Actions of the UK authorities, which ended with HM Treasury placing Landsbanki on a list alongside rogue states and terrorist organisations, were both unnecessarily aggressive and extremely damaging.

The aggressive response to the Icelandic crisis, in the UK and elsewhere, may in part have been a reaction to 'depositor panics and retail bank runs' (Allen *et al.* 2011, p. 38) in Europe following the failure of Iceland's banks. Iceland was in this sense a victim of the circumstance that regulation in Europe had not caught up with the growth in cross-border banking.

3 Analytical framework

In this section we sketch an analytical framework for the Icelandic banking crisis based on the microeconomic theory of banking and banking regulation.[44] No single model captures all the important aspects of this story – it is too complex for that – and the categories and time divisions suggested below represent a gross simplification and abstraction of reality. Such a framework may nevertheless be useful in understanding the incentives and motives for the actions of bankers and regulators.

Naturally, the main players are the regulator and bankers. We do not distinguish between owners and managers of the banks, implicitly assuming that their incentives are aligned. We also assume that the regulator's incentives are aligned with those of the government.

The liabilities of each bank are composed of equity and debt. Equity is held by a concentrated group of owners. We may distinguish between depositors and other creditors. We simplify the asset side to be loans only.

Time is divided into three periods: Period 0, 1 and 2. Importantly, in Period 0 the players do not know with certainty what lies ahead. From that vantage point Period 1 is most likely to be a time of 'business as usual', although there is, as always, a positive probability of adverse developments ahead, *i.e.* a 'bad' outcome in Period 1. When players are in Period 1 they have observed the actual state of the world, although full information on the quality of a bank's assets – which may have deteriorated significantly in the case of a bad outcome – is in general not known to the regulator and other non-bankers.

[44] Dewatripont and Tirole (1994) give a theoretical treatment of the regulation of banks, using the principal-agent approach. A more recent and comprehensive overview of the microeconomic theory of banking is offered by Freixas and Rochet (2008). Degryse *et al.* (2009) give a corresponding overview of empirical research in banking.

In Period 1 players again envisage two possible outcomes in Period 2: a good and a bad one. If a bad outcome obtained in Period 1 then the good outcome can be thought of as "resurrection" and the bad one as a full-fledged crisis. Before Period 1 ends, the players can undertake certain actions. For example, if a bad outcome obtained in Period 1 a bank may decide to disclose the true state of its assets to the regulator who in turn can intervene in the bank if it is disclosed to be insolvent. On the other hand a bank that is in reality insolvent may decide to keep that fact secret from the regulator and carry on, usually doubling down with further risky bets (although we ignore this below), hoping for a good outcome in Period 2. This latter action is usually called 'gambling for resurrection'.[45]

To place the real timeline of the Icelandic financial crisis into this framework, we may think of Period 0 as the pre-crisis time – the spring and early summer of 2007. Period 1 spans the turmoil months from August 2007 to the summer of 2008, and Period 2 is the full-fledged crisis in September-October 2008.

We take lending activities and other actions of banks in Period 0 as given, concentrating instead on the analysis of events in Period 1.[46] We assume banks have lent to two types of borrowers during Period 0: solid borrowers who are guaranteed to repay their loans, no matter what developments are observed in Periods 1 and 2, and risky borrowers who are more sensitive to general market developments.[47] Some of the risky borrowers may be firms with equity held by the bankers themselves. Loans are granted for two periods, *i.e.* until Period 2, but with covenants such that the bank may place an insolvent borrower into liquidation in Period 1.

We concentrate on one bank. Suppose a bad outcome is observed in Period 1 and that this has an adverse effect on risky borrowers to such an extent that they appear insolvent – their assets do not suffice to cover their loans. The bank then has two choices in Period 1: it can demand that the risky borrowers be liquidated or it can – in the absence of regulatory intervention – exercise forbearance and allow them to continue operations.[48]

In the case of liquidation of risky borrowers only a certain fraction of loans is recovered, and (we assume) the bank no longer fulfills regulatory capital requirements. Liquidation is assumed to be observable by the regulator who may intervene the bank. Most of its equity would then be written off; equity in risky firms held by the bankers could also be written off.

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[45] Such behaviour was observed, for example, during the US Savings and Loans Crisis of the 1980s and 1990s (Dewatripont and Tirole 1994, Hellwig 1995).

[46] We could assume a principal-agent relationship between the bank and the regulator in Period 0, where the regulator would induce the bank to put serious and costly effort into screening borrowers thereby improving the risk profile of its assets, but this would not have a material effect on the analysis of events in Period 1 which is of most interest to us.

[47] Solid borrowers could for example be homeowners with a low loan-value ratio. Risky borrowers can for example be holding companies who have borrowed to finance share purchases.

[48] This aspect of our analysis draws on Aghion *et al.* (1999) and Mitchell (2001); see also Chapter 9.5.2 of Freixas and Rochet (2008).

But even if the world is in a bad state in Period 1, there is still the chance of a good outcome in Period 2. Suppose the regulator does not have adequate information on the true state of the bank's assets and therefore does not intervene. If the bank then decides to roll over bad loans to risky firms they may, with a certain probability, experience 'resurrection'. This would return risky borrowers to solvency and allow them to repay their loans at maturity with interest. (Solid borrowers always do this.) The bank itself would be solvent again, and its owners would retain their equity plus a profit due to an interest margin on loans. Equity in risky firms owned by the same parties will also be recovered.

If on the other hand there is a bad outcome in Period 2 – a full-fledged crisis – risky borrowers will fail completely, with both loans and equity fully written off. The bank becomes insolvent and not only is its equity fully written off but there will also be losses on its debt.

Considering the primary incentives of risky borrowers, it is obvious that they will want to roll over their loans in the hope of experiencing a good outcome in Period 2 – they then stand a chance of recovering their equity while they are sure to lose everything if they are liquidated. Unless the probability of a good outcome is vanishingly small the bankers will – in the absence of other incentives possibly provided by the regulator – want to do the same, to 'gamble for resurrection'. Their gambling motives are intensified by their role as stakeholders in some of the risky borrowers and the possibility of a bailout (subsidy or loan) from public funds, should their bet not pay off.

Bankers will then also have incentives to undertake other lending activities that may give a higher payoff in the case of a good outcome, *e.g.* extending even more risky loans to borrowers squeezed by the bad state of the world in Period 1. Banks free to set deposit interest rates and supported by non-risk-adjusted deposit insurance will also have incentives to raise deposit rates, attract more funds, and extend more loans to risky borrowers (Hellman *et al.* 1993).

In a worst case scenario, bankers may abandon the hope of resurrection, choosing to loot the bank by fraudulent lending practices such as lending to their own holding companies and related parties (Akerlof *et al.* 1993).

The liability side of the bank's balance sheet may also suffer if a bad state of the world is observed in Period 1. There may be a run on market funding (no rollovers, demanding more collateral, etc.) due to general market conditions or by well-informed investors, and possibly intensified by the CDS market (see Sec. 5.2.4).[49] Depositors, who are not as well informed and also covered by deposit insurance, will be less prone to a run. The bank may respond to curtailed funding by deleveraging, liquidating loans to risky firms.[50] A bank playing for

[49] Bryant (1980) and Diamond and Dybvig (1983) are the seminal papers on bank runs; see also the excellent overview of later literature in Chapter 7 of Freixas and Rochet (2008).

[50] A run by informed investors is therefore similar to regulatory intervention and may be efficient, see Freixas and Rochet (2008), Chapter 7.4.

resurrection, shut out of long-term funding, will indeed raise deposit rates and seek other types of short-term funding such as repo loans from private banks and central banks. Insofar as this behavior is observed, and in particular affects CDS spreads, market funding costs will rise still further.

We have assumed the regulator knows the state of the world in Period 1, but not the true quality of the bank's assets. The regulator can, however, encourage disclosure by setting up the right incentives. For example, in return for truthful disclosure it can promise to recapitalize the bank if necessary, allowing managers to keep their jobs and owners to retain at least a stake in the bank. It can also commit to punish severely bankers who are found to have lied about the true state of their banks. But there are practical difficulties involved with both carrots and sticks: if the capital required is large in proportion to the government's budget this may be prohibitively costly and risky, and it is very difficult to establish intent in misrepresentation of the true value of assets. So the regulator's promises may not be credible.

The regulator can also exert effort and perform audits and in-depth monitoring of the bank. This would typically involve a substantial increase in resources devoted to regulatory activity, which may be difficult to draw on at short notice. Regulatory capture and government policy may limit such actions, especially if there is a policy of establishing a financial center in the country in question.[51] So even if the stakes for the country are high the costs – direct and indirect – to the regulator may be so high as to prevent proper monitoring.

If the bank is a cross-border bank, a fully informed regulator who maximizes returns to domestic stakeholders may have incentives to participate in the gamble for resurrection, intentionally ignoring that the bank no longer fulfills capital requirements if assets are properly valued. Such incentives are more likely to be present when the bank is domestically owned but largely foreign funded. In such cases the regulator will tend towards excessive forbearance.[52] On the other hand, in the opposite situation the regulator may be overzealous, intervening too early in a foreign owned, but domestically funded bank (Beck, Todorov and Wagner 2013, Allen *et al.* 2011).

Finally, if there are several large banks operating in the regulator's jurisdiction, a fear of triggering a systemic crisis may lead to excessive forbearance and reluctance to intervene in the first bank that runs into trouble.

In the story that follows we shall see most, perhaps all, of the behavior predicted by the theory outlined here. The analytical framework is especially relevant in understanding the developments described in Section 5, which details funding and lending behavior of the banks after the onset of the subprime crisis in August 2007 until the full-fledged crisis of September-

[51] Iceland provides a good example of the lesson that developing financial centres in small economies may have short-term growth benefits, but the volatility costs may also be high (Beck, Degryse and Kneer 2013). Cyprus is now another case in point.

[52] The model in Beck *et al.* (2013b) can be adapted to show this.

October 2008 described in Section 2. The forbearance of Icelandic authorities is also easier to understand in light of the theory.

4 Rise of Iceland's financial sector[53]

Financial liberalisation in Iceland began in 1979 when the system was in crisis after a long period of political interference and severe financial repression.[54] Rapidly rising inflation had led to double-digit negative real interest rates in the 1970s, which significantly reduced the demand for deposits and cut savings by half. In the following decades the system was transformed through liberalisation and privatisation. By 1986 domestic banks were free to set interest rates; international capital movements were fully liberalised by 1995; and in 2003 the state had fully privatised the formerly state-owned banks which had dominated the banking sector. Along the way, securities markets were developed, including a stock exchange. In 2001, when the Central Bank of Iceland was given instrument independence, an inflation-targeting regime was adopted, including a floating Icelandic krona – an internally consistent policy which however made Iceland the smallest economy in the world with a floating currency.

4.1 Privatisation and consolidation 1998-2003

Prior to 1998 the financial sector in Iceland was composed of a varied range of banks, savings banks, and sectoral investment credit funds. Two of the largest banks and all sectoral investment credit funds were state owned.

The main domestic stimulus for the subsequent strong growth in the financial sector was privatisation, beginning in 1998 and completed in 2003. Two state-owned commercial banks, Landsbanki and Bunadarbanki, were privatised in stages between 1999 and 2003; three state-owned investment credit funds merged to form FBA, an investment bank which was privatised in 1998-1999. Following privatisation, the banking sector was consolidated through mergers of both investment credit funds and commercial banks; *inter alia*, FBA merged with Islandsbanki which later became Glitnir bank, and, soon after it was privatised, Bunadarbanki merged with Kaupthing. After this period of privatisation and consolidation three main banks emerged: Glitnir, Kaupthing, and Landsbanki (see Fig. 4.1).[55] These banks had different histories, and to a certain extent, different cultures. Kaupthing was the largest and, with its roots as a small brokerage, had the most aggressive corporate culture and growth strategy of the three.[56]

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[53] This section relies to a considerable extent on material from Portes and Baldursson (2007). Data cited here without sources can be found there.

[54] Eggertsson and Herbertsson (2005) provide a long-term historical perspective on the evolution of the Icelandic financial system.

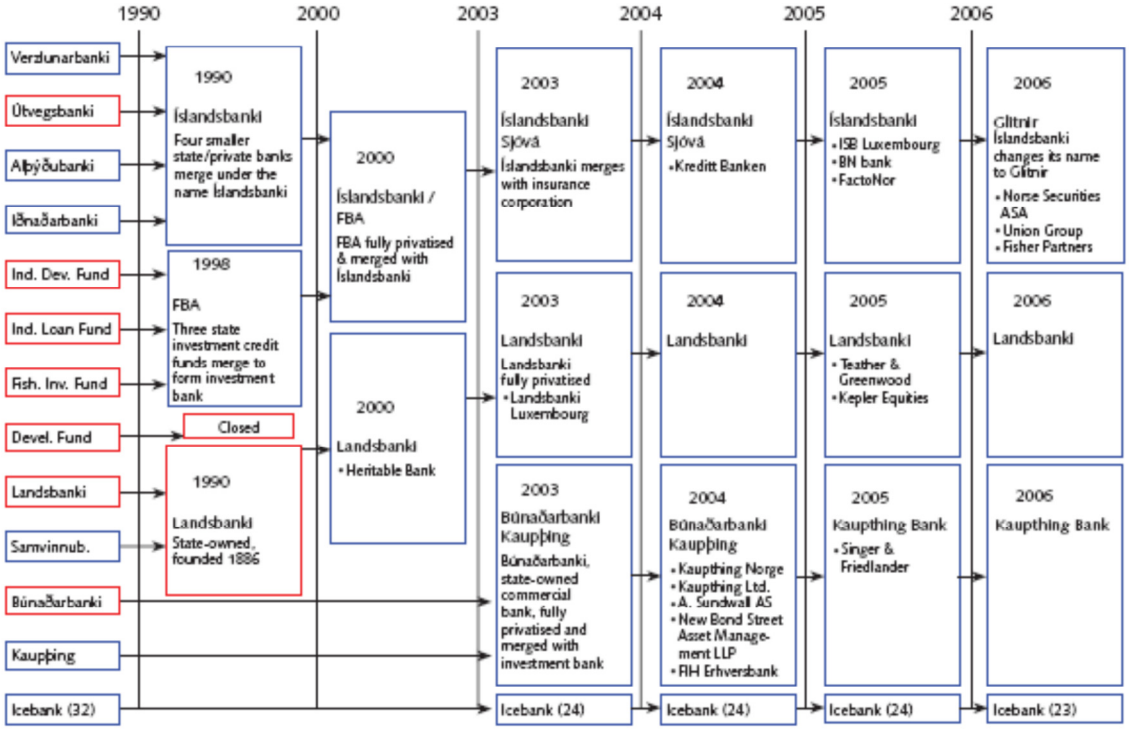
[55] Throughout we use these names for the banks, *e.g.* referring to "Glitnir" rather than "Islandsbanki" and "Kaupthing" rather than "Bunadarbanki".

[56] See Jonsson (2009) for a description of the different corporate culture at Icelandic banks.

After privatisation, the government's participation in financial markets was limited to mortgage lending institutions, such as the Housing Financing Fund (HFF), and a few other much smaller credit funds. Yet, as Iceland's main lender to households, the HFF was an important player in the domestic market.

After this process of consolidation and privatisation was mostly over in 2003/2004, the three main banks had become bigger and more efficient according to conventional metrics such as interest margin.[57] The macro-economy of Iceland was in good shape by standard measures, and the state was financially healthy (see more on the macro-economy and government finances in Section 4.8). Favourable credit ratings followed, which opened access to international credit markets. Ample availability of funds at low interest rates in international markets at this time created the opportunity for the banks, their owners, and other Icelandic entrepreneurs to expand their territory outside the small Icelandic market. This opportunity was seized.

Figure 4.1 Privatisation and consolidation of Icelandic banks[58]



Source: Central Bank of Iceland (2007a)

4.2 Ownership of the banks

As we shall show, ownership of the banks and the owners' behaviour was important for how they fared – not least after the international credit crunch of 2007 began. In its privatisation

[57] Central Bank of Iceland (2005, 2006, 2007b, 2008).

[58] Missing from this figure is Kaupthing's subsidiary in Luxembourg which was established in 1998.

programme in the early 2000s the government sought substantial ownership participation of international investors with financial market experience. But there was little appetite to invest in the relatively small Icelandic banks during the slump that followed the 2001 recession.[59] In the end a controlling stake in Landsbanki was sold to three Icelandic investors whose international business experience did not include owning or operating financial institutions. A similar outcome occurred with Bunadarbanki (Agricultural Bank of Iceland) which was sold to a group of Icelandic investors, initially with the expectation that Société Générale would participate as investors.[60] That group promptly sold their stake in Bunadarbanki to Kaupthing, making a handsome profit from the trade.[61]

From late 2003 controlling ownership of Landsbanki and Kaupthing was fairly stable.[62] The controlling shareholders of Landsbanki were a father and son, Bjorgolfur Gudmundsson and Bjorgolfur Thor Bjorgolfsson, with 40-45% of the shares.[63] The main shareholders of Kaupthing were the brothers Agust and Lydur Gudmundsson with a 25% share.

Shares in Glitnir bank changed hands more frequently; by early 2007 Jon Asgeir Johannesson – well known for his involvement in British retail trade – along with some partners had become the controlling shareholder with a 33% stake.

So each bank was controlled by a small group of investors. In all cases these investors had big stakes in other sectors internationally, usually acquired in leveraged deals. These circumstances came to play an important, adverse role from the onset of the international financial crisis in August 2007.

4.3 Regulation: CBI and FSA

As a consequence of Iceland's membership of the European Economic Area (EEA), the European financial regulatory regime has been the basis for the legal framework for financial regulation since 1994.[64] *Inter alia*, Iceland implemented the Basel II standard in 2004, and as a part of its fulfilment of the EEA Agreement, the EU Financial Services Action Plan, and, importantly, the EU Deposit Insurance Directive.

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[59] Other privatisation efforts floundered at this time, *e.g.* that of the state owned Iceland Telecom in 2001.

[60] The group stressed in their bid the participation of Société Générale (SG) as investors. This strengthened their offer enough to win. It was clear by the time the sale was actually made that SG would not participate as investors, but it went ahead nevertheless.

[61] The privatisation process of Landsbanki and Bunadarbanki is critically discussed in Volumes 1 and 8 of SIC (2010a). Gylfason (2008) and others have alleged corruption.

[62] Ownership of Landsbanki and other banks was usually organised through holding companies. The largest were Samson (Landsbanki), Exista (Kaupthing), and FL Group (Glitnir).

[63] The Winding-up Board of Landsbanki claims that Gudmundsson and Björgólfsson controlled 73% of shares by various means. If true, they would have been obliged to offer to buy out other shareholders.

[64] The EEA agreement allows Iceland, Liechtenstein and Norway, *i.e.* all EFTA countries, except for Switzerland which opted out, to participate in the EU single market without being members of the EU. The participating EFTA countries are obliged to adopt EU single-market legislation, except for legislation in the areas of agriculture and fisheries.

Financial regulation in Iceland was – and still is – a joint responsibility of the CBI and the FSA. The FSA monitors the credit market, the pension system, the insurance market, and the securities market. The FSA has legal powers to access any information it wants from all parties subject to supervision, and it has a substantial arsenal of potential actions should its decisions be ignored: it can impose financial sanctions, withdraw licenses, conduct house searches, and confiscate relevant material. It can call and chair board meetings of a bank under investigation and can publicly issue its interpretations of rules and regulations for sound and proper business practices. From our perspective here, among the most important tasks of the FSA is the enforcement and monitoring of capital adequacy regulation; for this purpose the FSA performed stress tests before and during the crisis. Monitoring lending and enforcing rules such as those on large exposures and related-party lending is another task explicitly assigned to the FSA.

According to law the principal role of the CBI is to promote price stability.[65] It is also responsible for ensuring financial stability: it shall promote an "efficient and sound financial system", as the law states. In particular, it sets prudential regulations on the liquidity and foreign exchange positions of credit institutions. The law also permits the Bank to act as a lender of last resort for financial institutions in liquidity problems. Prior to the crisis the CBI made it clear in its 2005 Financial Stability Report that it would not engage in bailouts, stating that it would "not provide assistance in the form of special facilities to boost the capital position of institutions which run into difficulties." (CBI, 2005, p. 58) But the CBI acknowledged that in a crisis it may be difficult to distinguish between liquidity problems and "wider-reaching ones", as the text euphemistically reads.[66] The CBI repeatedly stated, however, that it could not act as a lender of last resort in foreign currency.

Prior to the crisis all Icelandic banks operated in several countries and were classified as cross-border banks. The Nordic Central Banks and FSAs were supposed to cooperate on financial stability. They had signed Memoranda of Understanding on cooperation in managing crises long before the crisis of 2008. But there was little understanding and less cooperation when the Icelandic banking system was collapsing in October 2008.[67]

The division of labour between the CBI and the FSA thus was in the first instance along the lines of monitoring liquidity versus capital adequacy: the CBI took care of the former, the FSA of the latter. Another division of labour was along macro vs. micro lines: the CBI oversaw overall developments in markets (as in its Financial Stability Reports), while the

[65] The Central Bank Act in its present form dates from 2001. It was revised in February 2009 – almost exclusively as concerns the management structure of the bank.

[66] Subsequent Financial Stability Reports did not repeat this text, but cited a "strong fiscal position" as an important factor of resilience for the banks (CBI, 2006, 2007b, 2008) which would seem to signal potential government support. See Section 4.7 for further discussion.

[67] The exception is that the central banks of Denmark, Norway and Sweden entered into currency swap agreements with the CBI in the amount of 500 million euros in May 2008. After the crisis Nordic central banks also participated in financing related to the IMF stand-by arrangement for Iceland.

FSA monitored individual firms. Monitoring and responding to systemic risk was defined as a joint responsibility. Clearly, cooperation between the FSA and the CBI is necessary for adequate supervision and surveillance of the financial sector; in a crisis, coordination of actions between these institutions and the relevant ministries is essential. In February 2006 – during the so-called mini-crisis which hit Icelandic banks at that time[68] – the FSA, CBI, the Prime Minister's Office (responsible for economic policy and the CBI), the Ministry of Commerce (responsible for banking affairs and the FSA), and the Ministry of Finance issued a memorandum of understanding on consultation concerning financial stability and contingency plans. A formal coordination group with representatives from all these parties was set up. The FSA and the CBI still held the responsibility for financial stability and monitoring; the ministry representatives had more of an observer status.[69] In October 2006 – after the mini-crisis had essentially passed – the FSA and the CBI entered a formal agreement on oversight and supervision of financial activities. In the list of aims of the agreement the first four items concern division of labour and information sharing between the two institutions, while "ensuring coordinated responses by the FSA and Central Bank to conceivable systemic risks in financial markets" is the fifth, penultimate objective.

It is often claimed that the Icelandic FSA was underfunded and understaffed in relation to the size of the banking system it was supposed to monitor (*e.g.* SIC, 2010e). But FSA costs were similar to those in the UK and Ireland, in relation to the size of the financial system (Fig. 4.2). In Germany and France unit surveillance costs were considerably lower. Comparing numbers of staff leads to a similar result. So there is no evidence that the failures in regulating Iceland's banking system were caused simply by a lack of resources devoted to bank surveillance.[70] Moreover, there is evidence that Iceland's bank supervisory and regulatory framework was no weaker than in countries whose banks survived the global financial crisis.[71] The problems were elsewhere: lack of competence, the unwillingness of the supervisors to force disclosure, and the lack of coordination among agencies.

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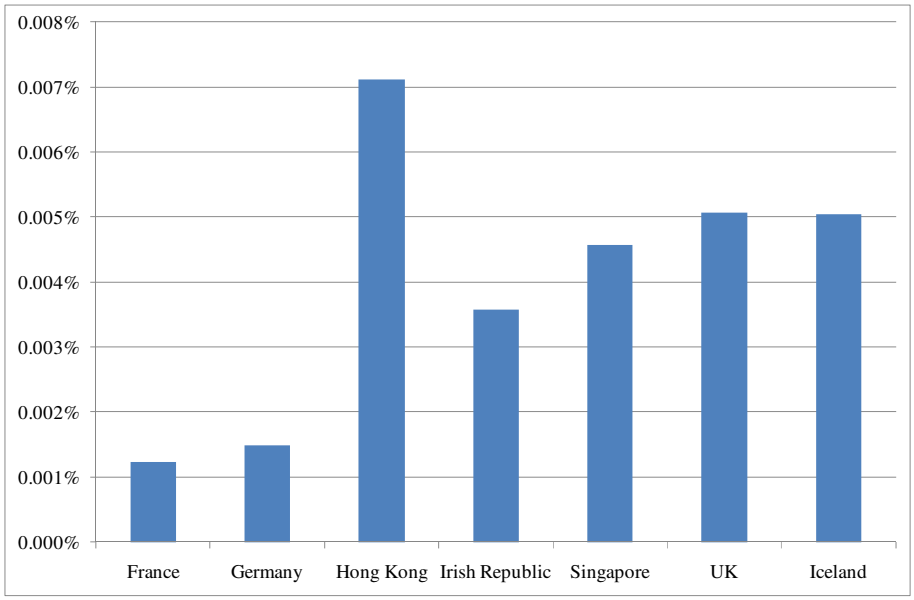
[68] See Section 4.5 for further discussion of the mini-crisis.

[69] When the crisis struck in October 2008, the Ministry of Commerce staff played a key role in the preparation of the Emergency Legislation; see Section 2.3.

[70] Here we disagree strongly with Benediktsdottir *et al.* (2010) and their discussant Pagano. Even if the Icelandic banking system was very large in terms of the economy of Iceland, it was only about a tenth of the Irish system and about 1.5% of that of the UK. And the British FSA, for example, had to deal with very large insurance, private equity and hedge fund sectors, as well as the banks. Although Iceland's FSA also regulates a domestic insurance sector, Figure 4.2 still understates the favourable comparison of Icelandic FSA resources with those of its British counterpart. All this says nothing about the competence of the Icelandic authorities.

[71] The World Bank initiated in 2001 an extensive survey on bank regulation and supervision. It was repeated in 2003, 2007 and 2011. Cihak *et al.* (2012) compare the regulatory and supervisory framework assessed in 2007 for countries hit by the global financial crisis and those that were not strongly affected. They 'find significant differences between crisis and non-crisis countries in several aspects of regulation and supervision. First, crisis countries had less stringent definitions of capital and lower actual capital ratios. Second, banks in crisis countries faced fewer restrictions on non-bank activities such as insurance, investment banking, and real estate. Third, regulations concerning the treatment of bad loans and loan losses were less strict in crisis countries. Finally, in crisis countries, there were weaker incentives for the private sector to monitor banks' risks.' Using these data, we find that in 2007, regulation in Iceland was equally or more stringent than in other crisis countries on the

Figure 4.2 Costs of financial regulatory authorities in 2007 as percentage of banking assets



Source: UK FSA Annual Report 2007/2008, Iceland FSA Annual Report 2009, authors' calculations

4.4 From privatisation to end-2005

As it became clear in 1998 that the banks would be privatised they began growing quite rapidly; the rate of growth of their combined balance sheet until full privatisation in 2003 was 29% per annum (measured in euros). They appear to have been competing for domestic market share ahead of privatisation. Growth was financed mainly in international markets on the back of newly acquired ratings from Moody's (Fig. 4.3). That was the first agency to assign ratings to Icelandic banks; ratings from other credit agencies such as Fitch Ratings and Standard & Poor's followed.

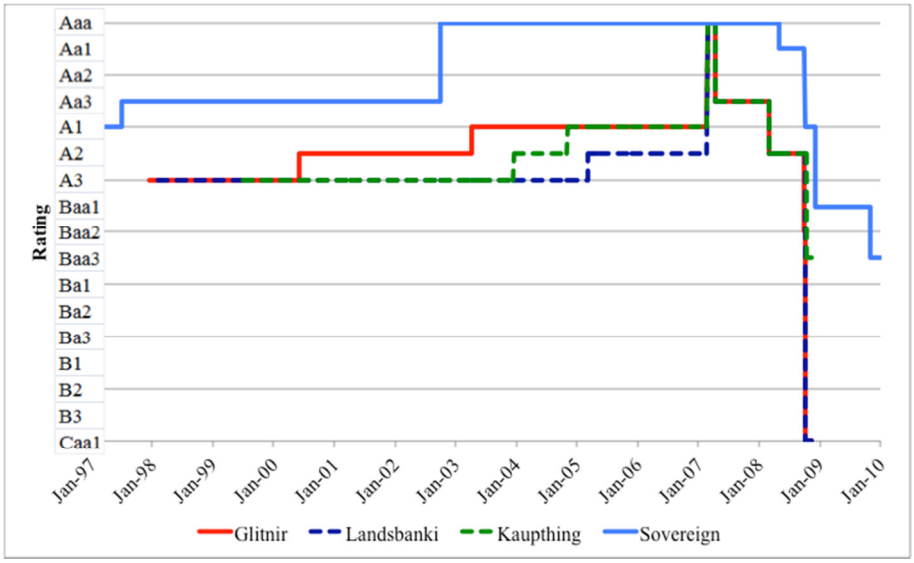
Still, by the end of 2003 – as privatisation was completed – the banks were small in comparison with what was to follow, with a combined balance sheet of €16 bn. Over the next two years their size more than doubled each year, and by the end of 2005 their combined balance sheet was over €72 bn in total. By comparison, Iceland's GDP in 2005 was €11.6 bn at market exchange rates.

The majority of this expansion was financed by international capital markets. In 2004-2005 alone the three banks issued €19 bn in the European bond market, in the form of Euro Medium-Term Notes (EMTN). As a result the share of deposits in total financing – 45% in 1998 – fell by almost a half and stood at 24% by the end of 2005. The banks' terms were very favourable, at 15-30 basis points over LIBOR. Financing was front-loaded, however; total

majority of relevant indicators. Indeed, Icelandic regulation was equally or more stringent than in the average non-crisis country on half the indicators that matter. This accords with our own assessment at the time.

refinancing needs in 2006-2007 were €15 bn out of some €50 bn in outstanding capital market debt at the end of 2005.

Figure 4.3 Moody's ratings of Iceland (sovereign) and Icelandic banks[72]



Source: Central Bank of Iceland

Some of the growth in 2004-2005 was due to acquisitions: Kaupthing acquired the Danish FIH Bank (2004)[73] and Singer and Friedlander in London (2005); Glitnir acquired the Norwegian BNbank in 2005. Nevertheless organic growth in 2004-2005 was a hefty 57% per annum.

4.5 The mini-crisis of 2006 and responses to it

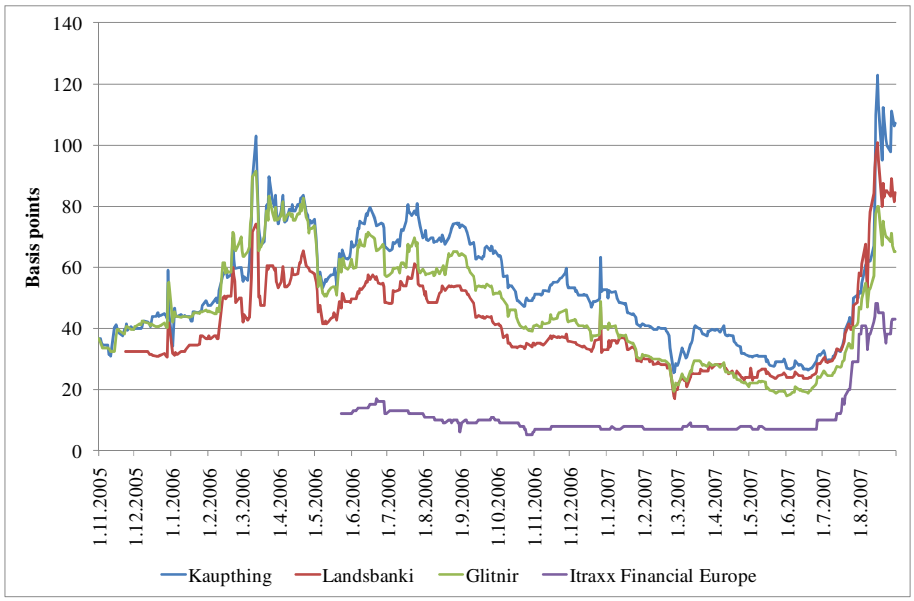
The rapid growth of Icelandic banks, their reliance on capital market funding, cross-ownership issues, exposure to market risks on the asset side, earnings quality, and, last but not least, severe imbalances in the economy of Iceland, had by late 2005 attracted unfavourable attention from foreign analysts.

The first problem signs were seen in November 2005 when the banks' credit default swap (CDS) and bond spreads started to widen well in excess of European counterparts (Fig. 4.4). In February 2006 Fitch changed its sovereign outlook for Iceland from stable to negative. A sequence of negative analyst reports followed, in particular that of Merrill Lynch (2006). From February to June the krona depreciated by one-quarter, and the stock exchange fell by a similar amount. Although spreads were far below levels observed in the crisis of 2007-2008, access of Icelandic banks to international market funding was severely restricted.

[72] Iceland's rating was still at Baa3 (stable) in September 2013.
[73] FIH was 140% of Kaupthing's size at the time.

Figure 4.4 Banks' CDS spreads

5 year senior bonds. July 2005 – August 2007



Source: Datastream

Following the mini-crisis of 2006, the banks worked swiftly on improving their credibility in international markets by acting on some of the criticisms directed at them by market analysts. Market observers were generally pleased: in June 2007 the IMF noted the following in their Article IV Consultation Concluding Statement:[74]

> The financial system withstood the market stress in early-2006 admirably, but new risks may be emerging. Banks have taken important steps over the past year to reduce vulnerabilities and increase resilience. Short-term liquidity management has been strengthened. Ownership structures have been made more transparent with the sell-down of some cross-shareholdings, which is important for maintaining investor confidence. ... (IMF, 2007a)

In particular, the banks started collecting retail deposits internationally to reduce their reliance on wholesale markets. Landsbanki and Kaupthing had the most success at this and raised their deposit-to-loan ratios to levels similar to those of Nordic peers such as DnB Nor, Svenska Handelsbanken, and Swedbank. Markets liked this: spreads began to fall, and by mid-2007 they were at lower levels than before the mini-crisis. Rating agencies followed suit; Moody's upgraded all three banks to Aa3 in April 2007 (after a brief period where they enjoyed an Aaa rating; Fig. 4.3).

There was a key difference in the way the banks collected deposits: Landsbanki did this mainly through branches, Kaupthing used its subsidiaries for the most part. The former

[74] The IMF also noted weaknesses and risks to the outlook. But see also Citigroup (2007) which in July made a "buy" recommendation on Kaupthing. Citigroup noted, in particular, Kaupthing's success at increasing their deposit financing and reducing their loan-to-deposit ratio.

deposits – collected under the brand of 'Icesave' – were guaranteed by Icelandic deposit insurance, the latter mostly by deposit insurance in home countries of the subsidiaries. When the banks collapsed, deposits in their foreign branches – up to the insured amount of €20,887 for each depositor – became a liability of the Icelandic deposit insurance fund, whereas deposits in subsidiaries were covered by subsidiaries' home countries.[75]

With higher deposit-loan ratios the banks became less reliant on market funding. They also were quite successful in extending maturities on their market funding. The origin of funding also became more diverse with issuance in the US Medium-Term Note (USMTN) market along with the EMTN market which had been predominant until 2006.[76] Average maturities became similar to those at Nordic peers.

4.6 The banks at the outset of the financial crisis (August 2007)

So the Icelandic banks grew rapidly from about 2003 through 2007 and had become large in relation to the domestic economy. They were still small, however, in an international context: at the end of 2007 the combined balance sheet of all three banks amounted to €124 bn. Kaupthing was largest with a balance sheet of €59 bn. The three aforementioned Nordic banks each had a balance sheet of €180-200 bn and the largest Nordic bank, Nordea, had €389 bn on its balance sheet at end-2007.

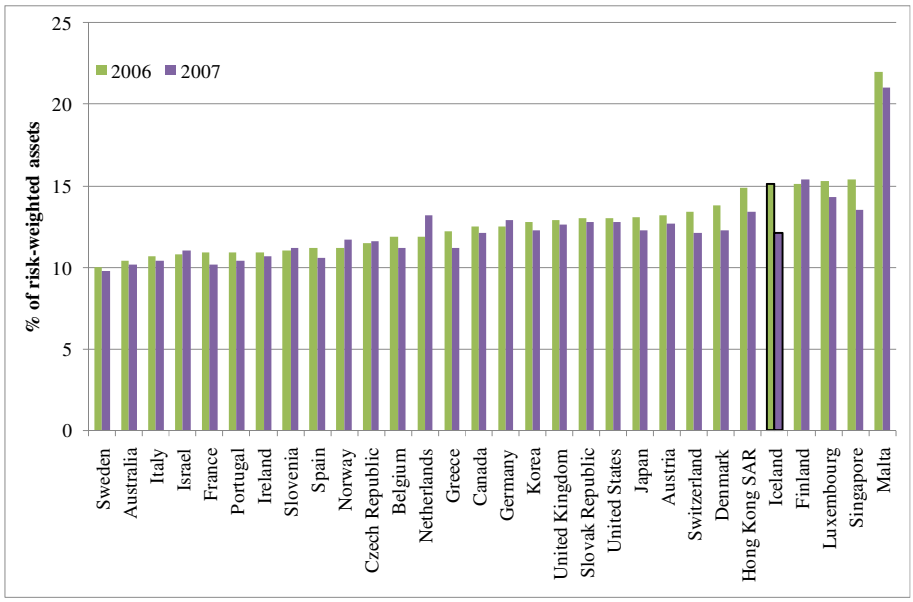
Their small absolute size notwithstanding, the banks looked quite impressive in an international comparison. As evidenced by return on assets/equity they were highly profitable, both when compared to banks in the Nordic region as well as in other advanced economies (Table 4.1). Some of these profits were due to capital gains from the Icelandic banks' equity holdings. When capital gains were excluded from reported income, the banks had approximately the same profitability as international peers. Capital ratios were high when compared to peers (Figure 4.5 and Table 4.1).[77] The rationale was that this was necessary to counteract the added risk from equity holdings. The banks had also become more efficient with net interest margins and cost-income ratios falling substantially in 2003-2007 (see Table 4.2).

[75] Kaupthing's 'Edge' accounts were mostly covered by assets of the respective subsidiaries and branches, so there was little cost to deposit insurance funds or taxpayers. The assets of Landsbanki are also expected to cover deposits.

[76] See a detailed overview of the banks' funding in SIC (2010a), Chapter 7.

[77] Capital ratios at Icelandic banks had fallen to the average by the end of 2007, as seen in Fig. 4.5 and Table 4.1.

Figure 4.5 Capital adequacy ratio (bank regulatory capital to risk-weighted assets) in advanced economies



Source: IMF Global Financial Stability Report (2010)

Regardless of the improvements made since the mini-crisis a year earlier, there were some evident weak points. One concern was the increase in foreign currency mortgage lending to households. During 2007 this proportion rose from approximately 7% to 14% of all mortgage loans provided.[78] Since domestic households usually do not earn much of their income in foreign currency, there was a clear exchange-rate risk for them to assume debt in other currencies than Icelandic kronur. Another critical issue was bank loan financing of equity positions on the Icelandic Stock Exchange (ICEX), which was itself dominated by banks and investment companies. According to margining data from the Central Bank, however, the banks had considerable leeway to meet a drop in equity prices (Central Bank of Iceland, 2007b).[79] Still, equity investments in domestic banks and holding companies were being leveraged on a sizeable scale. This was a major long-term risk for the banks.

[78] This was a much lower share than in *e.g.* Hungary, where foreign currency loans were 57% of all lending to households in 2007 (Pellényi and Bilek, 2009).

[79] According to the CBI Financial Stability Report for 2007 (CBI, 2007b), at the end of 2006 12% of total lending was against share collateral and 29% of the market capitalisation of the Icelandic stock market was used as collateral. However, 93% of lending against share collateral had more than 100% margining (*i.e.* collateral was equal to or exceeded lending) and 63% more than 150% margining (*i.e.* collateral exceeded lending by 50% or more). These ratios weakened somewhat over the course of 2007, but it was in the first quarter of 2008 that they became unacceptably low, indicating that margin calls were not being made. The 2008 data, which we discuss in Section 5.3.1, first became available in the SIC report.

Table 4.1 Financial soundness indicators
(In percent)

	2004	2005	2006	2007
Bank Regulatory Capital to Risk-Weighted Assets				
Advanced economies	13.3	12.8	12.8	12.3
Nordic countries excluding Iceland	13.7	13.1	12.5	12.3
Iceland	12.8	12.8	15.1	12.1
Bank Capital to Assets				
Advanced economies	6.7	6.6	6.7	6.5
Nordic countries excluding Iceland	6.9	7.0	7.0	6.3
Iceland	7.1	7.4	7.8	6.9
Bank non-performing loans to total loans				
Advanced economies	2.4	2.0	1.7	1.4
Nordic countries excluding Iceland	0.8	0.6	0.5	0.4
Iceland *)	0.9	1.1	0.8	0.7
Bank Provisions to Nonperforming Loans				
Advanced economies	94.9	93.1	95.2	93.6
Nordic countries excluding Iceland **)	85.0	86.1	66.1	63.7
Iceland	80.9	112.9	99.6	84.1
Bank Return on Assets				
Advanced economies	0.9	1.0	1.0	0.9
Nordic countries excluding Iceland	0.9	1.0	1.0	1.0
Iceland	1.8	2.3	2.6	1.5
Bank Return on Equity				
Advanced economies	14.5	16.8	17.2	15.7
Nordic countries excluding Iceland	16.1	17.4	18.1	17.1
Iceland	30.9	41.7	39.1	22.4
*) Value for 2007 from CBI Financial Stability 2008				
**) Values for Denmark and Finland missing in 2006 and 2007				

Source: IMF Global Financial Stability Report (2010), authors' calculations

The ratio of non-performing loans at Icelandic banks lay between the average in advanced economies and that in the Nordic countries (Table 4.1). Icelandic banks followed the international trend at this time of a decrease in the proportion of non-performing loans. Provisions were of approximately the same magnitude as non-performing loans (the general international standard); of course they turned out to be far too low when the crisis struck in 2008.

Table 4.2 Efficiency/Profitability measures
(In percent)

	2003	2004	2005	2006	2007
Net interest margin					
USA	3.8	3.6	3.6	3.4	3.4
Europe	1.5	1.2	1.0	0.9	0.9
Iceland	2.5	2.2	1.9	1.9	1.7
Efficiency ratio					
USA *)	56.5	58.0	57.2	56.3	59.2
Europe **)	73.1	64.8	60.9	59.8	63.0
Iceland **)	55.0	47.0	36.0	38.0	51.0
*) Non-interest expense less amortization of intangible assets as a percent of net interest income plus noninterest income.					
**) Cost-to-income ratio					

Source: IMF Global Financial Stability Report (2010) and CBI Financial Stability (2008)

The rather favourable picture seen by observers in 2007 (including the IMF, the OECD, Citigroup, and ourselves), based on public information, is dramatically different in the light of information on lending uncovered by the SIC report. As shown in Section 5.3.3 below, *the banks' owners used them as funding vehicles for their investment companies as their access to capital markets became more difficult over the course of 2007. The banks also purchased their own shares in the stock market in order to prop up the price*, reselling them in direct deals where they provided the funding themselves (see Section 5.3.2). As a consequence, *asset quality deteriorated rapidly from autumn 2007*.

The literature on loan growth and riskiness of banks indicates that rapid growth in lending signals major risks for banks (Foos *et al.*, 2010). The Icelandic banks are now seen as a prime example of the dire consequences of fast growth. There are, however, many possible reasons for such growth, some of which are positive. The Icelandic banks emphasised the latter: taking advantage of new and profitable opportunities created by Icelandic entrepreneurs, diversification by expanding to new geographic markets, etc. – were emphasised by the Icelandic banks. Unfortunately, the seriously risky aspects – lowering credit standards, relaxing collateral requirements, etc. – now seem to have been a major driver of their growth.

4.7 Lender of last resort

As it became more difficult for the banks to access market funding in late 2007, it was evident that failure of any of the three large Icelandic banks would unavoidably have implications for the others and be extremely costly for Iceland. In this sense each of the banks was 'too big to fail'. Despite the CBI's repeated declarations that it could not act as a lender of last resort in foreign currency (cf. Section 4.3) Moody's counted a "[s]trong likelihood of state support in

the event of systemic shock" as one of the main strengths of the Icelandic banking system (Moody's, 2006). This understanding was confirmed by the Prime Minister of Iceland in March 2008: "... the Icelandic authorities would in [a serious situation in the banking system] not hesitate to resort to the same measures as responsible authorities in other countries."[80] But there was good reason to be sceptical about the credibility of the CBI as lender of last resort in other currencies than the krona.

An indication of the funds that the CBI would have to provide, say over the span of three months, if it were to act as lender of last resort in foreign currency could in Autumn 2007 be inferred from the amount of foreign currency market funding maturing in a typical quarter (Portes and Baldursson 2007). Based on public information on the funding of the banks this was estimated to be in the range 50-100 bn ISK for any single bank. Currency reserves were 155 bn ISK, so it would be feasible for the CBI to provide these funds if the need was just for one quarter and one bank, but it could only do so over a short period and for one bank. Were all three banks to need funding of such magnitude the CBI would clearly have to resort to borrowing abroad – or guaranteeing the banks' borrowing. As we shall see in Section 5, these estimates were borne out by data revealed in SIC (2010a). Moreover, even the domestic currency funding gap turned out to be much too great for the central bank – and behind it, the Icelandic state – to backstop.

There was little doubt that the banks were too large and their financing needs too great for the state to help them if liquidity dried up totally. But as elsewhere in the global financial system, there was little reason to expect such an extreme liquidity crisis until it actually arrived.

4.8 Macroeconomic context

4.8.1 Macroeconomic development and policies in Iceland

In Iceland, the years leading up to the crisis were characterised by buoyant growth accompanied by internal and external economic imbalances. While 2003 was a reasonably balanced year, albeit with strong growth, imbalances began to appear from 2004 (see Table 4.3). Annual demand growth in 2004-2007 averaged 8.7%, and GDP grew by 6.4% annually over the same period; annual credit growth was 26% on average. Demand was to a large extent investment-driven in 2004-2006, while exports provided the main impetus in 2007; private consumption grew strongly throughout the period, however, by 7.8% annually on average.

Despite substantial inflows of immigrant labour, the labour market was extremely stretched from mid-2005, with registered unemployment below 2%; the output gap (as estimated by the CBI) shows a similar picture, with actual output in excess of estimated potential output peaking at 3.6% in 2007.

[80] Haarde (2008).

It is therefore not surprising that inflation – which was on target in 2003 – began to rise in 2004. The 2006 mini-crisis brought a 25% depreciation of the freely-floating krona. Historically, pass-through from the exchange rate to inflation is fast in Iceland, so with the tight labour market, there was a further rise in inflation, which in fact continued into 2007 and onwards.[81] over the whole period 2004-2007, however, the nominal exchange rate was approximately unchanged while annual inflation was 5.3% on average – almost 3% in excess of the 2.5% inflation target of the Central Bank. This was due less to exchange-rate pass-through than to a rapid increase in the price of housing, which is included in the Icelandic CPI.

Beginning in March 2001, the Central Bank was on an inflation target of 2.5%. It attempted to meet the target by raising its policy rate, in steps, from 5.2% in early 2004 to 13.75% at the end of 2007, and further to 15% in March 2008 and, finally, 15.5% in April. These measures had little effect, and inflation had reached 16% in October 2008, then largely driven by a depreciating krona. Meanwhile the difference between interbank interest rates in Iceland and the Eurozone (USA) increased from 3% (4%) in early 2004 to 11% (13%) in mid-2008. This attracted a (relatively) huge carry trade which undermined financial stability and hampered the effectiveness of monetary policy transmission by bringing down longer-term interest rates. Euroisation of domestic lending to firms and households was another consequence of the large interest rate differential. That counteracted monetary policy and undermined financial stability (see Section 4.7.3).

While fiscal policy was not slack during the boom – the average public sector surplus in 2004-2007 was 4.2% of GDP – it was *procyclical*: the government used a part of its increased revenues to lower personal income and other taxes, so boosting private consumption. The government also pursued procyclical policies in other areas under its control: large-scale investments in the electricity sector; and from 2004 vigorous competition from the Housing Financing Fund (HFF) with private banks for market share in housing mortgages. The HFF seriously impeded the transmission of monetary policy: rates on housing mortgage loans fell while the Central Bank was trying to curb inflation by raising its policy rate.

[81] See Pétursson (2008) on exchange-rate pass-through to prices in Iceland.

Table 4.3 Macroeconomic indicators

Volume changes on previous year unless otherwise stated

	2003	2004	2005	2006	2007	2008	2009
GDP and its main components							
Private consumption	6.1	7.0	12.7	3.6	5.6	-7.9	-15.6
Public consumption	1.8	2.2	3.5	4.0	4.1	4.6	-1.7
Gross fixed capital formation	11.1	28.1	35.7	22.4	-11.1	-19.7	-50.9
National expenditure	5.7	9.9	15.7	9.5	-0.1	-8.5	-20.7
Exports	1.6	8.4	7.5	-4.6	17.7	7.0	7.0
Imports	-1.2	14.5	29.3	10.4	-0.7	-18.4	-24.0
Gross domestic product	7.2	7.7	7.5	4.6	6.0	1.4	-6.9
Other key indicators							
Current account balance, % of GDP	-4.6	-9.7	-15.9	-23.6	-16.2	-24.3	-9.7
Fiscal balance, % of GDP	-2.8	0.0	4.9	6.3	5.4	-13.5	-10.0
Unemployment, % of labour force	3.4	3.1	2.1	1.3	1.0	1.6	8.0
Inflation, 12-month change in CPI	2.4	4.0	4.4	6.9	5.8	18.6	6.6
Exchange rate, 12-month change in TWI	0.7	-7.8	-8.1	24.5	-6.1	80.1	7.6
Policy interest rate, %	5.2	6.0	9.0	11.8	13.4	15.4	13.5
Credit growth, 12-month change *)	11.3	19.9	31.1	31.0	22.7	47.9	...
Output gap (CBI estimate)	-2.60	1.20	3.20	2.20	3.60	2.10	-2.70
*) For 2008, Q3 on Q3 2007 (2008Q3 is the last datapoint for total credit)							

Source: Central Bank of Iceland, Statistics Iceland

The competition between the HFF and the banks spurred a rise in housing prices which peaked in April 2008; prices had then risen by 80% from June 2004. The price of housing is an important component in the CPI, and it was the main driver of inflation in 2005-2007. A sustained rise in real estate prices and other asset prices also helped fuel the boom in private consumption.

Among several macroeconomic policy errors made during this time, such as lowering taxes and supporting large-scale investments during the height of the boom, the failure to rein in the HFF was among the most serious.[82] The HFF's actions – relaxed lending standards, higher loan ceilings, longer maturities, and lowered interest rates – spurred inflation, consumption and construction activity in an overheated economy.[83] The CBI tried to counter by raising interest rates, which did little other than attract carry trade and encourage borrowing in foreign currencies.

[82] There were political and institutional reasons for this failure. The HFF falls under the jurisdiction of the Minister of Social Affairs and was used as a political vehicle by the politicians who held that office without regard for easily predictable macroeconomic consequences.

[83] The HFF managed to lower (real) interest rates on their indexed loans by funding with long-term (up to 40 years) bonds. Pension funds were the main buyers of these bonds, which were an attractive option for them, given the volatile inflation and inflation expectations in Iceland. The HFF was the only issuer of bonds with such long maturities, which helped bring the rates down as well.

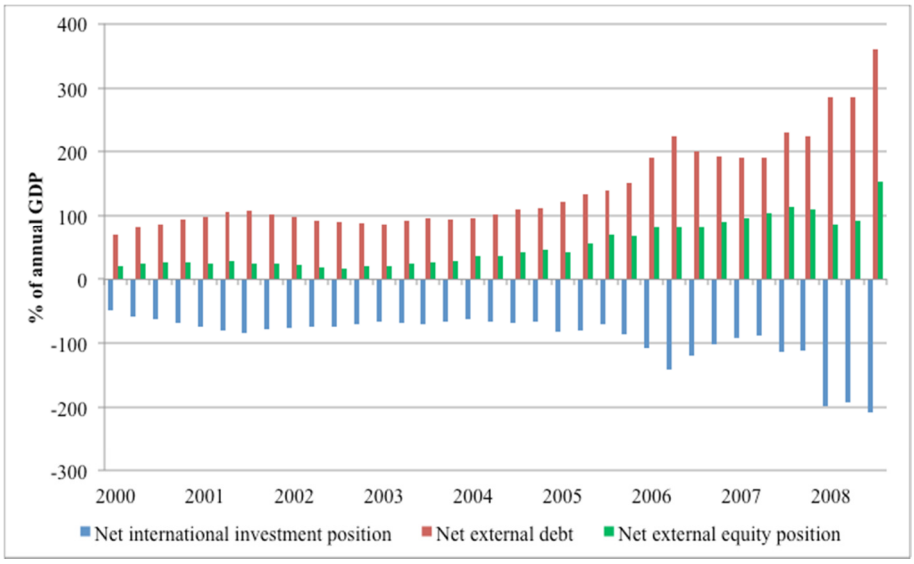
To sum up: monetary policy was intended to be restrictive but in reality it was, at best, ineffective. At worst, *monetary policy seriously undermined financial stability by its encouragement of carry-trade and euroisation. Moreover, fiscal policy* – in the wide sense, including policies on housing and investment by publicly owned firms – *was pro-cyclical* and ran counter to the attempted counter-cyclical monetary policy.

4.8.2 External finance

The net international investment position of Iceland (Fig. 4.6) was negative but fairly stable at around 50% of GDP until the early 2000s, when both capital outflows and inflows started increasing, concurrent with Icelandic investments abroad. This big increase in gross flows gathered pace after the privatisation of the banks in 2003 and went hand-in-hand with the increase in the banks' balance sheets. The net flows were negative, on average, and the net international investment position (NIIP) deteriorated from 2005 onwards.

Figure 4.6 Net external position[84]

Quarterly data: first quarter 2000 – third quarter 2008



Source: Central Bank of Iceland, Statistics Iceland, authors' calculations

Before the crisis Iceland was sometimes – and not unreasonably in view of the data – likened to a very large hedge fund or venture capital firm, in the sense that Icelandic parties borrowed short and medium term to finance very substantial investments abroad.[85] There was a high degree of leveraging, and assets and liabilities became several multiples of GDP: by the end of 2007 assets amounted to 514% of GDP whereas liabilities were estimated at 625% of GDP (Fig. 4.7). These ratios increased in 2008, but were then driven by progressive weakening of

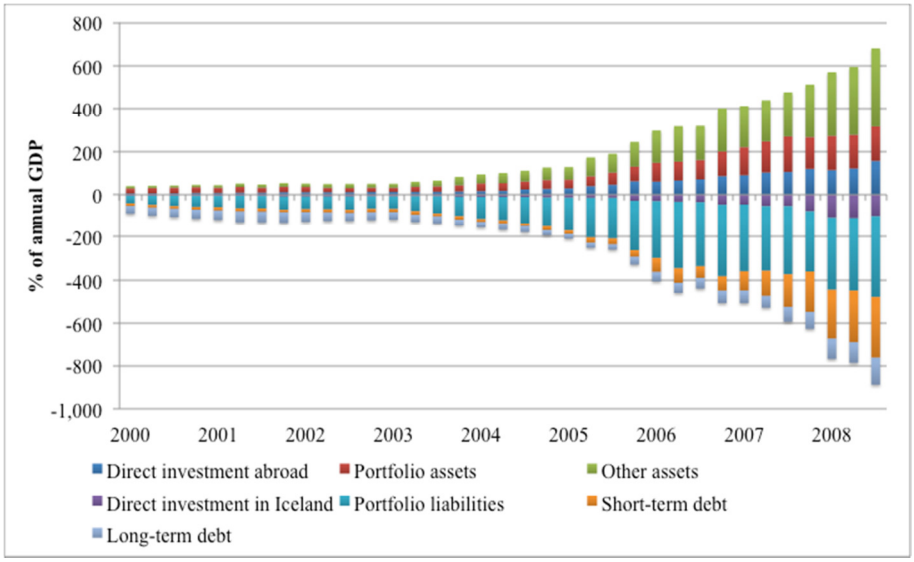
[84] Note that since most external debt was foreign currency denominated, debt-to-GDP ratios rose when the krona depreciated (the opposite from *e.g.* the US).

[85] This is analogous to the 'world banker' role of the US, as analysed in Gourinchas and Rey (2007). That in itself may suggest overreach.

the krona rather than increased leveraging in foreign currency terms as was the case, overall, in the period 2003-2007.

The high degree of leveraging in turn implied that factor income flows in the current account were proportionally large and sensitive to the rates of return on Icelandic external assets and liabilities. For example, interest income and dividends in 2006 and 2007 were, respectively, 15.6% and 22.5% of GDP whereas expenditure was 22.2% and 28.1%, respectively (Fig. 4.8; note that the figure shows quarterly data).

Figure 4.7 External assets and liabilities[86]
Quarterly data: first quarter 2000 – third quarter 2008



Source: Central Bank of Iceland, Statistics Iceland, authors' calculations

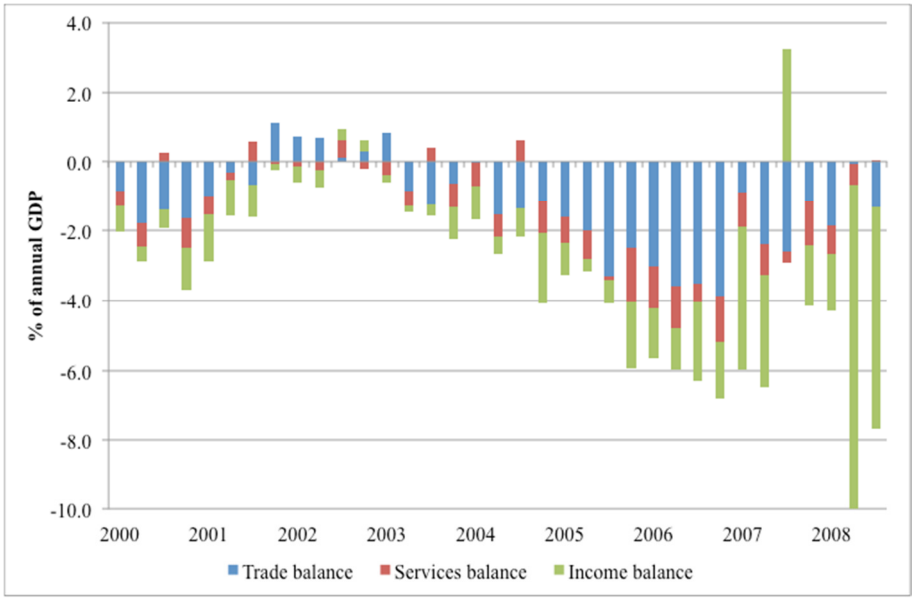
Whether or not Iceland's external finances were sustainable was a matter of much discussion. One source of controversy was the persistently negative balance on factor income, and official data were criticized as not truly reflecting underlying income flows (*e.g.* Egilsson, 2007).[87] Based on Central Bank data it appeared that, for all types of investment, both portfolio and FDI, Iceland earned lower rates of return on its foreign investments than foreigners earned on their investments in Iceland – an "exorbitant disadvantage" was observed, as opposed to the "exorbitant privilege" of the US (Gourinchas *et al.*, 2010). It was difficult at this time to align such findings with official (audited) accounts of the financial sector (including investment firms), which showed outstanding profits.

Nevertheless, it was clear that the current account deficit – whatever its true magnitude – was substantial. Iceland had, however, quickly returned to balance from large deficits many times before – typically after large investment projects were completed – and this also seemed to be happening in 2007 as new export projects came on line, after a huge deficit on the trade

[86] The item "Other assets" includes loans (to foreign parties), deposits abroad, and official currency reserves.
[87] The large positive income balance in the third quarter of 2007 (Fig. 4.8) is due to a dividend payment made in this quarter amounting to 5% of annual GDP.

balance in 2006 caused by the boom in investment and consumption. So it was not unreasonable to conclude that given the right policies the current account deficit could be brought on a sustainable path. This conclusion rested on the presumption, in turn based on official, audited corporate accounts, that investments made by Icelandic entrepreneurs were basically sound – that Iceland was solvent.

Figure 4.8 Current account balance 2000-2008
Quarterly data: first quarter 2000 – third quarter 2008



Source: Central Bank of Iceland, Statistics Iceland, authors' calculations

4.8.3 Carry trade and the exchange rate[88]

Plantin and Shin (2011) write that Iceland in the run-up to the 2008 financial crisis is "[p]erhaps the poster child for the perverse interaction between monetary policy and carry trade inflows."[89] The destabilising effects of carry trade were manifest already in 2007. During the boom that lasted until the end of 2007, high returns on Icelandic debt instruments, *inter alia* determined by the Central Bank through its policy interest rate decisions, attracted foreign inflows. In part, these inflows were the end result of issuance of Icelandic kronur denominated bonds – colloquially called "glacier bonds" – in foreign markets; even if these bonds were issued by foreign institutions and purchased by foreign investors they ended up as inflows into Iceland when issuers swapped out of currency risk related to Icelandic kronur in trades with Icelandic banks. Direct flows into Icelandic bonds were also a large part of the

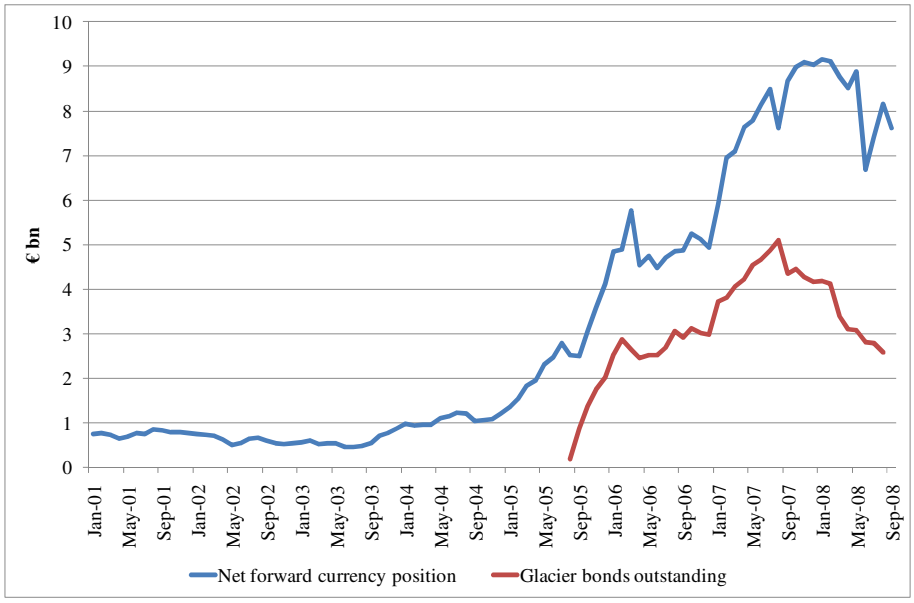
[88] For a wide-ranging empirical study of carry trade and its determinants, see Anzuini and Fornari (2012). For a model of the interdependence between the carry trade, monetary policy and the real economy, see Truempler (2013).

[89] Acharya and Steffen (2013), however, interpret Eurozone bank risks in the period 2007-2012 as 'the greatest carry trade ever'. Banks used short-term funding to take long positions in the sovereign bonds of peripheral Eurozone countries. In comments on their paper at the NBER Summer Institute in July 2013, Anil Kashyap suggested that an alternative interpretation was simply that weak banks were gambling for resurrection. This could apply to the foreign banks that took carry trade positions in Iceland.

carry trade, especially after loss of confidence in Iceland's banks had caused the glacier bond market to dry up in early 2008.

The invasion of carry trade into Iceland was fast and furious. Glacier bond issuance began in August 2005, and the stock of outstanding bonds reached a high of about €5 bn or 30% of GDP in August 2007 (Fig. 4.9).[90] After this peak net inflows originating in glacier bonds were negative, with a brief respite in January 2008. As noted above, however, glacier bonds were only part of the overall carry trade. A useful indicator of the overall volume of carry trade may be position taking in Icelandic kronur as measured by the banks' net forward currency position.[91] This reached a temporary plateau of €9 bn in November 2007, and began to fall only in March 2008.[92]

Figure 4.9 Volume of Carry Trade
Stocks in billions of euros. (For reference: GDP in 2007 was €15 bn)



Source: Central Bank of Iceland, authors' calculations

The main attractor of carry trade was of course the "carry" – the difference between asset yields in Icelandic kronur and those of low-yielding currencies such as the yen or the Swiss franc (possibly adjusted for exchange rate volatility to get a Sharpe ratio). The carry, as measured by the difference between 3-month interbank rates in Iceland and these currencies, was approximately 5% during 2003 and the first half of 2004. It then began rising and had reached about 8% by January 2005 when the carry trade in Icelandic kronur as measured by position taking in the krona really took off (Fig. 4.10). The interest rate differential reached a temporary peak in early 2007 – 13% against the Swiss franc and 14.5% against the yen – and

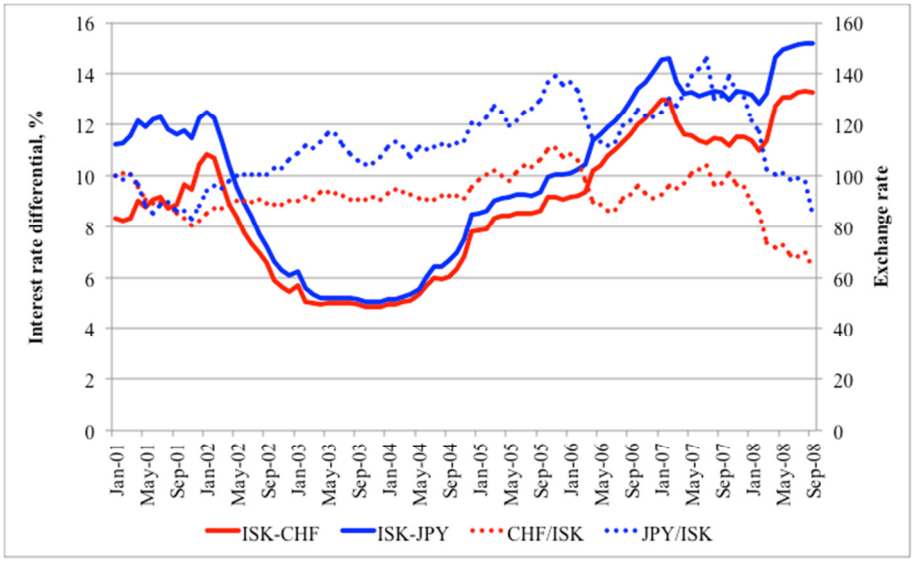
[90] Glacier bonds typically had a maturity of 1-2 years.
[91] This indicator was suggested by the CBI in 2007 (CBI, 2007b)
[92] The unwinding of carry trade thus began earlier in Iceland than in most other target countries for carry trade, where such unwinding started in August 2008 (McCauley and McGuire 2009)

subsequently fell due to rising interest rates on the low-yielding currencies.[93] In Spring 2008 the differential rose again as the Central Bank attempted to halt depreciation of the krona by raising its policy rate.

Towards the end, *the Central Bank further attracted carry trade by adopting an implicit exchange rate policy*. It did this by issuing – in addition to predictions for inflation and interest rates – predicted exchange rate paths consistent with its inflation forecast.[94] Furthermore, in its policy statements the Bank repeatedly used language regarding its response to a possible devaluation of the krona, such as that it would "respond firmly" should the krona fall, in order to restore it to a level the bank saw as consistent with its inflation target.[95] Given the published most likely path for the exchange rate and the absence of statements regarding what the Bank would see as an overly strong krona, this amounted to ensuring that with a reasonable degree of certainty, the krona could be sold at or above a certain value throughout the forecast interval. In our 2007 report we likened this to the Central Bank having issued a free put-option on the krona. Clearly, a (credible) policy of this kind creates arbitrage opportunities and reinforces the motivation for carry trade.[96]

Figure 4.10 Carry and exchange rate

Left-hand axis: difference in % between three-month interbank rates in Icelandic kronur and Swiss francs / Japanese yen; right-hand axis: exchange rate of the krona vs. the Swiss franc / Japanese yen. Monthly averages; exchange rate series normalised to 100 in January 2001



[93] It may be noted that in 2001 – shortly after the krona was floated – the carry was 10-12% without attracting carry trade.

[94] This practice began in March 2007.

[95] As noted earlier, pass-through from the exchange rate to domestic prices is fast and extensive in Iceland; on average, 40% of an increase in import prices is passed through to the CPI within two years.

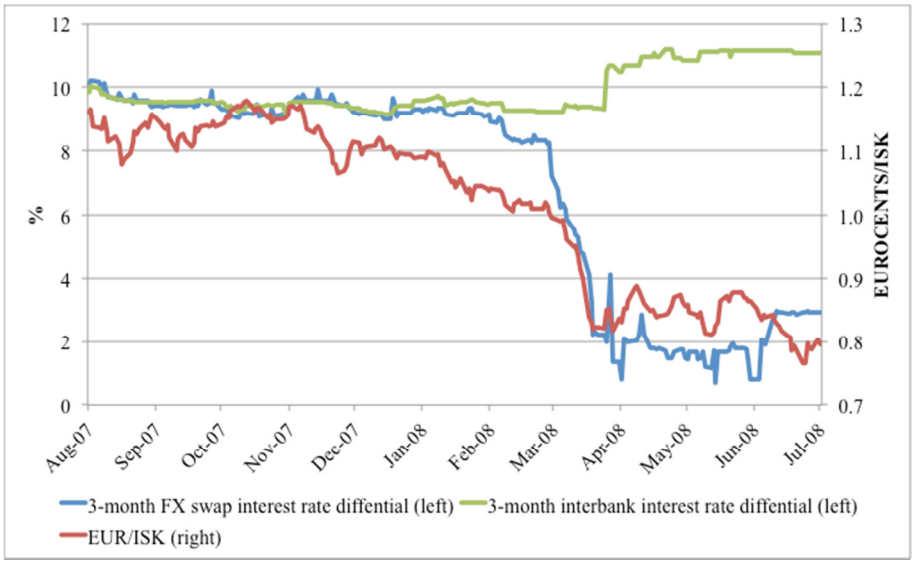
[96] There has been some local debate about this point, which was first made in Portes and Baldursson (2007). Á. Daníelsson (2010) does not agree that the Central Bank had an implicit exchange rate target. He is also sceptical of the importance for the carry trade of the statements made by the Bank and its exchange rate predictions, but admits that this may have influenced the decisions of Icelanders as to what currency they should borrow in. The Central Bank (2010) has, however, implicitly accepted our criticism.

Source: Central Bank of Iceland, authors' calculations

The policy of the Central Bank 'succeeded' for a while, in the sense that the resulting inflows supported the exchange rate of the krona, *e.g.* after the devaluation during the mini-crisis of 2006. In this way inflation was prevented from running completely out of control. In early 2008, however, as the risk premium on the banks wiped out the interest rate differential on swap rates the banks could offer (Fig 4.11), inflows first slowed down and then reversed. The krona then depreciated, despite attempts to stabilise the exchange rate by raising interest rates in March and April 2008 by a total of 1.75%.

In March 2008 the Central Bank also began issuing CDs in order to attract inflows; investors could then buy directly into government-guaranteed paper without using the banks as intermediaries. Although the CDS spread on the Icelandic state had risen substantially by this time, the margin provided sufficient incentive to attract some inflows, but not enough to stem the fall of the krona.

Figure 4.11 Foreign exchange swap-implied ISK rate minus LIBOR and the exchange rate of the Icelandic króna against the euro.
Daily data, August 1, 2007 - July 1, 2008



Source: CBI (2008b)

We are not aware of econometric studies of the effect of carry trade on the transmission of monetary policy to longer interest rates.[97] Beginning in 2005, however, the interest rate differential between short-term and longer-term (five year) interest rates in Iceland and other countries which had earlier been near-identical began to diverge, with term structure in Iceland much flatter relatively to other countries than before.[98] The diminishing correlation of bond yields with policy rates in the period 2006-2007 (Fig. 4.12) also indicates that the

[97] See, however, Bernanke (2007) and Gudmundsson (2008) on the related topic of the effect of financial globalisation on monetary policy and the monetary transmission mechanism.
[98] To some extent this was a natural development which indicated a more integrated and efficient capital market.

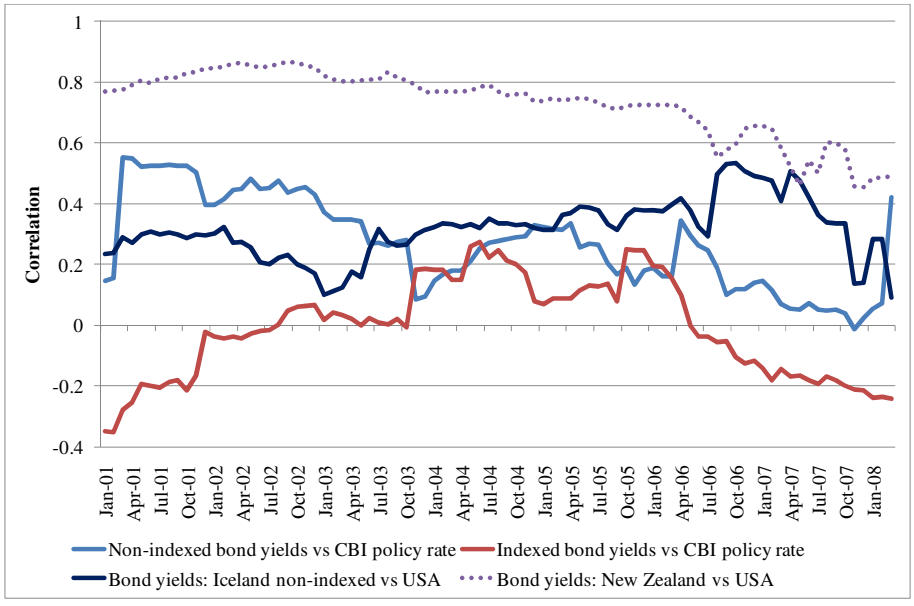
transmission of policy interest rates to longer rates became steadily less effective during this period. Conversely, a jump in this correlation in early 2008 indicates a re-coupling of monetary policy rates and bond yields.

A negative and decreasing correlation of inflation-indexed (real) rates with the policy rate from mid-2006 onwards may suggest a loss of policy credibility; a similar period in the early days of inflation targeting (from March 2001) was natural as the Central Bank was gaining credibility following the abandoning of the previous fixed exchange rate policy; in between was a period where the Central Bank enjoyed a reasonable degree of credibility.

Rising correlations of Icelandic bond yields with those in the US, on the other hand, indicated that Iceland became steadily more integrated with international markets from the beginning of inflation targeting in early 2001 until a turning point in the autumn of 2006, when this correlation started a downward trend, falling close to zero by the end of 2007.[99]

An in-depth study of carry trade, its causes and effects, is outside the scope of this paper. But we conjecture that the carry trade in Icelandic kronur – first its rapid rise followed by stagnation and fall – was an important underlying factor behind the coupling/decoupling of interest rates described above.

Figure 4.12 Transmission of interest rates
Moving correlations between monthly changes in yields; three-year lagged window.



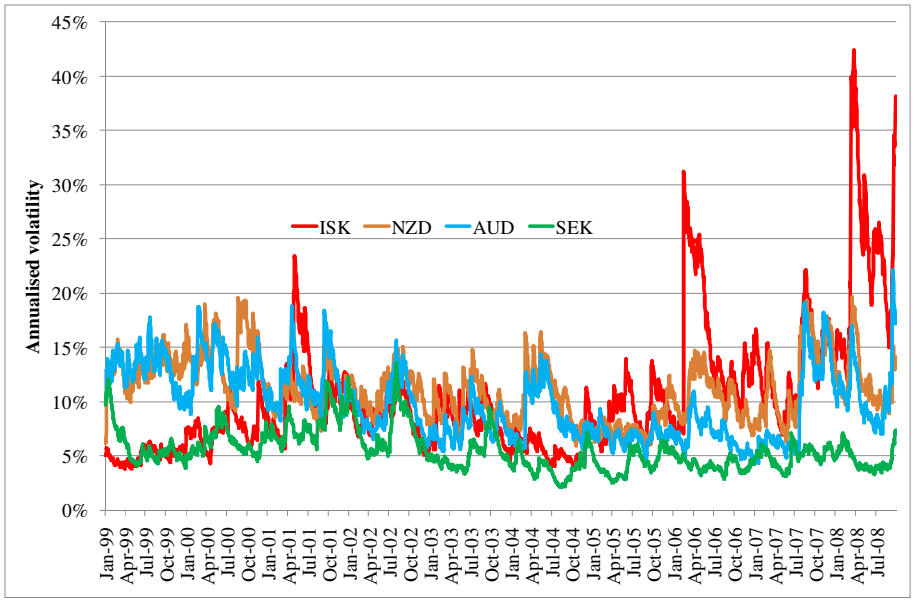
Source: International Financial Statistics (IMF), Central Bank of Iceland, authors' calculations

[99] Bond yields in another carry trade economy, New Zealand, had also been very highly correlated with those in the US (Fig. 4.12), That correlation also went on a strong downward trend at about the same time as in Iceland. A similar trend was observed in Australia, whereas Norway and Sweden, not carry trade countries, exhibit a steady strengthening of financial ties with the US, as measured by correlations analogous to those in Fig. 4.12 (Gudmundsson, 2008).

The exchange rate certainly exhibited the pattern of a target currency for carry trade, *viz.* that of appreciating gradually for extended periods, but falling sharply in between these periods. The first fall was experienced during the mini-crisis of early 2006. A period of appreciation followed until the end of 2007. A transition in volatility was observed in March 2008. Before this point the krona had not been exceptionally volatile when compared with currencies such as the New Zealand dollar and the Australian dollar, two freely floating carry-trade currencies in small, developed economies (albeit much larger than Iceland).[100] But from March 2008 the krona became much more volatile than these currencies.

Figure 4.13 Volatility of selected currencies against the euro

Daily data. Volatility calculated by the exponentially weighted moving average method (λ=0.94)



Source: Datastream, Central Bank of Iceland, authors' calculations

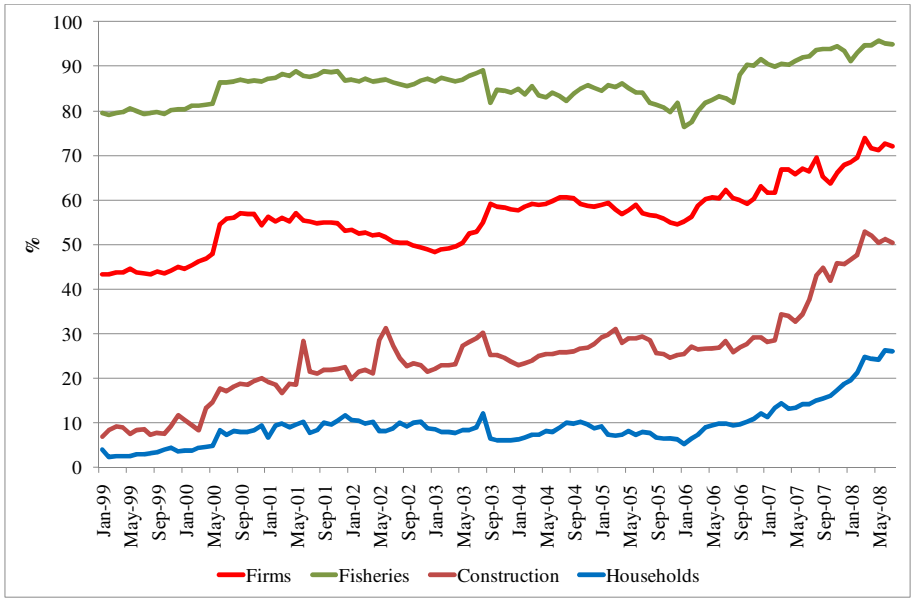
We now know that Iceland's financial sector was subject to powerful external forces that would have posed major problems regardless of the size and behaviour of its banks. Miranda Agrippina and Rey (2012) document a global financial cycle, and Miranda Agrippina and Rey (2013) show its relation to monetary policies: low risk aversion and volatility (proxied by the VIX) are associated with big cross-border credit flows, rapid domestic credit creation, monetary policy tightening in response, and a resulting feedback loop that sustains a prolonged departure from uncovered interest parity – and hence the carry trade. Rey (2013) argues that the global financial cycle, which co-moves with the VIX, affects domestic leverage, credit growth and asset prices regardless of the exchange-rate regime and can be countered only by macroprudential measures or capital controls. Iceland had neither – and hence, in practice, no monetary policy independence.

[100] The exception is the turbulence during the 2006 mini-crisis, from late February to April.

4.8.4 Foreign currency domestic lending

Another consequence of monetary and exchange rate policy in combination with the domestic demand boom was an increasing share of foreign currencies in domestic lending (Fig. 4.13). There was a considerable history of firms' financing in foreign currency. This was especially the case for firms in export sectors (*e.g.* fisheries) or those competing with imports, where there was a natural hedge. But firms in non-tradable sectors such as services and construction had also been financed in foreign currency to some extent for several years, although the share was much lower there than in tradable sectors.

Figure 4.14 Share of foreign currency in banks' domestic lending
'Firms' includes construction and fisheries

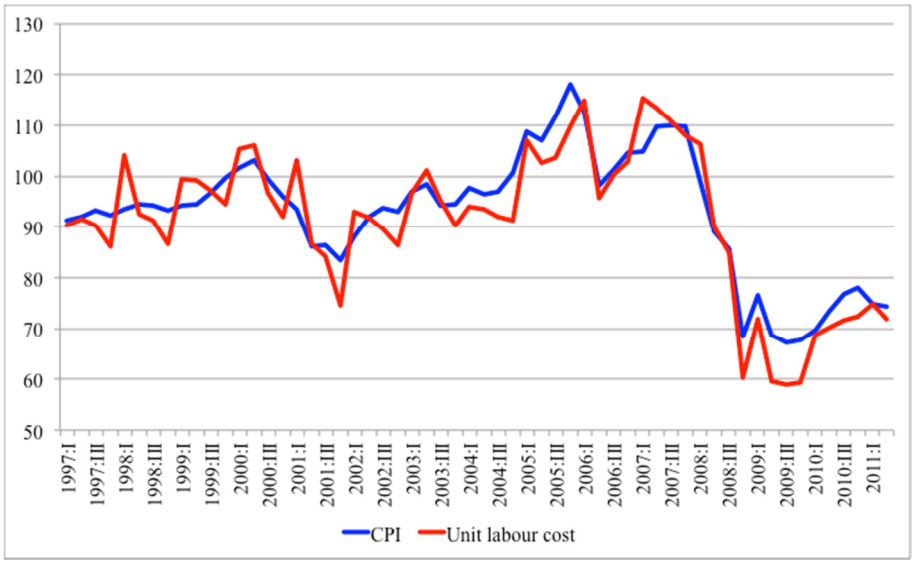


Source: Central Bank of Iceland, authors' calculations.

As in the case of the carry trade, the motive for foreign currency borrowing was the high cost of financing in Icelandic kronur as opposed to currencies like the yen (more risk-averse firms would choose the euro or US dollar). The general view was that exchange rate fluctuations notwithstanding, Icelandic kronur financing was too expensive compared with foreign currencies. Moreover, over the longer-term the real exchange rate had a tendency to fluctuate around a central value to which it would eventually return, even after a devaluation of the krona, usually after a bout of inflation (Fig. 4.14). Hence, for a firm that was adequately capitalised and could withstand these fluctuations in its debt the risk appeared to be worth taking. This rationale became more attractive over time, probably for similar reasons as noted in our discussion of the carry trade. It was particularly important that after an increase in the share of foreign currency lending to firms in early 2006, driven by depreciation of the krona, the foreign currency share did not fall back to its previous level as the krona appreciated. Rather, it increased from its previous level of 50-60%, and was almost 70% in late 2007. The rise was driven by lending to non-tradable sectors such as construction, where the foreign currency share rose from about 30% to 45% during this period.

In the half-decade before 2006 foreign currency lending to households had mostly been confined to car loans and fluctuated in the range 6-10% of banks' overall lending (Fig. 4.13). When the banks found it difficult to compete with the HFF in the mortgage market, they began offering foreign currency housing loans to households. As a result the foreign currency share in lending to households increased rapidly and reached 20% at the end of 2007; the subsequent rise to 25% observed in Fig. 4.13 was driven by depreciation of the krona rather than an increase in volume.[101]

Figure 4.15 Real exchange rate of the Icelandic krona
Quarterly data. Index normalised so that it is 100 on average over 2000:Q1-Q4



Source: Central Bank of Iceland

The rising share of foreign currency lending, especially to households, and, more generally, the extensive trend towards "financial euroisation" gave a reason for concern, *e.g.* based on Levy-Yeyati (2006). The currency risk materialised when the krona collapsed in 2008 with devastating consequences for firms' and households' balance sheets.[102] There would be similar balance sheet effects if a "weak" country were to exit the Eurozone.

Carry trade and foreign currency borrowing by firms and households had similar causes. Even if the resulting inflows had different asset classes as targets – bonds in the case of carry trade, fixed assets, shares, housing and consumer durables in the case of foreign currency borrowing – they also had similar consequences for the price of the assets in question. Yields on bonds fell and the price of housing, land and shares rose. And in both, economic agents ignored uncovered interest parity, which would have suggested the depreciation that ultimately came. We conclude that *the interaction between capital inflows and the Central Bank's attempts to*

[101] Due to the high market share of lenders outside the banking system – the HFF and pension funds – who lend exclusively in kronur, the overall share of foreign currencies in lending to households was considerably lower – approximately 12-15% – than indicated by the share of foreign currencies in banks' lending.

[102] In 2010 Icelandic courts found that loans made in Icelandic kronur but linked to a basket of foreign currencies – the most common form of foreign currency lending to households – were illegal and that the principal of the loans should stay unchanged from the initial amount.

curb inflation with its policy rate as sole instrument, with an implicit exchange rate policy as an intended support mechanism, created a vicious circle that encouraged destabilising carry trade inflows and financial euroisation.[103]

5 August 2007 – September 2008

5.1 Developments in international financial markets

The Icelandic banking crisis should be viewed against the backdrop of the international financial crisis which began, as the US subprime crisis, in August 2007. Although there were precursors, the first event in the timeline of the crisis in Europe is often taken to be when on 9 August 2007, the French bank BNP Paribas suspended payments out of three investment funds which had invested in US asset-backed securities (Ferguson *et al.*, 2007).[104] The progression of the crisis from this point onwards can be seen from the CDS spreads of banks and spreads in short-term capital markets (Fig. 5.1).

Over the next months investors grew increasingly wary of securities backed by US housing debt. Estimates of losses on mortgage-backed securities increased through the autumn of 2007, the market for these securities collapsed, and financial institutions that had invested heavily in this class of assets became vulnerable.[105] The next major event was the collapse of the US investment bank Bear Stearns, which had funded its investments in mortgage-related assets to a large extent by short-term borrowing. As investors became more conscious of the risk related to this business model, Bear Stearns had found it increasingly difficult to roll over its short-term debt, and its funding dried up completely by mid-March 2008. On 14 March 2008 the US Federal Reserve assisted JPMorgan Chase in taking over Bear Stearns.

This helped restore some calm to markets, partly because it reinforced the view that the US authorities would not permit any major investment bank to go bankrupt (Reinhart, 2011). In mid-2008 the mainstream view was that the crisis could in all likelihood be contained and would not have serious longer-term effects on economic activity.[106] This view was wrong. On 15 September 2008 the US financial crisis culminated when Lehman Brothers filed for

[103] A similar analysis and conclusion appeared in Portes and Baldursson (2007). The SIC report (Chapter 4, Volume 1) takes a similar view, *ex post*.

[104] The first event in the timeline of the US financial crisis prepared and maintained by the Federal Reserve Bank of St. Louis (http://timeline.stlouisfed.org/) dates back to February 2007. Reinhart (2011) names the liquidation on July 31 by Bear Stearns of two hedge funds, which invested in US asset-backed securities, as the first event.

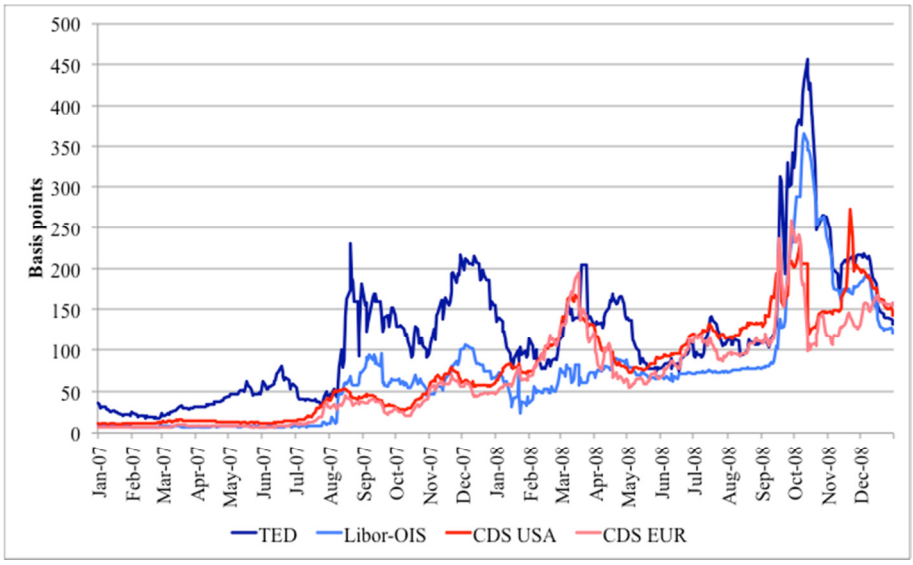
[105] While mortgage-backed securities were downgraded regardless of rating, recent estimates of impairment on these securities indicate that '[o]verall, for 2005-2007 vintage tranches of mortgage-backed securities originally rated triple-A, despite the mass downgrades, only about 10% of Alt-A and 4% of subprime securities had been "materially impaired" – meaning that losses were imminent or had already been suffered – by the end of 2009.' (Financial Crisis Inquiry Commission, 2011).

[106] See *e.g.* the OECD Economic Outlook of June 2008 (OECD, 2008) whose introductory chapter bears the title „After the storm?" Downside risks were of course duly noted.

bankruptcy.[107] This marked the transformation of the crisis from one largely centred on the US to a global financial and economic crisis which led to the deepest economic downturn since the Great Depression.

Figure 5.1 Credit default swap spreads of European and US banks and spreads in short-term capital markets

"CDS USA" is the average CDS spread of Bank of America, Citibank and JPMorgan Chase; "CDS EUR" is the average CDS spread of Deutsche Bank, Royal Bank of Scotland and UBS. All CDS spreads for senior 5 year debt



Source: Bloomberg

The fall of Lehman had a major adverse impact on all financial institutions, but especially those which were perceived as risky. This included the major US institutions – not just the insurer AIG, which was bailed out by an $85 bn loan from the Federal Reserve the day after the Lehman collapse, but also the big banks. All counterparties were suspect, and the interbank markets dried up.

The weakness of the system went much deeper than warranted by the direct exposure of balance sheets to the US subprime mortgage market. Hence the rapid transmission of the crisis from the US to the global financial system and particularly vulnerable countries. A common feature in the latter was the devastating nexus between banks and sovereigns – in debt holdings and balance sheets, bad loans and fiscal consequences. Iceland was the first spectacular casualty, but a long sequence of others followed. Huge cross-border financial flows had gone into financial sectors incapable of intermediating them properly. Bad banking – both borrowing and lending – and high leverage led to structural weaknesses whose burdens governments quickly took on themselves. The problems were most acute in some countries with banking sectors that were very large relative to the underlying economy – Iceland, Ireland, the UK, most recently Cyprus.

[107] See Sorkin (2009) for a detailed account of the collapse of Lehman, which with its balance sheet of $691 bn helps to put the Icelandic bank collapse in perspective.

The impact quickly reached both Irish and Icelandic banks whose access to funding – already severely constrained – was now fully curtailed. At Icelandic banks existing funding began unravelling as loan lines were cancelled. In Ireland the government, on 30 September 2008, chose to guarantee all liabilities, €440 bn worth, of the country's banks; this sufficed to normalise their market access for the time being, at the cost of ultimate fiscal disaster. In Iceland the authorities were forced onto a different path and events unfolded quite differently.

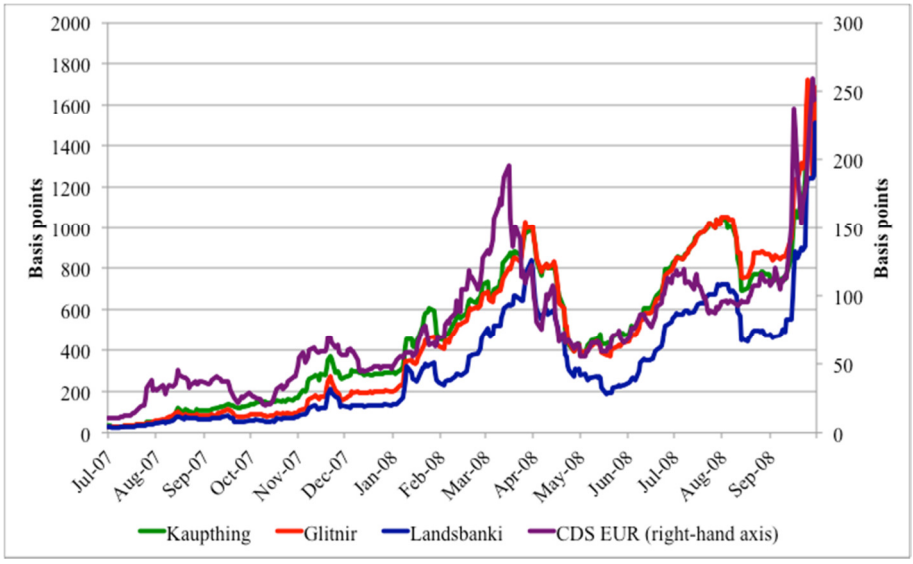
5.2 Icelandic banks: capital market access, collection of retail deposits, and collateralised funding

5.2.1 Capital market access

Comparing CDS spreads for Icelandic banks with those of their European counterparts (Fig. 5.2), we see that market access for the former followed a similar pattern as that of banks internationally: spreads began rising in July 2007, and by mid-August they reached the levels seen in the mini-crisis of 2006; the rise gained momentum in January 2008, peaking in March; spreads fell back to January 2008 levels after the Bear Stearns intervention but rose steeply again through the spring and summer and went through the roof with the fall of Lehman. There are, however, some features of the Icelandic trajectories that differ from international developments: a continued rise in March, for two weeks after Bear Stearns, followed by a rapid fall and a deeper dip in May, a sustained rise in July, another dip in August and an explosion of spreads during the three weeks between the fall of Lehman and the collapse of the Icelandic banks. These specific features can be linked to events in Iceland to which we shall return below.[108]

[108] Our 2007 report was published on 21 November 2007. CDS spreads *rose* sharply on November 21-22 but then came down to previous levels for a few weeks. Share prices fell sharply on November 21. European banks followed the same pattern, *i.e.* a small peak on November 21 and a subsequent drop which lasted until January 2008, indicating that the Icelandic developments were mostly driven by international events. This is of interest bearing in mind the weight given by some commentators to our 2007 report. At least in the markets, academics seldom carry such weight.

Figure 5.2 Banks' CDS spreads (5-year senior bonds).
July 1 2007 – October 1 2008. For ease of comparison CDS EUR (the average CDS spread for Deutsche Bank, Royal Bank of Scotland and UBS) is plotted on the right-hand axis.



Source: Datastream

Even if the qualitative pattern of Icelandic banks' spreads was broadly similar to those for the US and the rest of Europe until October 2008, the situation of the former quickly became much more difficult. During the first weeks of the crisis CDS spreads were of a similar order of magnitude for Icelandic and international banks. But the two trajectories diverged fairly soon: while the difference in spreads between the average of Icelandic banks and three large European banks (Deutsche Bank, Royal Bank of Scotland and UBS) was 15-20 basis points in May and June 2007, the difference exceeded 100 basis points by November. As the crisis progressed the magnitude of risk premia placed on Icelandic banks became much greater than those of US or European counterparts: the average CDS spread over the period January-September 2008 for Icelandic banks was 626 basis points, while that of European banks was 100 basis points.

As market conditions turned adverse, the volume of bonds issued for sale in capital markets fell drastically and the terms on the issues that were made deteriorated sharply. Before the mini-crisis, Icelandic banks had generally issued bonds with spreads of 20-30 basis points. In the first half of 2006 bond spreads rose – in parallel with the development of CDS spreads – to 70-100 basis points. Market conditions had normalised in early 2007, and in May 2007 Landsbanki had issued €1.5 bn of 5-year bonds with a 26 basis point spread over EURIBOR. By April 2008 a €0.2 bn issue – the only one Landsbanki sold in markets after August 2007 – had a 350 basis point spread. Glitnir managed to sell €0.7 bn worth of 5-year bonds in September 2007, but attempts to access markets in January 2008 failed utterly. Kaupthing sold €1.5 bn of bonds in total in 2008 at spreads commensurate with the CDS numbers, *i.e.* 500 basis points for 5-year maturities.

We conclude that Icelandic banks were for all practical purposes shut out of long-term capital markets soon after the onset of the subprime crisis in August 2007. Clearly, their situation had become quite untenable were it to be sustained.

5.2.2 Deposit funding

With restricted access to capital markets the banks looked for other channels of funding. In 2006 Landsbanki had begun collecting retail deposits into internet accounts in its UK branch under the brand name of 'Icesave'. The accumulation of these and other ('wholesale') deposits gathered pace during and after the mini-crisis of 2006 and reached a peak of €9.8 bn in August 2007. The deposit ratio of Landsbanki peaked at the same time at over 70%.[109] With restricted market access in 2007 the Icesave accounts were seen as an important potential source of funding and they were aggressively marketed in the UK; in May 2008 marketing began in the Netherlands, also through a branch.[110] The drive was successful in that the number of accounts increased, but total amounts diminished.[111] Market conditions clearly had an impact on these deposits: there was a €2.7 bn drop – virtually a run amounting to 28% of Icesave deposits – in the overall amount from January to April 2008, and a €1.4 bn drop in October 2008. The final stock of foreign deposits at Landsbanki amounted to €7.2 bn, mostly in Icesave accounts, compared to €9.2 bn in July 2007, and constituted 23% of the balance sheet of the bank which had €32 bn in assets in June 2008. Landsbanki's deposit ratio had decreased to 63% by this time.[112]

Kaupthing first began marketing internet deposits internationally under the brand name of 'Edge' in the last quarter of 2007 through its UK subsidiary, and it was only in the second quarter of 2008 that these deposits began growing appreciably.[113] Growth then came quickly, however. By the end of September deposits in Edge accounts amounted to €5.4 bn or 10% of Kaupthing's balance sheet in June 2008. Due to strong growth in lending, however, Kaupthing's deposit ratio at this time was similar to that a year earlier, at 45%.

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[109] As noted in Section 4.5 the shift from capital market funding to retail funding was in good part done as a response to the criticism of market analysts and ratings agencies, who pointed to low deposit ratios and dependence on capital market funding as a weakness of the banks during the mini-crisis of 2006.

[110] There were plans for expansion of the 'Icesave platform' into other countries in Europe (Landsbanki, 2008).

[111] The number of Icesave accounts increased from 100,000 in July 2007 to 350,000 in July 2008 with over 200,000 new accounts in the first half of 2008 (Landsbanki, 2008). The average amount in each account diminished from €61,000 to €20,000 over this period. This indicates that depositors were conscious of amounts covered by deposit insurance, which was €20,887 per depositor in the case of Iceland, the home country responsible for accounts in its banks' foreign branches. The total amount insured by the Icelandic deposit insurance fund increased commensurately with the number of accounts, *i.e.* grew more than threefold in the period July 2007 – July 2008.

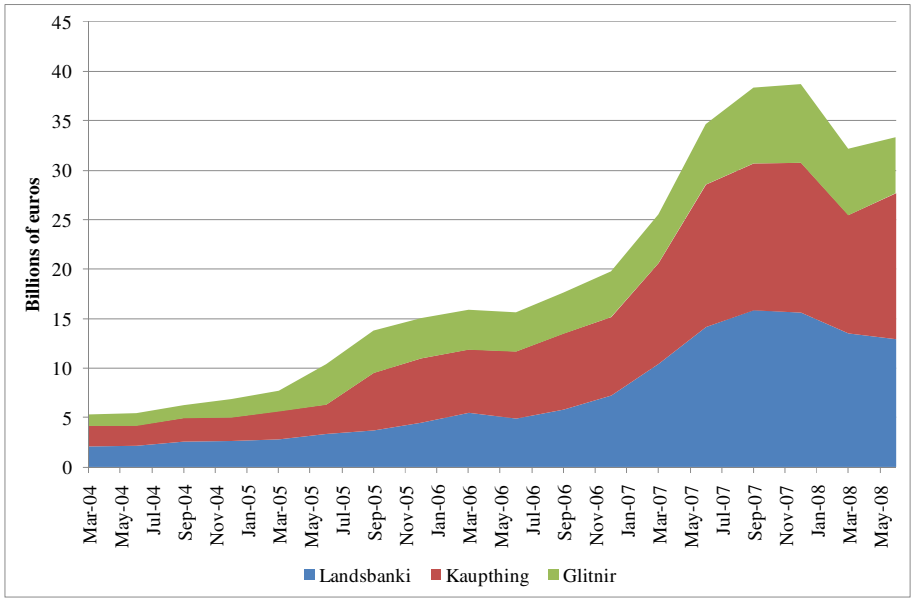
[112] Our deposit ratios do not match those published in SIC (2010a) exactly, but are calculated based on data on deposits and loans to customers from that same report.

[113] Edge deposits were mostly collected in Kaupthing's subsidiaries, especially Kaupthing Singer and Friedlander in the UK. This implied that the deposit insurance fund in the home country of the subsidiary – which was subject to local financial regulation and oversight – bore the risk of insuring these deposits.

In June 2008 Glitnir – which had the tightest funding situation of the three banks – initiated collection of retail deposits in Norway, without appreciable success. At this time Glitnir's deposit ratio was 28% compared to 34% a year earlier. International deposits at Glitnir fell from €4.6 bn in September 2007 to €3.3 bn in August 2008.

As noted in Section 2.5, deposits in subsidiaries were covered by deposit insurance of the home countries of the subsidiaries, whereas those in branches were covered by the Icelandic deposit insurance, which turned out to be woefully inadequate. The reason for Landsbanki's preference for collecting deposits into branches rather than subsidiaries was that it was much easier, for regulatory reasons, to upstream cash from a foreign branch to the parent bank than to do so from a subsidiary. Beginning in early 2008 UK authorities, who were worried about a possible run on the Icesave deposits, began to put pressure on Landsbanki to transfer them into a subsidiary. These requests were largely supported by Icelandic authorities, but resisted by Landsbanki. By the end of July 2008, however, Landsbanki agreed to the demands made by the UK FSA, but the transfer was never executed.[114]

Figure 5.3 Deposits at Icelandic banks



Source: SIC (2010a)

Total domestic and international deposits at Icelandic banks peaked at the end of 2007 at €38 bn, but had fallen by €6 bn at the end of March 2008 (Fig. 5.3). Some of this drop (about €2 bn) came from the 25% depreciation of the krona over the period, which reduced the euro value of domestic deposits. The SIC does not offer an explanation of the large drop, €3 bn at Kaupthing.[115] It does however, state that about €2 bn was due to the run on international deposits at Landsbanki in the first months of 2008. On April 1, after close to £200 million (€250 million) had been withdrawn from UK Icesave accounts in two days, the Chairman of

[114] SIC (2010a, Vol. 6, Ch. 18) gives a detailed account of the interactions of Landsbanki and UK and Icelandic authorities regarding the Icesave accounts.

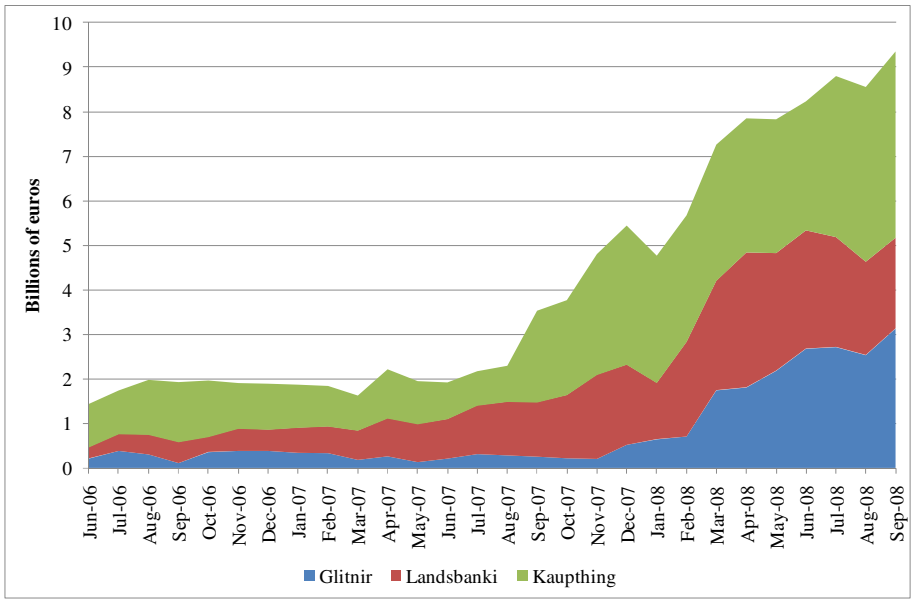
[115] This drop was not due to a run on Edge accounts, which were just beginning to take off in March 2008.

the Board of Governors of the CBI stated in a meeting with the Prime Minister and the Minister of Foreign Affairs that Landsbanki was a week from collapsing were this rate of outflows to continue (SIC 2010a). The outflows subsided, however, and Icesave deposits stabilised for the time being. But overall, deposits at Icelandic banks fell from €34 bn to €33 bn from June 2007 to June 2008, with the difference evenly split between domestic and international deposits. Clearly, *increased reliance on funding from deposits provided no effective cushion against the liquidity crisis* the banks faced.

5.2.3 Collateralised funding

With the onset of the liquidity crisis the banks became more reliant on collateralised loans from central and commercial banks as a source of funding.[116] Kaupthing was the first bank to step up its use of such loans, but the other banks soon followed (Fig. 5.4). The overall amount of collateralised loans increased from about €2 bn in July 2007 to over €9 bn by the end of September 2008. This type of funding is very short-term in nature – the typical maturity is one week.

Figure 5.4 Loans to Icelandic banks against collateral, breakdown by bank



Source: SIC (2010a)

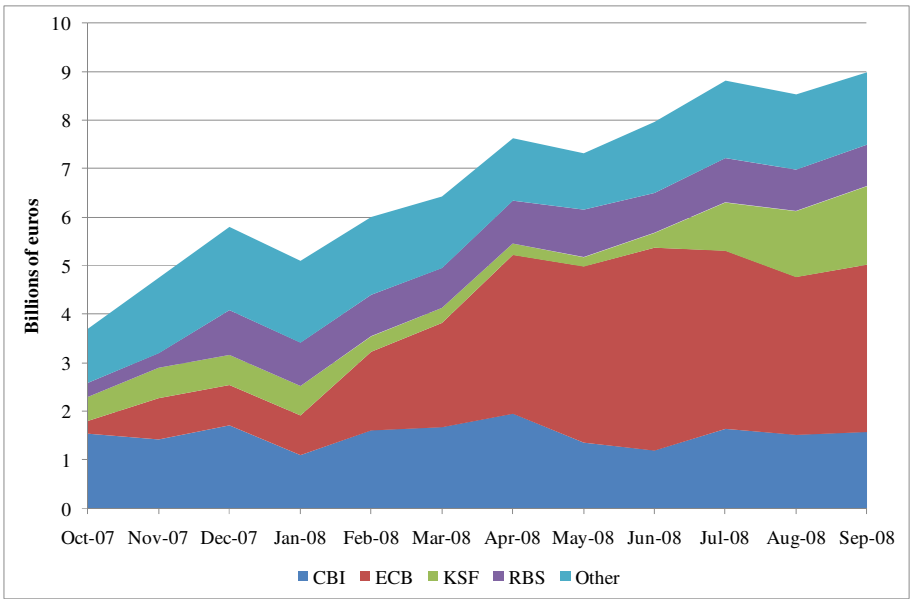
Fig. 5.5 shows collateralised loans broken down by origin.[117] Of particular interest is the rapid increase in loans from the European Central Bank (more precisely, the Central Bank of Luxembourg – all the large Icelandic banks had subsidiaries in the Grand Duchy) beginning in early 2008. At the peak in June 2008 these loans amounted to €4 bn in total. SIC (2010a) reveals the worries of ECB officials and interaction and communication between the CBI, the

[116] We use the term "collateralised loans" to encompass both short-term loans against collateral with a margin (haircut) and traditional repo loans, where ownership of the collateral actually changes hands during the loan period.

[117] Total amounts in Fig. 5.4 and Fig. 5.5 should be the same, but differ slightly. These figures are constructed on the basis of different data tables from SIC (2010a) and reflect discrepancies therein.

banks and the ECB which resulted in certain changes in the type of collateral that the banks were allowed to place. At first they had posted Icelandic bank bonds which they had exchanged between each other before placing them as collateral – so-called 'love letters'.[118] When discovered, this practice was deemed to break the spirit, if not the letter, of ECB regulations on permissible collateral and caused great consternation at the ECB. After an intervention from the President of the ECB, in April, the banks were required to limit such collateral to 40% of the total posted.

Figure 5.5 Loans to Icelandic banks against collateral, breakdown by origin



Source: SIC (2010a)

The banks responded to the limitation of Icelandic bank bonds as collateral by increasing their borrowing and the total amount of collateral rather than reducing the amount of love letters! This went on over the next two months. In August the ECB again intervened; the love letters were quickly phased out as collateral and had mostly disappeared by August 2008. The love letters were replaced mainly by covered bonds – more precisely, asset securitisation via SPV – which were subsequently rated by rating agencies and could legitimately be placed as collateral with the ECB and other financial institutions. But there was still a problem: a good part of the assets underlying the covered bonds was denominated in Icelandic kronur. The banks had to swap out this currency risk – recall that the krona had already depreciated substantially by Spring 2008. This they did by writing currency swap agreements between the relevant SPV and themselves. The ECB was still far from happy with the development of collateralised lending and considered that its lending facilities were being abused. In August 2008 the ECB changed its regulations on lending against any kind of asset-backed bond as collateral – increasing haircuts from 2% to 12-17% depending on the type of collateral – but these rules were not scheduled to come into effect until February 2009. Glitnir, Macquarie

[118] The word for 'bond' in Icelandic is 'skulda-bréf' which in literal translation to English is 'debt-letter'; 'bréf' being the Icelandic word for 'letter'. A bond that Glitnir, say, gave to Landsbanki in exchange for a similar bond from Landsbanki was (with a good measure of irony) called 'ástar-bréf' or 'love letter'. The reader will have understood that 'ást' is the Icelandic word for 'love'.

Bank of Australia, and Lehman Brothers were publicly cited as examples of banks that would be negatively affected by the new regulations (*Financial Times*, 2008b).

Kaupthing was the Icelandic bank that used ECB funding the least; at peak their loans from the ECB amounted to about €1 bn, or a quarter of the total lent to Icelandic banks, while Kaupthing was approximately the same size as Landsbanki and Glitnir together. Kaupthing went down a different road, borrowing from its own subsidiary in London (KSF) against collateral (Fig. 5.5) – in effect 'upstreaming' cash from Edge accounts to the parent bank. These loans, which began in May 2008 and had a margin of 15-20% over collateral through August, exceeded €1.5 bn by the end of September 2008. Then, however, the value of collateral had fallen to €1.3 bn or 85% of the loans from KSF to its parent. The shortfall increased even further over the first week of October. It is likely that this played a substantial role in the decision of the UK FSA to place KSF under administration on 8 October 2008; this in turn triggered the immediate collapse of Kaupthing Bank.[119]

The Central Bank of Iceland was also a substantial lender to Icelandic banks, which Fig. 5.5 does not fully capture. Collateralised (repo) lending at the Central Bank was – with one major exception in early October 2008 – denominated in kronur. The depreciation of the krona therefore disguises the growth of the CBI's lending in Fig 3.5 as kronur amounts are converted to euros. Moreover, the large banks used smaller Icelandic banks, *e.g.* Icebank,[120] as intermediaries in their borrowing from the Central Bank: the small bank took a bond from a large bank, placed it as collateral in the CBI against cash which it promptly handed over to the large bank.[121] This type of lending is not included in Fig. 5.5. Overall, the amount of CBI lending with bank bonds as collateral grew by leaps and bounds from early 2008, when the CBI relaxed its rules on permissible collateral.[122] On October 1 2008 – a few days before the banks collapsed – the CBI had lent ISK 520 bn (35% of 2008 GDP) to the banks against collateral of which ISK 304 bn (20% of 2008 GDP) was lent against unsecured bank bonds (Fig. 5.6). These amounts were double those observed at the beginning of the year. During the Bear Stearns crisis in March-April the CBI pumped ISK 158 bn – about 10% of GDP – into the banks (€1.3 bn at the exchange rate at the time).

Three side effects of the CBI's lending are worth mentioning here. First, the banks needed liquidity in foreign currency – not kronur. As we saw in Fig. 4.11, the foreign exchange swap market collapsed in early 2008, so the banks converted CBI loans into foreign currency.[123] This undoubtedly contributed significantly to the rapid depreciation of the krona in 2008.

[119] See Section 2.3 on the fall of Kaupthing.

[120] Icebank was owned by a consortium of Icelandic savings banks and was established for the primary purpose of undertaking capital market transactions on their behalf.

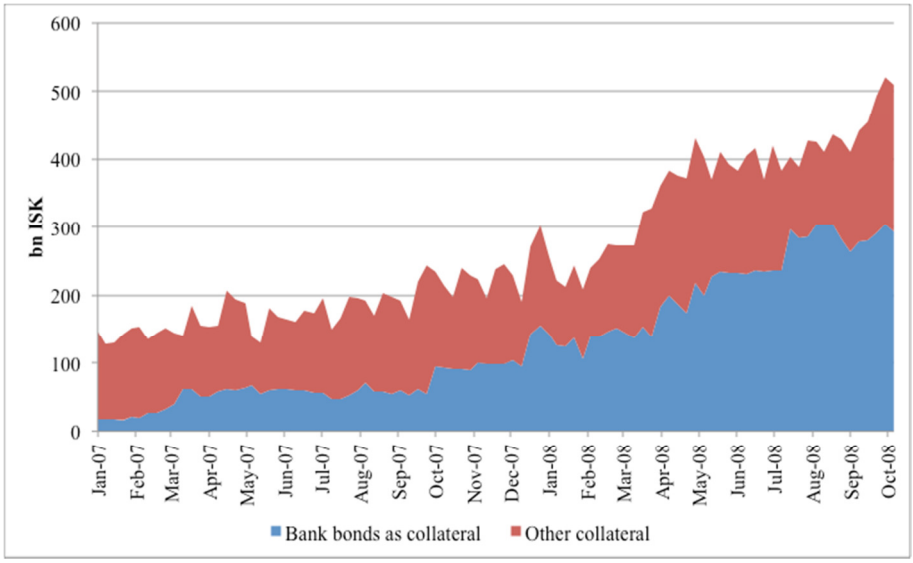
[121] This is another variant of the 'love letter' scheme described earlier. The volume of these transactions far exceeded the capital of the intermediaries, *e.g.* Icebank. SIC (2010a) details how Icebank 'hedged' against the risk involved by purchasing CDS contracts from small, local Icelandic firms which had even smaller capital.

[122] The CBI effectively allowed the banks to create an unlimited amount of kronur by the love letter scheme.

[123] The CBI repeatedly stated that it was able to provide liquidity support only in its home currency, *i.e.* Icelandic kronur, see *e.g.* Gudnason (2008). The exception was a €0.5 bn loan to Kaupthing right before its collapse.

Second, when the large banks collapsed in October 2008, balance-sheet contagion (Kiyotaki and Moore, 1997) was inevitable, where the smaller banks which had been intermediaries in repo lending from the Central Bank to the bigger banks went bankrupt as the bank bonds they had placed as collateral were wiped out. This essentially eliminated what remained of the Icelandic banking system after the three large banks had collapsed. Third, losses on bank bonds held as collateral by the CBI, estimated at 11.1% of GDP, are the largest direct fiscal cost item due to the banking crisis (Laeven and Valencia, 2010; OECD, 2011).[124] The Central Bank had to be recapitalised after it was left holding bank bonds now estimated to be worth about 30% of their nominal value as collateral.

Figure 5.6 CBI repo lending to Icelandic banks



Source: SIC (2010a)

Commercial banks also lent to Icelandic banks against collateral – including the Icelandic banks among themselves. The largest private lender, excluding KSF, was the Royal Bank of Scotland (RBS) with approximately €0.9 bn in loans at the end of September 2008 (Fig. 5.5).

So the Icelandic banks that faced funding difficulties moved from market funding to repo transactions, gradually lowering the quality of the collateral. This pattern is well known (*e.g.* Borio 2009, van Rixtel and Gasperini 2013). A consequence is that central banks expand their balance sheets against collateral of deteriorating quality. In Iceland, this led to large losses for the CBI. We have seen a similar development in periphery Eurozone countries recently: banks in Cyprus, Greece, Ireland, Italy, Portugal and Spain have had difficulty in obtaining market funding and more than half the debt they issued during 2011-2012 was taken up by the banks themselves (IMF 2012 p. 29; see also van Rixtel and Gasperini 2013).

[124] This estimate does not include the CBI's loss on the loan to Kaupthing (cf. previous footnote) which is likely to amount to 2.5% of GDP. The collateral in that case was shares in Kaupthing's Danish subsidiary, FIH.

5.2.4 August 2008: overall funding situation

The banks' balance sheets continued expanding from August 2007 throughout that year, peaking at a total of €124 bn at the end of 2007. Some deleveraging then began – at least when measured in euros – and in June 2008 the banks were of a similar size as a year earlier, or €115 bn in total. A limited amount of their debt came due during this period, in all likelihood €3-4 bn. There was very limited international bond issuance by Icelandic banks after August 2007, approximately €2.4 bn. The shortfall in long-term funding is therefore likely to have been €1.5-2.5 bn.[125]

The banks had turned increasingly to deposits and collateralised borrowing as sources of funding. But deposits provided no solution – the overall amount decreased by €1 bn in the period June 2007 – June 2008. Borrowing against collateral from the ECB, the CBI and others was a net source of cash, however, and provided some €7 bn in funds during this period.

We have discussed the banks as a whole in the preceding paragraphs. Despite their manifold interconnections, however, they were not run as a whole. The flows described affected them differently. Still, a liquidity problem at one bank was likely to become a systemic problem, and to this extent the system was no stronger than the weakest bank. The data in SIC (2010a) suggest that Kaupthing may have been in the best liquidity position: it was able to be a net borrower in capital markets in 2008 and had a steady increase in Edge deposits. Glitnir and Landsbanki were probably in a worse condition, with a decrease in deposits at both and considerable net shortfall in borrowings at Glitnir.

Nevertheless, in their half-year reports issued at the end of July 2008 (Glitnir, 2008; Kaupthing, 2008; Landsbanki, 2008) the banks claimed to have liquidity to cover all payments on debt coming due in the next 12 months – in total, liquid assets were said to amount to more than €24 bn (about €8 bn at each bank) whereas payments on long-term debt over the coming 12 months amounted to approximately €7 bn (Fig 5.7.).[126] The half-year results, which, in view of adverse market conditions, showed surprisingly strong headline key ratios for profitability, capital adequacy, and loan quality – in addition to adequate liquidity – had a positive impact on market sentiment towards Icelandic banks. CDS spreads dropped substantially (Fig. 5.2), and press coverage became more favourable.[127]

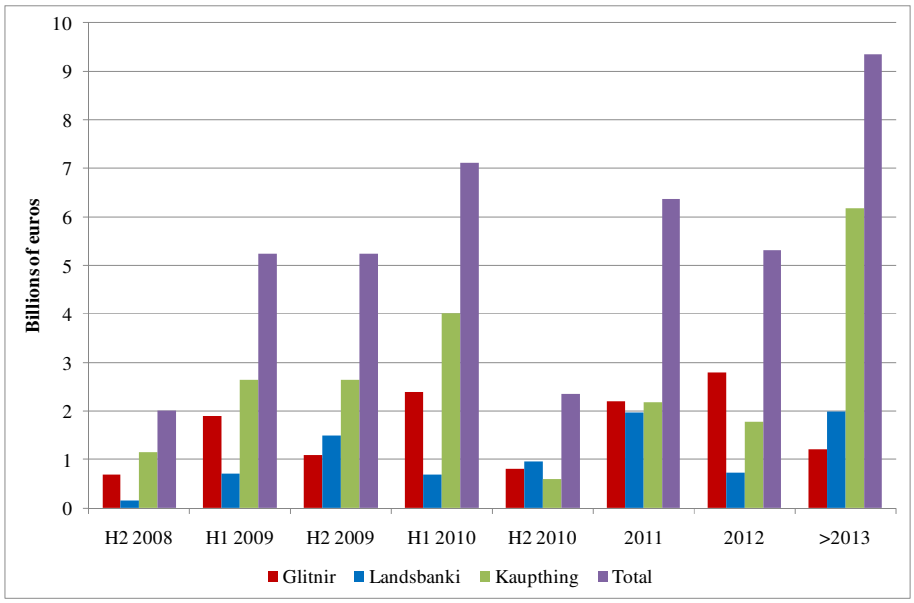
[125] Surprisingly, the SIC report does not give complete data, neither on borrowings nor repayments for the period before the fall of the banks.

[126] Based on data from SIC (2010a) repayment on long-term debt July 2008 to June 2009 amounted to a somewhat lower figure, or €6 bn. Apparently SIC (2010a) – as opposed to the banks' half-year reports – does not take debt at foreign subsidiaries into account and therefore underestimates the total repayment burden.

[127] See *e.g. Financial Times* (2008a) 3 August 2008.

Figure 5.7 Maturity profiles for long-term debt

The leftmost five clusters are half-year data. The rightmost three clusters are annual data



Source: Glitnir (2008), Kaupthing (2008), Landsbanki (2008)

All this was deceptive. For example, some of the reported liquidity was in the form of credit lines reported as being without 'Material Adverse Change' (MAC) clauses.[128] Glitnir and Kaupthing each had a €1 bn credit line with Deutsche Bank of this kind.[129] In effect, if the auction failed Deutsche could set its own terms to cover the shortfall. So even if the credit line was formally without a MAC clause and therefore solid, even in the case of market distress, it would have been prohibitively expensive to draw on and was therefore useless in practice. Furthermore, despite the absence of a MAC clause the underlying contracts depended on a certain rating and were therefore rendered void when the banks were downgraded at the end of September 2008 (see Section 2).

Despite the drop in CDS spreads in August 2008, they remained high, especially in comparison to other European banks (Fig. 5.2). Indeed, it was clear that the banks were by no means out of the woods. Looking beyond 12 months, there were considerably heavier payments on debt in store, and the banks would have to regain market access in order to service their debt. With average scheduled payments on the banks' debt of €10 bn per year in

[128] The role of a MAC clause in a loan agreement is to protect the lender against events that have significantly adverse implications for the borrower. Lenders may refuse further drawings on the contract and even require immediate debt repayment (www.bankopedia.net). Credit lines without MAC clauses are therefore expected to offer much better liquidity backup during a crisis than those with such provisions.

[129] The terms were as follows: Deutsche would be an intermediary in an auction of Glitnir or Kaupthing bonds amounting to up to €1 bn, but in the event of a shortfall in the auction "the liquidity facility provider shall obtain credit quotations in the credit default swap market to cover the full amount of the shortfall and make a BID (at such level as it shall, in its sole and absolute discretion determine) to purchase the Shortfall, and the Subscription Price will be the weighted average of all Bids (including the Bid of the Liquidity Facility Provider) obtained." (text from contract between Glitnir and Deutsche Bank, dated 28 January 2008, as cited in SIC (2010a, Vol. 2)). The text in the Kaupthing-Deutsche contract which dated from 9 November 2007 is analogous.

2009-2010, most of this in foreign currencies, and CBI currency reserves of €2 bn, the central bank was obviously unable to act as a lender of last resort for the banks.

A number of important factors had developed for the worse, but they were not revealed in the banks' mid-2008 reports: funding had become increasingly short-term with greater reliance on collateralised loans, most of which had very short maturities and were vulnerable to changes in the value of underlying collateral should market conditions deteriorate. Adverse developments in underlying loan quality – low official impairment notwithstanding – were not reported. Credit lines with such draconian terms that they were in practice inaccessible were counted as a part of liquid funds. The near failure of Landsbanki after a run on Icesave accounts in February-April 2008 was of course not mentioned.

Some in the international investment community may have had information – or just conjectures – on these developments. In January 2008, a group with members from Bear Stearns and four hedge funds went to Reykjavik to confirm their decisions to short Icelandic assets (Ibison 2008). During the spring and summer of 2008, there were frequent reports of speculation against Iceland in both credit default swaps (CDS) and the underlying securities.

CDS spreads are claimed to reflect a correct interpretation of information available to sophisticated market participants. But there is growing support in recent literature for the view that the CDS markets do not function in this way, indeed that they may not reflect fundamentals and can be destabilising. The CDS market may be a dysfunctional form of 'market discipline', insofar as a rise in CDS spreads increases the cost of market funding, which pushes the bank towards riskier, high-return activities (gambling for resurrection) and weakens its balance sheet, which in turn leads to higher CDS spreads. Moreover, the ability to write and trade 'naked' CDS (without owning the underlying securities) amplifies the purely speculative element in the market (Fostel and Geanokoplos 2012, Che and Sethi 2011, Portes 2012). Shorting securities and buying CDS can amplify and reinforce one another (Sethi 2010), and there is empirical evidence that the CDS market is a coordinating mechanism for speculation (Bruneau *et al.* 2012). The power of this mechanism is amplified if market participants disseminate rumours that support their positions. There were several reports of this sort of activity regarding Iceland (Barnett 2008, Jonsson 2009).

5.3 Icelandic banks: lending and loan quality

Changes in overall assets on the banks' balance sheets developed in line with their lending which we focus on here.[130]

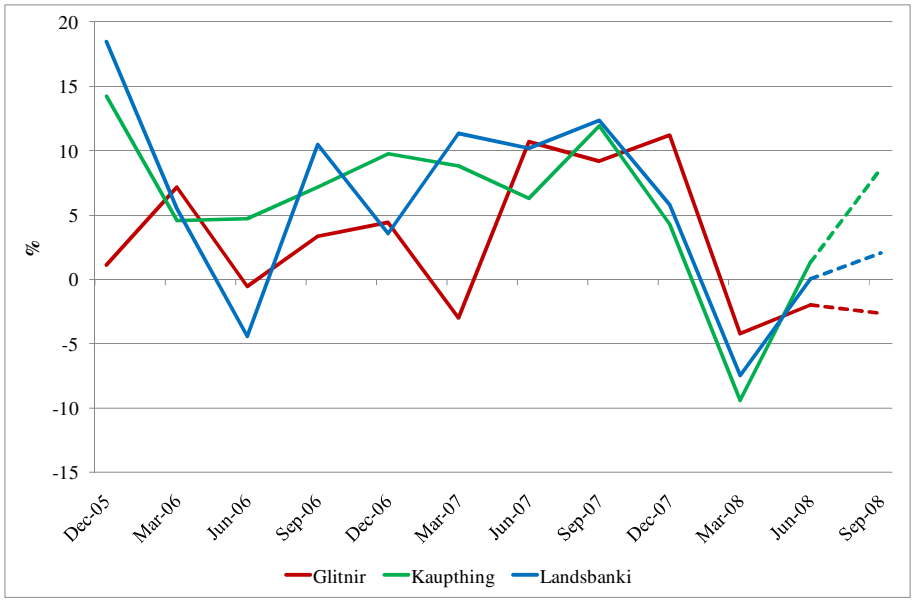
The development of lending at Icelandic banks does not indicate any immediate effect of the liquidity difficulties that began in August 2007: loans continued to expand at approximately

[130] Loans to customers were 60-70% of assets of the banks. As expected the largest items apart from loans were bonds, loans to other financial institutions, and derivatives held for hedging. Equity represented about 2-3% of total assets, but the banks were exposed to substantial additional equity risk through their lending to holding companies (see below in this section).

the same pace as before, albeit at a lower rate at both Kaupthing and Landsbanki than at Glitnir (Fig. 5.8). Some deleveraging then took place during the first quarter of 2008 as overall lending, measured in euros, dropped by 5-10%. The drop is exaggerated somewhat by the parallel depreciation of the krona by 25%, but since loans in kronur only amounted to 20% of overall lending the deleveraging pattern observed holds up even after correcting for this factor.

Deleveraging was, however, a short-lived phenomenon and had mostly stopped – with some variation between banks – already in the second quarter of 2008. As for the third quarter, the last complete data for the banks on a consolidated basis are for end-June 2008, but data for the parent banks for the third quarter (shown with a dashed line in Fig. 5.8) show a strong increase in lending for Kaupthing, a small increase for Landsbanki, and a small decrease for Glitnir. The data also show an 8% increase in lending (measured in euros) at the parent banks of Kaupthing and Landsbanki for the second quarter of 2008. While the international subsidiaries of these banks pursued a deleveraging policy in that quarter (6% and 26% reduction, respectively), the parent banks expanded their lending vigorously at the same time. A similar pattern is not observed at Glitnir, which seems to have tried to reduce its balance sheet throughout the year.

Figure 5.8 Lending growth at Icelandic banks
Loans to customers measured in euros. Percentage changes quarter-on-quarter.



Source: SIC (2010a). Data for the third quarter of 2008 are available only for lending at the parent bank.

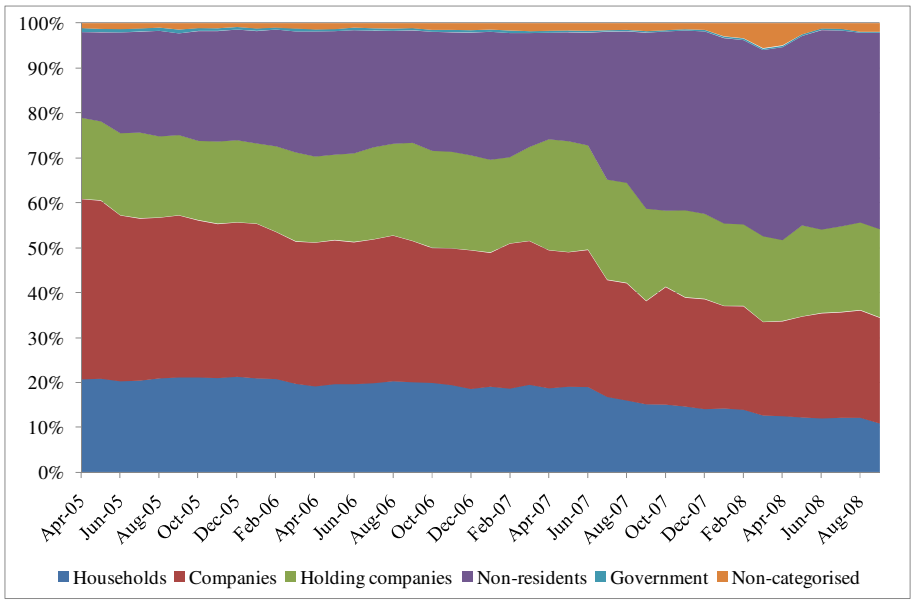
On the surface, it is hard to understand vigorous lending growth at Kaupthing and Landsbanki in the second and third quarter of 2008. These banks were having serious problems with financing and should have been continuing and speeding up the deleveraging begun in the first quarter of 2008.

The SIC report classifies only domestic lending at parent banks; subsidiaries' lending and parent banks' lending to non-residents is left unclassified. This is inherited from CBI data but

is somewhat unfortunate, since when the division of lending onto sectors is examined for parent banks (Fig. 5.9) the most striking feature is the *increase in lending to non-residents*, which is especially pronounced from mid-2007. Overall, *i.e.* including subsidiaries, the share of lending to non-residents exceeded 60% of lending during the last year of the banks' existence; at parent banks the share was 40-45% over the period. The share of lending to holding companies was fairly stable at 18-20%.

We conjecture that a large share of parent banks' lending to non-residents was to holding companies.[131] If correct this would increase the already high share of such loans.[132] According to the banks' consolidated half-year statements for 2008 (see below) this was not the case, since they indicate a 19% share of loans to holding companies, the same ratio as at the parent banks (Fig. 5.9). But in light of revelations in SIC (2010a) about the quality of the banks' accounts in other respects, this must be taken with some scepticism.

Figure 5.9 Division of parent banks' lending by sectors



Source: SIC (2010a)

Data from half-year reports of Glitnir and Kaupthing give a more nuanced picture for these banks on a consolidated basis. Individuals had a 22% share at Glitnir and 15% at Kaupthing; manufacturing had 16% and 18% of the loan book, respectively; services 14% and 18%, respectively; real estate companies' share was 23% and 21%, respectively; holding companies were 17% of the loan book at both banks. Glitnir's lending was 48% to Icelandic parties, 34% to other Nordic parties and 18% other international; Kaupthing's lending was more geographically diversified with only 30% in Iceland, 36% in Scandinavia, 22% in the UK, and most of the remaining 12% in Luxembourg. Glitnir gives a detailed breakdown of their lending to holding companies – the most prominent feature is the exposure to the financial

[131] The SIC report shows that many of the holding companies borrowing at this time were connected to the largest shareholders in the banks.

[132] In June 2008 lending of parent banks, overall, was 67% of total lending of the banks' consolidated balance sheet, i.e. counting lending at all subsidiaries. Kaupthing had the lowest share or 54%.

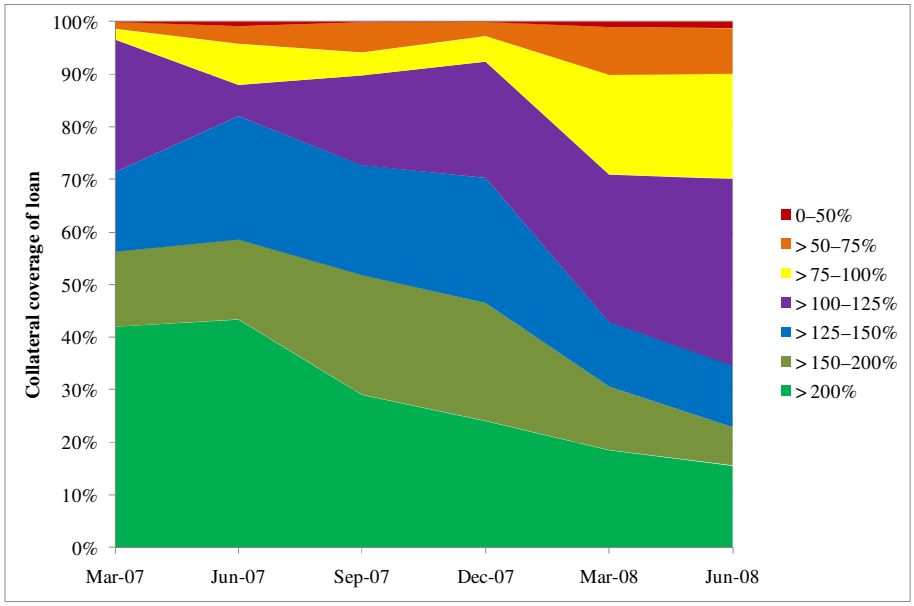
sector, which accounted for 42% of such lending. From Landsbanki's annual report for 2007 it may be inferred that the sectoral distribution of loans was similar to Glitnir and Kaupthing, although the share of holding companies was considerably larger, 24% of loans to customers, of which close to half was for investment in finance or insurance. Landsbanki had a higher share of lending to Icelandic parties than the other two, 58%, with most of the remainder in the UK.[133]

The high share of foreign currency loans to the domestic corporate sector (Fig. 4.14) and a rising share of foreign currency lending to households was an adverse factor for loan quality.[134] By lending in foreign currency, the banks hedged their foreign liabilities and nominally their equity was fully protected against exchange rate fluctuations. But that risk had merely been transferred to customers who were to a large extent unhedged (Portes and Baldursson, 2007). The banks were therefore at risk of large losses on these loans should the krona depreciate substantially (Baldursson and Portes, 2008). In 2007 it was known that at end-2006, 93% of lending with share collateral was fully covered by that collateral, and 63% of the loans for this purpose had more than 150% coverage (CBI, 2007; Portes and Baldursson, 2007). Data presented in the SIC report show that full coverage roughly held up at 90% of lending until the end of 2007, whereas the share of over 150% coverage declined from 58% in June 2007 to 46% at the end of the year (Fig. 5.10). The bulk of the collateral (59%) was from the Icelandic Stock Exchange (ICEX), which was dominated by the banks. The collateralisation of these loans deteriorated markedly in 2008 with the share of loans that were at least fully covered declining to 70%; in June the share of loans with 150% or more coverage had fallen to 23% of total lending for this purpose. Clearly, margin calls were not made to a sufficient degree, and the quality of loans suffered correspondingly.

[133] It is not clear how consistent between banks the classification in these reports is. It seems possible that lending to an Icelandic holding company which invested in the UK would be classified as Icelandic lending at one bank and UK lending at another.

[134] About 60% of parent banks' loans to holding companies were in foreign currency.

Figure 5.10 Coverage of lending with shares as collateral



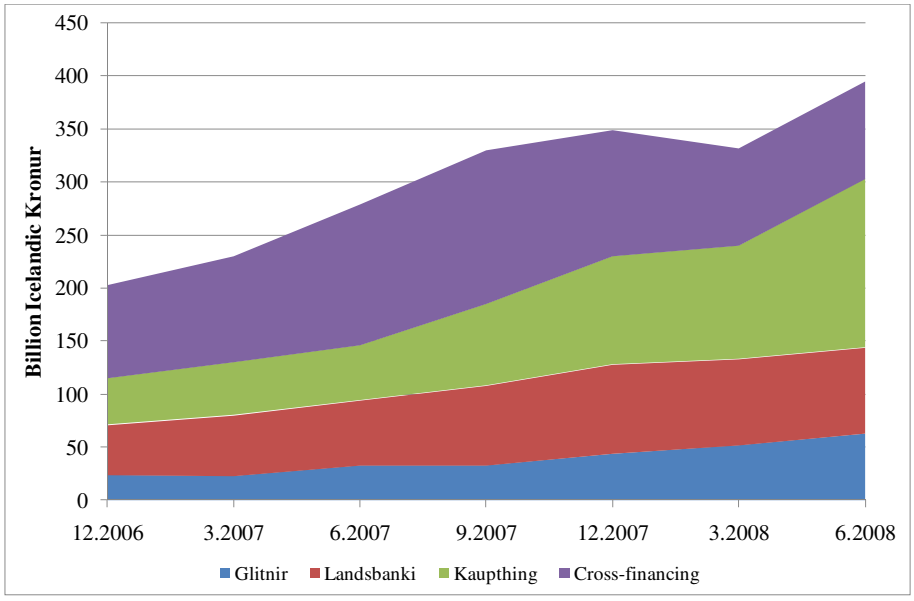
Source: SIC (2010a)

5.3.1 Financing of bank shares

The banks financed customers' purchases of their own shares, as well as shares of other banks (cross-financing). Typically, these loans were secured only by the shares in question. SIC (2010a) points out that this weakened the capital base of the banks: in the case of a sharp drop in banks' share prices, there would be corresponding loan losses. Figure 5.11 shows the development of such financing – which was both in the form of direct lending to buy shares and in the form of futures contracts – from end-2006 to mid-2008. Financing of banks' own shares increased continuously over the period at all banks – most drastically at Kaupthing, where there was a near quadrupling of loans for this purpose.[135] Overall, the financing of own shares increased from 12% of capital to 26% at mid-2008 – most of the increase taking place from September 2007 onwards, when the pressure on the banks rose. Financing of other banks' shares follows another type of path: rising from 10% of capital at end-2006, until peaking at 16% in September 2007, and then dropping off again to 8% in June 2008.

[135] Kaupthing subtracted futures contracts for purchasing own shares from its equity, so financing of own shares was only in the form of loans.

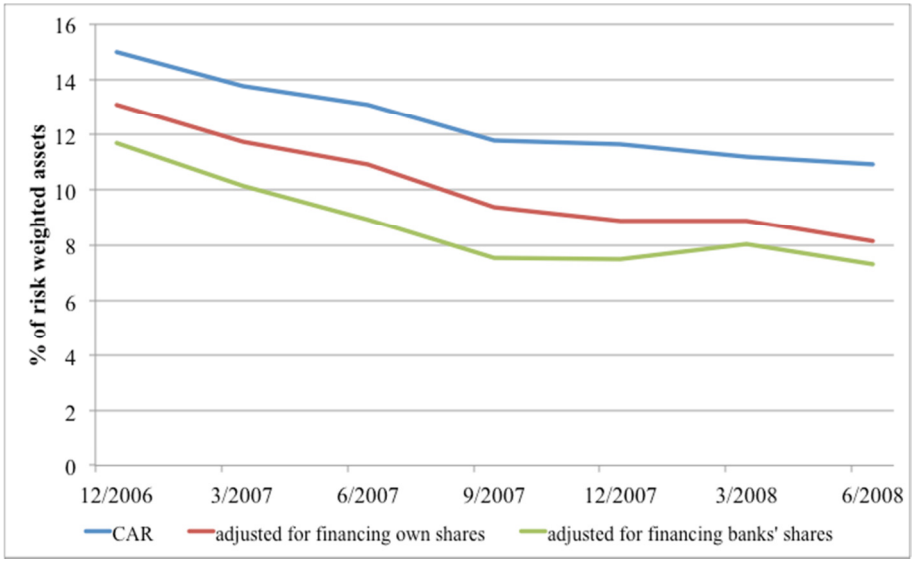
Figure 5.11 Financing of bank shares



Source: SIC (2010a)

Surprisingly, even if each bank's capital base is adjusted for financing of its own shares – *i.e.* financing is subtracted from equity when capital adequacy ratios (CARs) are calculated – *the banks, taken as a whole, were above the 8% regulatory minimum until the very end.*[136] When cross-financing is taken into consideration the ratio drops below 8% from September 2007 onwards, with one exception (see Fig. 5.12).

Figure 5.12 Capital adequacy ratio (CAR) for Glitnir, Kaupthing, and Landsbanki considered as a whole



Source: SIC (2010a)

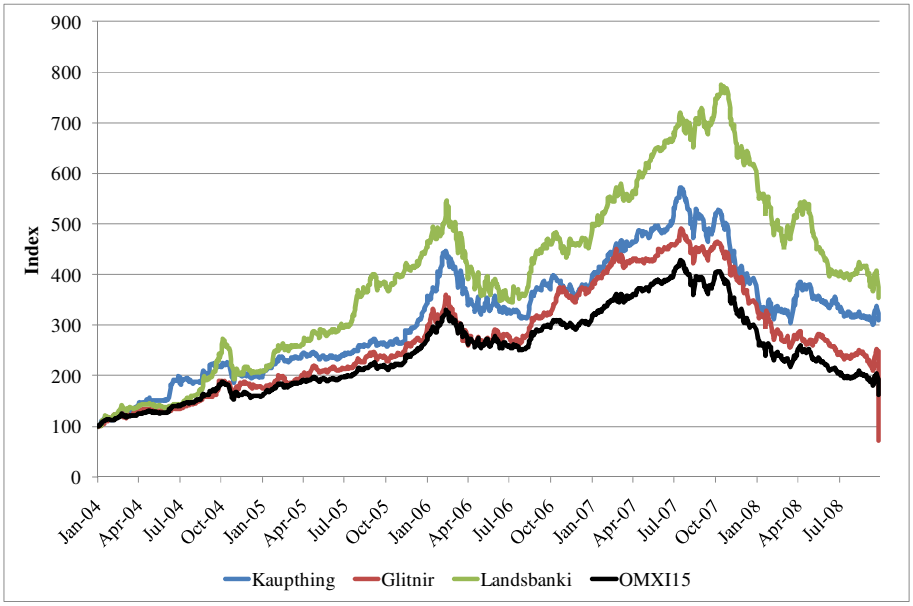
In addition to these adjustments, the SIC report also considers it may be reasonable to adjust for lending to big shareholders in the banks (such as FL Group and Exista), even if those

[136] This was in fact the case for all three banks.

loans were not made specifically to buy shares in the banks. Such adjustment would bring the CARs in Fig. 5.12 well below 8%.

Had margin calls been made in time, it should have been possible to have an orderly unwinding of these positions in a normal downturn. When cross-financing is considered (Fig. 5.11) in juxtaposition with the banks' share prices (Fig. 5.13), it seems as if margin calls were made in this case to some extent, because the overall level of financing drops with the share price – by a third from its peak. Fig. 5.11, however, indicates that this was not the case for financing of the banks' own shares, since the opposite happens: the level of financing gains momentum with lower share prices beginning from September 2007.

Figure 5.13 Share prices on the Icelandic stock exchange[137]
Indices set equal to 100 on January 5 2004. The series end on September 30 2008.

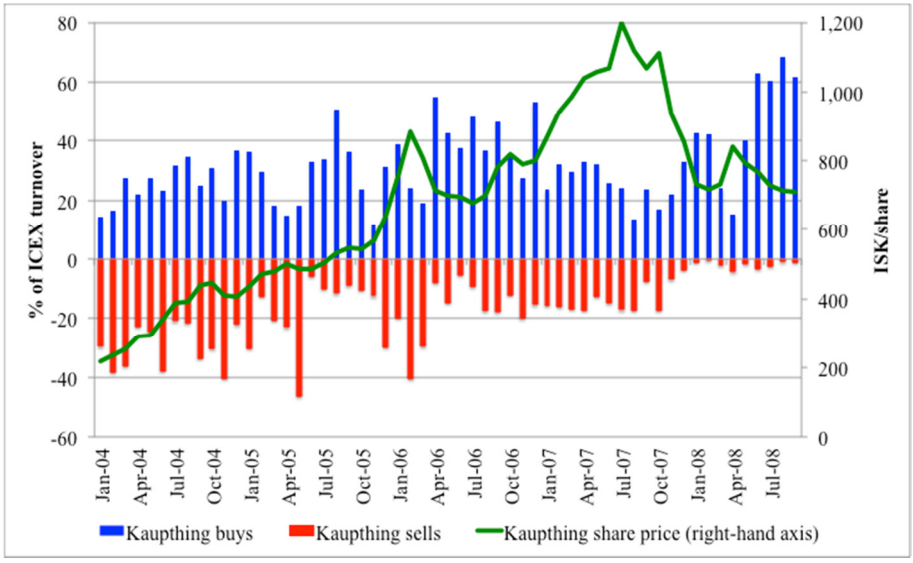


The SIC report suggests that as the credit crisis progressed, from late 2007 and onwards, this type of lending turned into outright and illegal market manipulation where the banks collaborated with various parties in an attempt to support their share prices. Figure 5.14 shows Kaupthing's trading in its own shares on the Icelandic Stock Exchange (ICEX).[138] Throughout the period shown Kaupthing was a very active trader in its own stock and was, on average, behind a third of all ICEX purchases of its stock in each month. Starting from mid-2005 there is a tendency for more buying than selling. From November 2007, however, Kaupthing was virtually only on the buying side with negligible sales in the stock exchange. In the last four months of its existence (June-September 2008) Kaupthing was the buyer in over 60% of all purchases of its own stock.

[137] OMXI15 was the main stock index for Iceland.

[138] Kaupthing was also traded on the Stockholm Stock Exchange. Taking Stockholm trades into account does not change the overall pattern shown here (SIC, 2010a).

Figure 5.14 Kaupthing's trading in its own shares on ICEX



Source: SIC (2010a).

From November 2007 to September 2008 Kaupthing bought 1.5% of its outstanding stock each month on average on ICEX but sold only 0.1% on the exchange. Such imbalanced trading could clearly not go on for long without Kaupthing selling some of the shares. This was done in arranged deals outside ICEX. Figure 5.15 shows how Kaupthing's purchases on ICEX would gradually approach the 5% limit where by law the stake would have to be flagged,[139] and then drop suddenly, as buyers were found for excess shares.[140] SIC (2010a) does not give full information on how these deals were financed – they were often done through Kaupthing Luxembourg, and in those cases information was not accessible to the SIC – but its report gives many examples of off-exchange deals financed by Kaupthing.[141]

Although patterns vary somewhat between the banks, a similar development took place at Landsbanki and Glitnir as at Kaupthing. At Landsbanki the purchasing of own shares with offloading in arranged deals outside ICEX in a similar fashion as in Figs. 5.14 and 5.15 began a month later than at Kaupthing, *i.e.* in December 2007. At Glitnir this pattern was prevalent already in 2004 but gained considerably greater momentum in mid-2007.

This was not necessarily market manipulation. The banks' traders have claimed that there was great demand for larger portions of shares than available in the stock exchange (SIC, 2010a). Accumulating shares in the stock market was a way of meeting this demand and facilitating trade in the banks' shares. This explanation is more credible for the period of rising share prices than for that of falling prices, *i.e.* from August 2007 until October 2008. As SIC

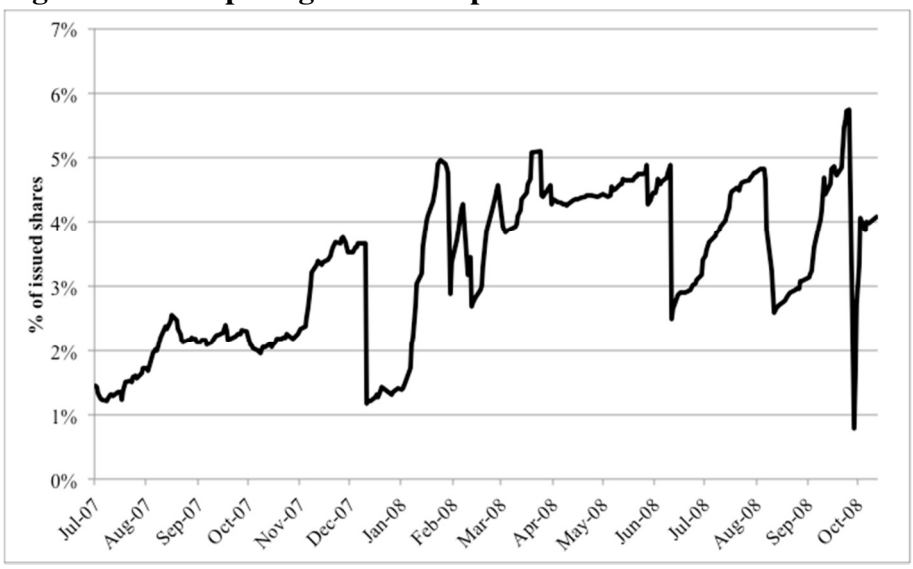
[139] The ratio in Fig. 5.15 is calculated by dividing the number of shares by 740 million which was the number of shares in Kaupthing at the end of 2007. Some new shares were issued during the period shown so the ratio is somewhat underestimated in the first half of the period.

[140] Employees of the banks were under strong pressure to buy shares in the banks and did so to a considerable extent.

[141] SIC (2010a) also looks into cross-bank trading – the banks acted as market makers for each other. There the patterns are much more symmetric than those exhibited by trading in their own shares.

(2010a) points out, one would have expected a reversal of the previous pattern where portions of shares would have been purchased from investors wanting to sell and then gradually sold on the stock exchange. An investigation is ongoing into the above practices on suspicion of market manipulation.[142]

Figure 5.15 Kaupthing's ownership of own shares



Source: SIC (2010a). Authors' calculations.

5.3.2 Large exposures and lending to owners and their associates

Regulators in Iceland were aware of the risks created by concentrated ownership of the banks. The FSA's annual report for 2006 and the CBI's 2007 Financial Stability Report explicitly discussed those risks:[143]

> Ownership of Icelandic banks has become more concentrated in recent years and large shareholdings have become prominent. In some cases, large shareholders are also clients of the banks concerned or their investment partners. Iceland's financial legislation imposes no restrictions on facilities granted to such parties or financial company executives, over and above those applying to customers in general, for example rules on large exposures.[[144]] This entails certain risks and it

[142] The first indictments against formerly high-ranking Icelandic bankers were made in February 2012 against the top management of Kaupthing (*Financial Times*, 2012). The trade in question may be observed as a 5.1% drop in Fig. 5.15 in late September 2008. The buyer in this case was Sheikh Mohammed bin Khalifa al Thani, a Qatari investor. Mr. al Thani bought 5.1% of Kaupthing's shares – enough to have the position flagged. This boosted market confidence in Kaupthing at this time. What market participants did not know was that Kaupthing financed the deal, which was without risk to al Thani. For details of the story see Davidsdottir (2012). In March 2013 the CEO and five other executives from Landsbanki were indicted for market manipulation (*Financial Times*, 2013).

[143] CBI (2007b), p. 52.

[144] Slightly more restrictive rules on mother companies and subsidiaries of banks – a large-exposure limit of 20% of capital rather than the normal 25% – were imposed in March 2007, at about the same time as the CBI report was published.

> is the role of the [FSA] to ensure that certain principles concerning equality, conflicts of interests and eligibility are adhered to. The [FSA] has strongly emphasised this aspect of its supervisory role ...

The CBI also recounted how the FSA had imposed and enforced remedies "in order to avoid the detrimental effects of concentrated ownership and prevent these risks from becoming actual threats." Among those remedies was enforcing the rules on large exposures. The rules, which date from March 2007 in their present form, stipulate that each large exposure due to a group of financially related (connected) parties cannot exceed 25% of regulatory capital. A large exposure due to the parent company of a bank or due to a subsidiary cannot exceed 20% of capital.[145] The SIC report on the extent and magnitude of large exposures, and especially lending to the banks' owners and their business partners, suggests that these limits were violated egregiously.

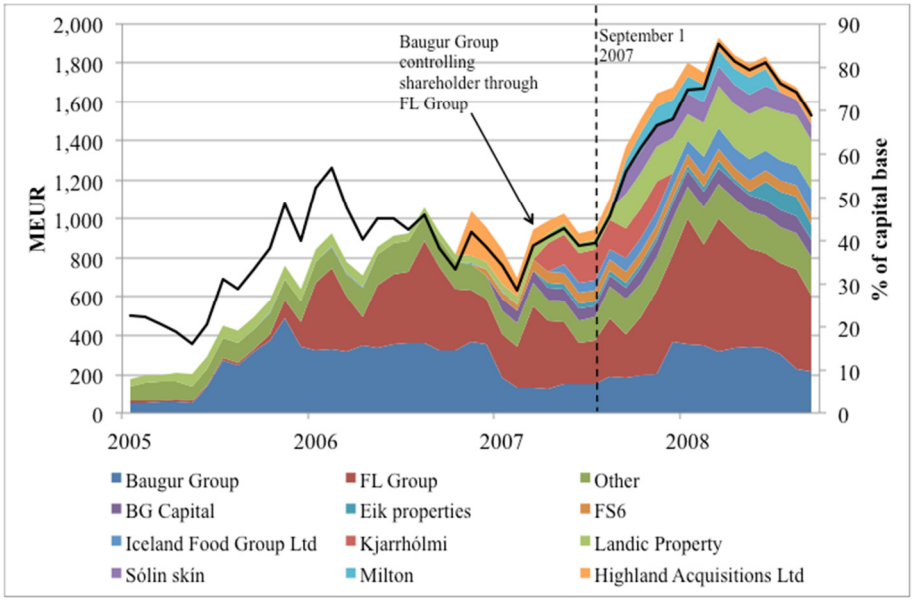
Lending to Baugur Group and related parties is the most important example of such lending. The SIC data indicate that Glitnir's lending to Baugur and related parties started to rise rapidly from a level of about 40% of Glitnir's capital base at the beginning of September 2007 – right at the outset of the international financial crisis and a few months after Baugur Group became controlling shareholder of Glitnir – and reached a peak of 85% in March 2008 (Fig. 5.16).[146]

[145] An exposure is considered "large" when it exceeds 10% of regulatory capital. Large exposures in total may not exceed 800% of regulatory capital.

[146] SIC (2010a) documents pressure by Glitnir's owners to direct increased lending to themselves and their own companies.

Figure 5.16 Lending of Glitnir Bank to Baugur Group and related parties

Areas show lending to Baugur Group and related parties in millions of euros; the black line shows such lending as percentage of Glitnir's capital base.

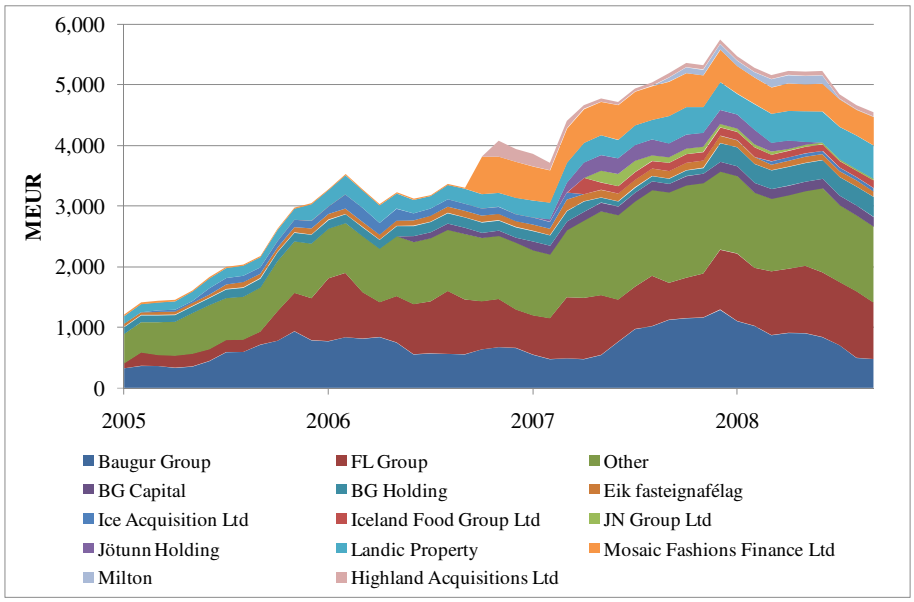


Source: SIC (2010a)

Lending to Baugur Group at Glitnir constitutes an extreme case – at no bank did lending to owners or any group of related parties reach such heights. The group of firms of which Baugur Group was the centre did, however, borrow heavily from all three major banks: at Landsbanki lending to Baugur Group and related firms amounted to 60-80% of capital base; at Kaupthing the corresponding ratio was 30-40%. So all three banks – not just Glitnir – were exposed to Baugur Group to an extent which exceeded the regulatory maximum of 25% by a large margin. At its peak in December 2007, combined lending at the three banks to Baugur Group and related parties amounted to over €5.5 bn (Fig. 5.17). For comparison the capital base of the three large banks at the end of 2007 as well as the 2007 GDP of Iceland was approximately €14 bn.[147]

[147] Converted into euros at the ISK/€ exchange rate on December 31 2007.

Figure 5.17 Lending of three banks (Glitnir, Landsbanki, Kaupthing) to Baugur Group and related parties.



Source: SIC (2010a)

These numbers immediately raise the question of how – or even whether – the FSA monitored lending as regards enforcing rules on large exposures. Furthermore, the largest exposures at each bank were to companies owned by the owners of the banks, which should have caused intervention at lower ratios than 25%.

To some extent these high exposure ratios are a consequence of the definition of "related parties" chosen by the SIC where two parties are defined to be related/connected when one party owns, directly or indirectly, at least 20% of the other. The FSA, however, did not lay down a precise rule on how it defined related parties. Instead it relied on the qualitative EU definition,[148] which does not set any numerical threshold in terms of ownership for parties to be related, but considers a group of parties to be connected when one party has control over others in the group or when financial difficulties of one party would lead to similar difficulties for other parties in the group. As a result of this ambiguity it appears that defining related (connected) parties for the purposes of large exposure decisions was to a considerable extent at the discretion of each bank. Landsbanki and Straumur-Burdaras – a small investment bank controlled by the same investors as Landsbanki – were the only banks that had numerical thresholds in their rules, *viz.* that a share of 50% was needed to control a company. Overall, the banks defined related parties narrowly. By contrast, the SIC definition casts a wide net, and does it *ex post*.

One can reasonably ask whether the SIC's net is too wide, *i.e.* whether a 20% threshold share is enough to consider the shareholder and the firm in which shares are owned to be related or connected. In general this will vary depending on circumstances (*e.g.* the distribution of other shares) and relates not only to the control of a company but also to the likelihood of contagion

[148] EU Directive 2006/48/EC.

from one party to another. The SIC does not consider that problem. It does, however, test its analysis of large exposures for robustness by varying the threshold required for two parties to be related. Figure 5.18 gives the results of such an analysis for lending to Baugur Group at all three banks at the end of 2007.

A threshold of 37% would suffice to bring lending at both Glitnir and Landsbanki to over 50% of capital base.[149] At the 50% threshold the lending of Glitnir and Kaupthing to the group drops to 24% and 15% respectively; at Landsbanki the share is 29%, which exceeds the 25% limit by 4% of capital base. An analysis of this kind for other groups, *e.g.* Exista, gives similar results.

This indicates that even if the banks were dancing on regulatory boundaries, they broadly followed the rules on large exposures *as they were allowed to implement them*. The FSA did not lay down a precise implementation of the qualitative definition of the EU directive, but rather allowed the banks to write their own rulebooks. The banks either just copied the directive or chose the narrowest possible definition for two parties to be related. Judging from this analysis the banks' rules – imprudent as they were – appear to have been accepted in practice by the FSA.[150] Furthermore, it is evident from SIC (2010a) that the CBI did not pay adequate attention to potential systemic risks created by practices such as lending to Baugur Group and related parties.[151] *Together, the FSA and the CBI had legal powers to access, and the means to analyse, the information that the SIC brought forward in March 2010.*[152] *But they did not.*

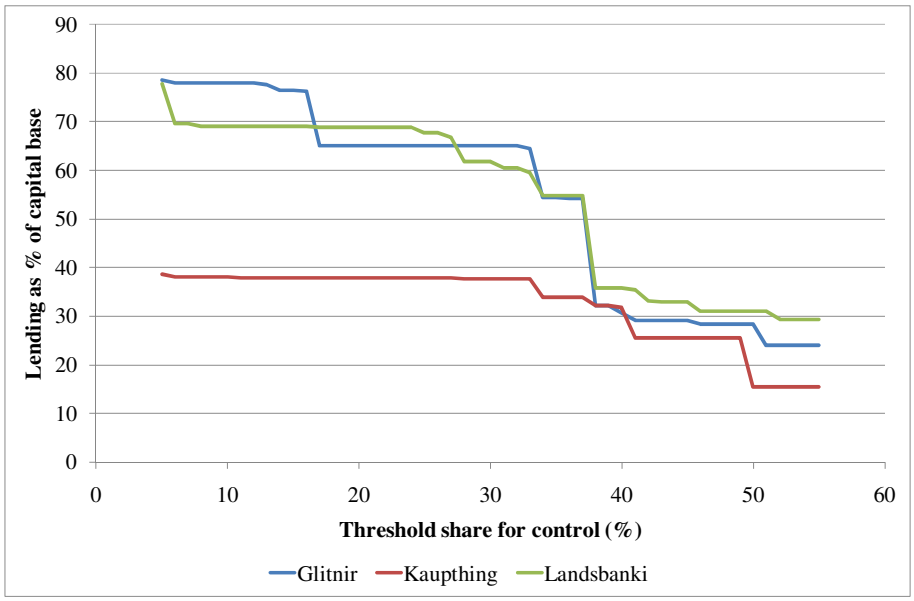
[149] The jump at 37% is due to the fact that FL Group (later Stodir), where Baugur Group was a 37% shareholder, was not considered by Glitnir and Landsbanki to be connected to Baugur Group.

[150] There were, however, a few cases where the FSA did intervene. The processing of these cases took a long time, *inter alia* due to the banks' strong resistance. Several such cases were outstanding when the banks collapsed.

[151] SIC (2010a) relates how the Chairman of the CBI discovered the extent of Glitnir's lending to Baugur Group and related parties the day after the decision was made to take the bank over at the end of September 2008.

[152] The CBI did not have access to information on individual borrowers.

Figure 5.18 Lending to Baugur Group and related parties as a function of threshold share for control



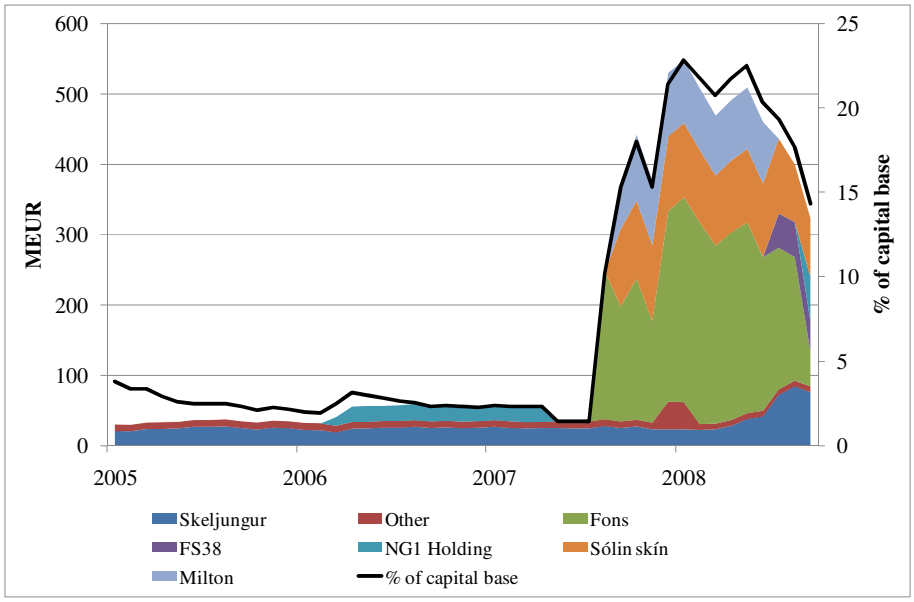
Source: SIC (2010a)

Lending to Baugur Group and related parties is the most striking example of how large exposures accumulated at Icelandic banks, and unique in that this single group of companies created a serious systemic risk to the financial sector in Iceland. But there are several examples of similar cases, albeit not as large. Using the SIC definition (*i.e.* the 20% share threshold), Exista, the controlling shareholder of Kaupthing Bank, and related parties borrowed what amounted to 25-30% of Kaupthing's regulatory capital, 20-30% of Glitnir's capital base, and 6-8% of Landsbanki capital. A group of companies around the father-and-son pair Bjorgolfur Gudmundsson and Bjorgolfur Thor Bjorgolfsson, controlling shareholders of Landsbanki, borrowed the equivalent of 50-60% of Landsbanki's capital, a (relatively) similar amount at Straumur-Burdaras (where Bjorgolfsson was the main shareholder), and 20-25% of Glitnir's capital. Ownership of Kaupthing and Landsbanki was fairly stable from 2003 onwards (after privatisation) so, even if lending to owners was extensive, we cannot observe a similar breakpoint as at Glitnir, when Baugur Group became controlling shareholder.

Perhaps the most obvious example of the implications of ownership is Glitnir's lending to Fons, a company owned by Palmi Haraldsson, a business partner of Jon Asgeir Johannesson. Fons came in as an important (indirect) shareholder in Glitnir in the spring of 2007. From August 2007 there was a sharp increase in lending to this company and related parties, which amounted to 23% of Glitnir's capital by the end of 2007.

Figure 5.19 Lending of Glitnir Bank to Fons and related parties

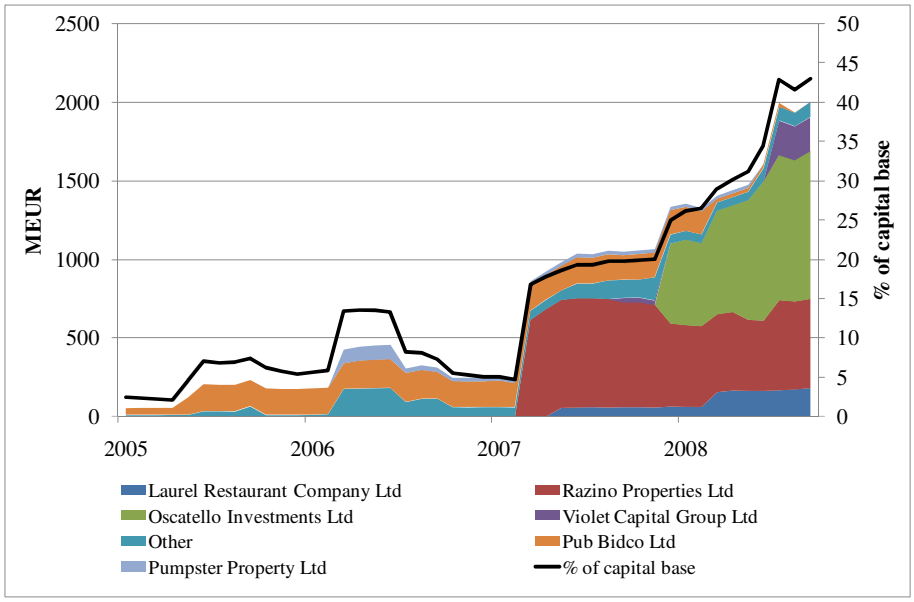
Areas show lending to Fons and related parties in millions of euros; the black line shows such lending as percentage of Glitnir's capital base.



Source: SIC (2010a)

Also striking was Kaupthing's lending to companies related to Robert Tchenguiz, a prominent UK businessman and, from March 2007, a member of the board of Exista, the main owner of Kaupthing. In that same month, March 2007, a new loan amounting to €0.6 bn was made to one of Tchenguiz's companies, bringing total lending to the group close to €1 bn. There was only a small increase in the position until January 2008 as Oscatello – another of Tchenguiz's companies – faced margin calls made by Dawnay Day, Morgan Stanley and KSF. From that time to October 2008 lending to Tchenguiz increased by €1 bn. Kaupthing granted these loans at the same time as other banks – including its own subsidiary – were safeguarding their interests vis-à-vis Tchenguiz. The terms were 2.75% over Libor – much better than what Kaupthing could get in markets at the time. In the end, loans to Tchenguiz amounted to €2 bn, 43% of the capital base of Kaupthing. For comparison, total payments on Kaupthing's loans in 2009 amounted to €3.5 bn

Figure 5.20 Lending of Kaupthing Bank to companies related to Robert Tchenguiz
Areas show lending to companies related to Robert Tchenguiz in millions of euros; the black line shows such lending as percentage of Kaupthing's capital base.

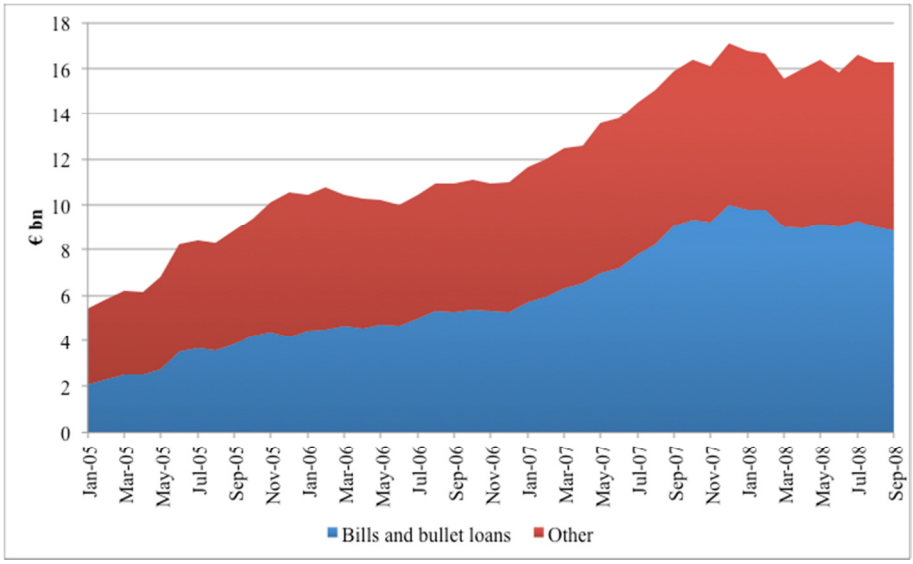


Source: SIC (2010a)

5.3.3 Loan types

Limited information appears to have been available to the SIC on the types of loans made. The SIC did, however, get data from Landsbanki which indicates that there was a trend towards bullet loans. Unfortunately the data do not classify different types of loans with one payment at the end of the loan period so short-term bills and longer-term bullet loans are in one category. Nevertheless the increase in this type of loan over the data period (Fig. 5.20) is an indication that bullet loans were increasingly used for investment purposes. The overwhelming share of such loans at holding companies (80-85%) reported by the SIC supports this conjecture.

Figure 5.21 Classification of loans at Landsbanki



Source: SIC (2010a)

Unfortunately information on length of bullet loans or the extent to which they were rolled over is not available. SIC (2010a) gives some anecdotal information on these loans being increasingly rolled over with longer maturities during the last year of the banks' operation. The purpose of that would have been to keep delinquency rates down.

5.3.4 Recovery of loans

Getting a complete picture of the recovery of loans at the banks is a complicated task which we need not and therefore shall not attempt. The banks all had foreign subsidiaries, which have been sold or liquidated. Overall, loans at subsidiaries accounted for a third of total loans to customers, and they were 47% at Kaupthing. Furthermore, domestic assets and liabilities were transferred to new banks by force of the Emergency Legislation (Act 125/2008) passed on 6 October 2008. Finally, some loans have been reduced in value or even paid up by amortisation (according to Kaupthing Bank (2008) 40% of loans had maturity of less than a year).

Some evidence on loan recovery rates can be gleaned from creditors' reports. Table 5.1 contains data fetched from such a report on loans to customers at Kaupthing. The total nominal amount (carrying value) of outstanding loans, €7.2 bn, is only 23% of the €33.3 bn reported as loans to customers in the consolidated balance sheet of Kaupthing on June 30 2008 and 43% of loans to customers at the parent bank (SIC, 2010a). According to the Creditors' Report the fair value of the loans is €1.2 bn indicating an overall recovery of 19%. Note that since the collapse of Kaupthing there has been a considerable reduction in the amount of good loans outstanding whereas bad loans remain on the loan book. Actual recovery of loans outstanding in October 2008 is therefore significantly underestimated in the table.

Overall recovery is considerably higher than Table 5.1 indicates: of the €13.2 bn of nominal assets held by Kaupthing's estate on 31 December 2011 €5.5 bn, or 42% of the total, were expected to be recovered; €2.1 bn of this amount was held in cash.

Regardless of its limitations Table 5.1 shows that by far the greatest losses, in absolute and relative terms, are suffered on loans to holding companies and individuals. Most "normal" loans to individuals were transferred to Arionbanki – the new bank founded on the domestic part of Kaupthing – so it seems likely that most loans to individuals in the table were in fact made for the purpose of investing in shares. Together these two items account for 85% of total estimated writedowns on what remains of the loan book of Kaupthing Bank. Information from creditors' reports from the estates of Glitnir and Landsbanki show a similar picture.

Table 5.1 Recovery of loans to customers at Kaupthing

Position at 31 December 2011 in bn ISK. Loans at Kaupthing subsidiaries (including KSF and FIH) are not included. Loans transferred to Arionbanki are not included.

	Carrying value	Fair value	Provisions	Recovery rate
Real Estate	110	61	50	55%
Business and Industrial Products	67	46	21	68%
Holding Companies	798	47	751	6%
Consumer Goods and Retail	54	38	16	71%
Consumer Services: Other	23	20	3	87%
Individuals	101	4	97	4%
Other	82	18	64	22%
Loans to customers	**1,235**	**233**	**1,002**	**19%**
Loans to customers, € mn	7,777	1,467	6,310	**19%**

Source: Kaupthing (2011)

As for overall recovery of liabilities it is expected that deposits, which got priority status with the Emergency Legislation of October 6 2008, will be mostly covered. In particular, deposits in Icelandic branches are fully covered – having been transferred to the new banks with assets (domestic lending) well in excess of deposits even after substantial writedowns. Deposits were 45% of loans but 29% of total assets so this implies a recovery of a corresponding percentage of total liabilities. Expected recovery rates of bonds differ from bank to bank and are still uncertain. Current estimates indicate a recovery rate of approximately 30% at Glitnir and Kaupthing, but only 6% at Landsbanki, which had the highest deposit ratio of the three banks. Assuming that priority claims consist solely of deposits, and that other liabilities, less equity and subordinated loans, are recovered at the same rate as bonds, gives an overall recovery rate of approximately 50% into liabilities, less equity and subordinated loans. In this exercise Kaupthing has the highest recovery (58%) and Glitnir the lowest (44%). These results should of course be taken with a good deal of caution. In particular it should be noted that different outcomes at subsidiaries have not been taken into consideration. This would affect Kaupthing the most since loans at subsidiaries were almost 50% of the total and loan recovery there is set to be much better than at the parent bank. A reasonable estimate of overall recovery in the consolidated balance sheet of Kaupthing could perhaps be in the range 60-70%.[153]

[153] The former CEO of Kaupthing has recently claimed in testimony that overall recovery at Kaupthing will be about 80%. The claim was not supported with data and, as noted in the main text, it is difficult to substantiate such a number. It is clear, however, that the former Danish subsidiary of Kaupthing (FIH bank), which represented 30% of the overall balance sheet of Kaupthing, is still operating. Furthermore, non-secured KSF creditors are expected to have 84-86.5% of their claims covered (Ernst &Young, 2013a); 76% of non-secured claims have already been paid out so this seems to be a cautious estimate. KSF represented 15% of the balance sheet of Kaupthing. Recovery at these two subsidiaries which together were 45% of the balance sheet of Kaupthing would then seem to amount to over 90% on average.

5.3.5 Stress tests

The Icelandic FSA conducted regular stress tests of the banks' balance sheets. In these tests the balance sheet of each bank was subjected to simultaneous shocks to the value of shares (25% reduction for foreign shares, 35% for domestic shares), market bonds (7% reduction), non-performing/impaired loans (20% reduction) and the exchange rate of the krona (20% devaluation). The FSA conducted tests of this kind in August 2007, February 2008, and in August 2008. In all cases the banks passed the tests with flying colours. In the last test, performed on the basis of the banks' half-year reports and made public on 14 August 2008, the effect on the CARs of the banks ranged from 0.4% to 0.9% of capital base. Landsbanki seemed the weakest, having reported the lowest CAR of the three banks in June, viz. 10.3%; it was also most vulnerable to the shocks described above, *i.e.* its CAR ratio was lowered to 9.4% in the exercise.

In light of the data on foreign currency lending and margining presented above it is difficult to understand the outcomes of these stress tests. Perhaps they were done very mechanically, *e.g.* not taking into account the consequences of a drop in the exchange rate with underlying collateral in Icelandic kronur or the ability of borrowers with income in kronur to make payments on their loans. In view of the extensive lending to holding companies and the low or non-existent margins that were prevalent by this time (cf. Fig. 5.10) a similar observation may be made regarding the effect of a drop in share prices.

We conclude from all this evidence that if management had taken prompt corrective action from the beginning of global financial turmoil in the summer of 2007, the Icelandic banks might well have survived – although their owners might not, because they were so highly leveraged. Instead, the banks gambled for resurrection[154] – and lost.

5.3.6 Are there other possible explanations than 'Gambling for Resurrection'?

It is natural to ask whether there are alternatives to gambling for resurrection, as outlined in Section 3, as an explanation for the behaviour of the owners of the Icelandic banks. Laeven and Levine (2009) conclude, based on econometric analysis of a large sample of countries,[155] that dominating owners that are diversified (*i.e.* do not have a large percentage of their wealth invested in the bank) are willing to take on more risk than debt holders and non-shareholding managers.[156] While we do not have data on the overall shareholdings of the owners of the Icelandic banks it seems likely from anecdotal evidence that their bank holdings constituted a substantial portion of their wealth. This would tend towards rejection of the diversification theory. Nevertheless, this may be one underlying reason for their behaviour in the first years after privatisation of the banks (2003-2007). The behaviour of the banks during the last year of their existence seems, however, to fit the gambling for resurrection story much better. Such behaviour included owners' lending to their own companies and those of their business

[154] Cf. Section 3.
[155] Not including Iceland, however.
[156] See also Saunders *et al.* (1990).

partners; aggressive collection of international retail deposits, offering high interest rates; and lending for buying their own shares in order to support their market price.

5.4 Government contingency planning

The Icelandic government has been severely criticised, in particular by the SIC (2010a, Vol. 7), for inadequate preparation for the possible failure of the banks and for not intervening in them much earlier than October 2008. The SIC report describes many meetings and discussions where problems in the banking sector were discussed (see Vols. 6 and 7 of SIC, 2010a). Unfortunately, little came of these discussions. Two points are, however, worth mentioning. First, during most of 2008 the CBI tried to obtain external financing, *e.g.* through swap contracts with institutions such as Nordic Central Banks, the ECB and the Bank of England. The central bank had little success, and SIC (2010a) describes reactions and warnings sounded by these institutions regarding Iceland's banks. On 23 April 2008, the Governor of the Bank of England wrote a letter to his counterpart at the CBI where he refused to provide financing, arguing that the amount of money asked for was too small to be of real value – on the contrary it could be interpreted as a sign of weakness for Iceland to underscore its vulnerability in this way. The Governor did, however, offer his help in reducing the size of the banking system:

> It is clear that the balance sheet of your three banks combined has risen to the level where it would be extremely difficult for you to act as a lender of last resort. International financial markets are becoming more aware of this position and increasingly concerned about it. In my judgement, the only solution to this problem is a programme to be implemented speedily to reduce significantly the size of the Icelandic banking system. It is extremely unusual for such a small country to have such a large banking system. It would not be sensible for me to suggest the precise way in which this might be achieved. But the sale of one or more banks or significant proportions of their assets overseas, to foreign banks must surely be high on your list of possible policy instruments.

The suggestion made by the UK Governor in this letter was never presented to the Prime Minister of Iceland, and it was never followed up.

In May 2008 the exertions of the CBI finally yielded swap contracts with the central banks of Sweden, Norway and Denmark. In total these contracts amounted to €1.5 bn. The Icelandic government, in return, promised to increase available foreign exchange reserves, pressure the banks to reduce their balance sheets, reform the Housing Financing Fund, and maintain fiscal prudence (SIC, 2010a, Vol. 1).[157] While efforts were made to increase currency reserves, little was done in the way of pushing for reducing the banks' balance sheets, nor on other action

[157] Shortly before, at the end of April, access to foreign funds had been reduced as the CBI neglected to renew a $500 mn credit line at BIS opened a month earlier. When the mistake was made the CBI asked BIS to renew the line even if it was not contractually obligated to do so, but the request was refused (SIC, 2010a, Vol. 1).

points. The European Central Bank, the Federal Reserve and, as noted above, the Bank of England all refused to provide financing.

The second noteworthy item here is that a group of high-ranking officials from ministries, the CBI and the FSA had been set up following the memorandum of understanding on consultation and cooperation concerning financial stability and contingency plans issued in February 2006 (cf. Section 2.3). While this group met frequently it was unable to come to a common understanding on how to prepare for a possible banking crisis and what should be done. The origins of the crucial Emergency Legislation enacted on 6 October 2008 can, however, be traced back to the work in this group.

Icelandic authorities were indeed inadequately prepared for the collapse of the banks. However, as noted by Allen *et al.* (2011, p. 41) a proper resolution framework, as exists in the US and Canada, was nonexistent in most European countries. The theory of Beck, Todorov and Wagner (2013) on the supervision of cross-border banks (cf. Section 3) provides a potential explanation for the delayed intervention by Icelandic authorities: ownership of the banks was mostly domestic, while their debt was largely held by foreign parties. The authorities may thus have become indirect participants in the gamble for resurrection. Regulatory capture and the importance of the financial sector in the domestic economy (*i.e.* as a big wage and tax payer) may also have played a role. Conversely, this hypothesis is consistent with the aggressiveness of the UK authorities towards Kaupthing Singer and Friedlander – from a UK perspective foreign owned but domestically financed.

6 Aftermath: crisis response and adjustment[158]

The Icelandic authorities have been strongly criticised for not preparing adequately for the banking crisis. From a technical perspective, however, the crisis had remarkably little effect on local banking operations: the creation of the new banks on the basis of the Emergency Legislation and the transfer of domestic assets and liabilities to the newly created banks was a smooth operation which was done overnight and without disruption to the daily operations of local branches.

There were of course major problems. It was clear that Iceland would suffer a balance of payments crisis in the absence of outside support. Apart from the certainty of a classic currency crisis there was a risk that Iceland would suffer financial retribution for its actions and possibly be shut out of international payments systems.[159]

Informal contact with the IMF began soon after the collapse of Landsbanki on October 6.[160] Icelandic authorities were at first reluctant to seek help from the IMF and sought other sources

[158] This section draws on Baldursson (2011a).

[159] Statements such as that of the UK Prime Minister on 9 October 2008 (see Section 2.4) did not help. For a few hours on Friday October 10, much of Iceland's currency reserves kept at Dresdner Bank were frozen.

[160] A mission from the IMF had arrived in Reykjavik on October 5 on the IMF's initiative.

of financing. On October 7 the Central Bank announced that Russia was willing to lend €4 bn to Iceland on very advantageous terms and subsequently pegged the exchange rate to the euro at a much lower rate than the prevailing market rate.[161] But the Russian loan never materialised, and the exchange rate peg lasted for only two days. The government finally decided that the IMF was the right negotiating partner. Preparation of a Stand-By Arrangement for Iceland began on October 9.

It was by no means obvious that the IMF deal would come off. There were the usual contentious points in IMF programs, such as how fast to consolidate public finances and how high to set interest rates initially. But there were also difficult issues more particular to Iceland, such as the need to impose capital controls and the Icesave issue – whether Iceland should guarantee deposit insurance for Landsbanki's UK and Netherlands branches to the tune of half Iceland's GDP. There was also some uncertainty about Icelandic policy, especially at the Central Bank.[162] But the deal was struck in the end and was finalised and made public on October 24 (IMF 2008). Against the assurance of following the policies of the programme, the IMF, other Nordic countries and Poland lent Iceland $5 bn – 40% of GDP – to serve its external financing needs over the next three years. The programme was completed on 26 August 2011.

The IMF deal had a calming effect, which was realised as news of the negotiations came out a few days before the agreement (Fig. 2.3).

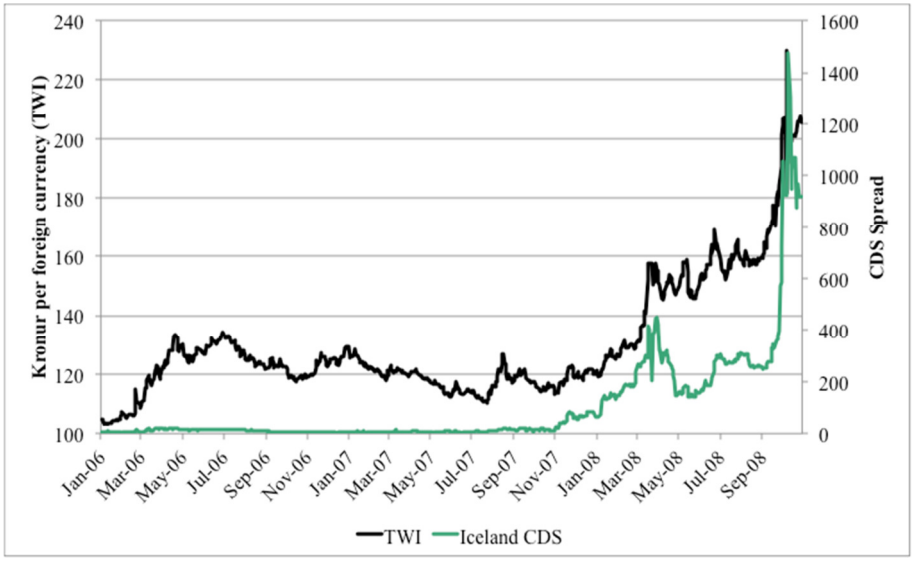
The IMF program – designed largely by IMF staff – had three main components:

1. Banking sector restructuring and insolvency framework reform
2. Consolidation of public finances
3. Monetary and exchange rate policy, with stabilisation of the exchange rate and inflation as key elements

[161] This is the brief drop in the trade-weighted index (TWI) in Fig. 2.1.

[162] This included actions such as the pegging of the exchange rate and an abrupt lowering of the policy rate by 3.5% on October 15. The most unexpected development, however, was when the CBI suddenly argued strongly – on the basis of recommendations from international banking consultants (JPMorgan Chase) – that the bank split executed a few days before should be reversed and the newly created banks reunited with the old, collapsed banks. The proposal was considered for a couple of days within the government but was then rejected. Regrettably, SIC (2010a) stops short of investigating these and other events following directly on the failure of the banks, so we know little of the underlying resons for the CBI's actions and their consequences. For example, there has been no investigation into currency trading during the brief exchange-rate peg; the CBI, however, stated in a press release that only €6 mn were sold in the interbank market (Central Bank of Iceland 2008c).

Figure 6.1 Trade-weighted exchange rate of the krona and Iceland's CDS spread



Source: Central Bank of Iceland

6.1 Heterodox policies

Some of the policies implemented in Iceland as part of the IMF programme have been called heterodox (*e.g.* Krugman, 2011). The imposition of capital controls in particular has been so characterised as well as the 'repudiation of debt', that is, the consequences of the Emergency Legislation: letting institutional creditors of the banks bear the costs of their collapse rather than Icelandic taxpayers. The Emergency Legislation was enacted independently of the IMF. But it was extremely important that the subsequent IMF programme implicitly supported this legislation.

6.1.1 Capital Controls[163]

The most controversial element of the monetary and exchange rate policy part of the program was the imposition of capital controls. Interest rates were raised to 18% initially but were lowered quite rapidly; they reached a minimum of 4.75% in February 2011, but have since increased again to 6%. The capital controls are still in force, however, and Iceland faces major obstacles in removing them.

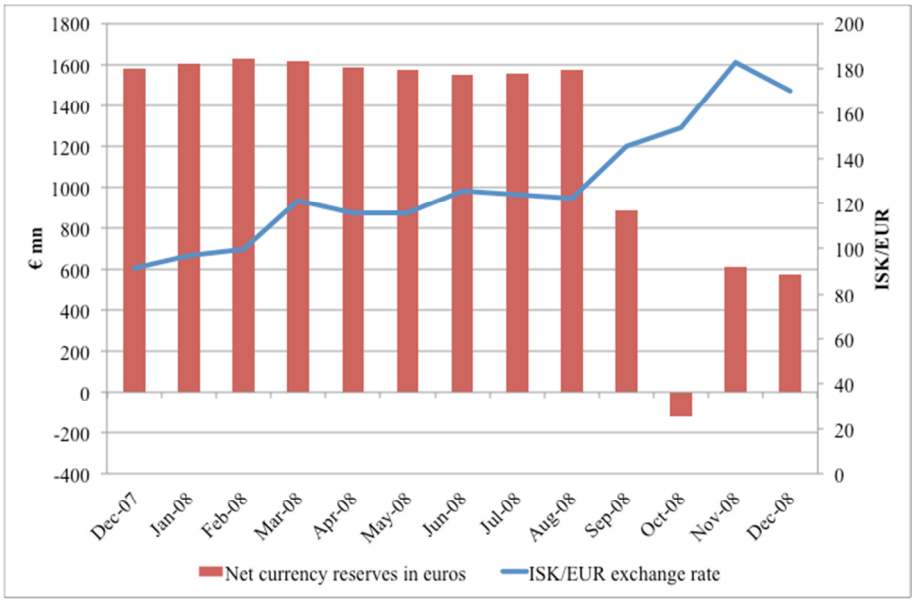
Some claim that imposing the controls was a major mistake (Danielsson, 2011b). We disagree. It would have been highly risky not to impose capital controls. Firms' debt was largely in foreign currency, and households also had a significant amount of such debt (cf. Section 2). The remainder of lending was to a large extent indexed to the consumer price index, which is highly sensitive to exchange-rate movements. As the carry-trade inflows which had supported the krona until the end of 2007 were first halted and then reversed, the

[163] See Baldursson and Portes (2013) for a more detailed account and analysis of the Icelandic capital controls and the resolution of the failed Icelandic banks.

exchange rate depreciated by 40% over the first three quarters of 2008. By October inflation was approaching 20%, and inflation and exchange rate–linked debt shot up. Balance sheets of most firms and many households were already in tatters. It was still essential to stabilise the exchange rate in order to prevent even more damage.

Currency reserves (Fig. 6.2) had been depleted to the extent that by the end of October 2008 they did not suffice to cover known outflows over the next twelve months let alone the trade deficit and the huge stock of carry-trade money still left in Iceland (approximately 40% of GDP). The 18% policy rate would perhaps have sufficed to slow down outflows and stabilise the exchange rate under more benign circumstances, but as things were it is doubtful that any interest rate would have stopped massive capital flight and a complete collapse of the krona in the absence of capital controls.

Figure 6.2 Iceland's net currency reserves and exchange rate[164]



Source: Central Bank of Iceland

The capital controls have worked, in the sense that since they were rigorously enforced the exchange rate has been fairly stable and inflation has come down. The controls have also helped recovery after the crisis by keeping domestic interest rates down and supporting asset prices. Policy on lifting the controls has been indecisive, however, and the controls have had to be tightened a few times as market participants found loopholes.[165] A key prerequisite for lifting the controls was met in June 2011 when Iceland regained access to international capital

[164] Net currency reserves are gross reserves less known outflows over the next 12 months.

[165] The capital controls are implemented in the Foreign Exchange Act. They involve a general ban on capital movements and foreign transactions but also a number of exemptions. In general, current account transactions are permitted, and there are no restrictions on imports of goods and services. Non-residents can transfer interest payments on Icelandic bonds and bank accounts. The controls allow for payments related to contracts entered into before they were imposed (November 2009). Thus, Icelandic entities do not default on such contracts due to the capital controls *per se*. However, payments related to bankruptcy administration, *e.g.* of the failed banks, are not allowed. The Central Bank therefore has the power to deny payment out of the estates of the failed banks.

markets and issued a $1 billion bond; another $1 bn issue took place in June 2012. Notwithstanding a manageable underlying[166] net external debt (60% of GDP) and an underlying surplus on current account (3% of GDP), it will be very difficult to lift the controls without external support: kronur-denominated assets in foreign hands are now approximately €5 bn, 42% of GDP, at the current official exchange rate.[167] Gross currency reserves are only a little over half of this sum, or €3 bn (26% of GDP). Furthermore, most of the reserves are borrowed, and the CBI has been unwilling to use them for supporting the exchange rate or for gradually letting out foreign funds locked into Iceland.

A little less than half of the foreign overhang is accounted for by the remainder of the carry trade. These funds, now 19% of GDP, are mostly liquid or invested in government bonds at rather short maturities. The remainder of foreign-owned kronur funds is at present tied up in the old banks. Foreign creditors of the old banks, who stand behind over 95% of the claims, have been pushing for the old banks to be allowed to enter composition.[168] The consent of the CBI is required for that process to go forward. The CBI has not been willing to agree to composition unless it is done in such a way that financial stability in Iceland is safeguarded (Gudmundsson, 2013). Composition would imply that creditors would be paid out €2.8 bn in kronur-denominated assets. Creditors would also be paid out foreign assets worth €10.6 bn; the latter payments would, as such, not create a balance of payments difficulty.

An additional €3.5 bn of *foreign denominated* claims on Icelandic parties would also lead to balance of payments difficulties to the extent that the debtors do not have sufficient foreign assets or income to meet these payments. About half of this, €1.8 bn, is a bond issued by new Landsbanki and held by the old (failed) Landsbanki (cf. Section 2.7). Payments on this bond begin in 2014 and it is to be fully paid up by 2018. The main (priority) creditors of old Landsbanki are the UK and Dutch deposit insurance funds. A significant portion of the payment of the Icesave debt of old Landsbanki depends on the payment of this bond. In June 2013 the new Landsbanki requested that this bond be restructured, including an extension of its maturity by 12 years. It will be interesting – especially in light of the recent Icesave dispute – to see how this request, which should ultimately be seen as a request from Icelandic authorities to UK and Dutch authorities, will be received.

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[166] Both the current account and the external position of Iceland need to be adjusted for the impact of the failed banks' estates and failed international investments which are still on the country's official balance sheet.

[167] In this section current amounts denominated in Icelandic kronur are converted to euros at the rate of 160 ISK/€ - the average official exchange rate for the period August 14 to September 13 2013. Projected GDP in 2013 converted to euros at this rate is €11.25 bn.

[168] Composition is a "contract made by an insolvent or financially pressed debtor with two or more creditors in which the creditors agree to accept one specific partial payment of the total amount of their claims, which is to be divided pro rata among them in full satisfaction of their claims." (legal-dictionary.thefreedictionary.com) In the case of Iceland's failed banks creditors would have a large proportion of their nominal claims converted into equity in the failed bank, thereby becoming direct owners of the bank (Kaupthing or Glitnir). The old bank would in effect become an asset management company under the direct controls of the former creditors, now shareholders.

There are reports of talks between creditors of Kaupthing and Glitnir, many of whom are distressed debt funds who bought their claims at very low prices post-crisis,[169] and the CBI on how to resolve the problem of the krona holdings as far as these two failed banks are concerned.[170] Until this situation is resolved in a satisfactory way – and the CBI has signalled that such a resolution is likely to involve considerable haircuts on kronur-denominated assets – and the Landsbanki bond has been renegotiated, it seems unlikely that the capital controls can be lifted. If these two stumbling blocks are removed, the problem of letting out carry trade holdings will still remain, but the overall situation will be more manageable. The CBI could then proceed with its plan for removing the controls and ultimately lift them. The main issue at that stage will be to prevent domestic pent-up demand for foreign funds, *e.g.* from pension funds who will want to diversify out of Iceland, from causing a balance of payments problem.[171] It seems reasonable then to follow a similar procedure as was employed in 1994 when Iceland entered the EEA and opened up for international capital movements (cf. Section 4).

6.1.2 Banking policy

From a banking and economic perspective the old-bank/new-bank split that was executed in Iceland by force of the Emergency Legislation, and later became one of the pillars of the IMF programme, was questionable (see *e.g.* Danielsson 2011a). It would surely have been better to do a bad-bank/good-bank split, as in Sweden in the early 1990s.[172] This would have involved classifying assets into "good" and "bad", placing the good assets in the new banks, leaving the bad assets in the old banks. This would have placed the new banks on a sound footing from the start enabling them to play their proper role as facilitators in the economic recovery after the crisis. With the domestic/international split a lot of bad loans were placed in the new banks (including much of the foreign currency lending to domestic households and businesses), which implied considerable uncertainty about their actual position. Moreover, management had to put much energy into working out loans in default rather than concentrating on possibilities for new lending.

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[169] Most of the international market funding of the old banks was issued under English or US law. This may explain the interest of distressed debt funds in acquiring the related claims.

[170] Estimated recovery of the bonds of Landsbanki, Glitnir and Kaupthing in closure of CDS contracts in November 2008 was 1.25%, 3% and 6.625%, respectively. This should give an indication of market values of these bonds at the time. In December 2012 market values of the bonds were 6.25, 27% and 25.5% of face value, respectively (*Frettabladid*, 2012). Trading in these bonds has, however, been active so many of the present bondholders will not have achieved such spectacular returns. Approximately 30-40% of claims on the old banks are still held by the original bondholders.

[171] IMF (2013a) estimates this at 30-45% of GDP and recommends 'speed limits' on outflows, especially for pension funds.

[172] During the Swedish crisis of the early 1990s, in the case of two banks that were insolvent, or were expected to become so, the Swedish government took over the banks, placed bad assets into separate asset management companies and created a new bank, now Nordea, with the good assets. The fiscal cost turned out to be negligible in the end. See Jonung (2009a, 2009b) for a description of crisis resolution and the policy lessons from the Swedish crisis.

The choice that was made was based on legal grounds: the Emergency Legislation changed the priority order of claims retroactively, placing deposits ahead of bonds. It also protected domestic deposits better than all other claims by moving them into new banks. Domestic loans were transferred into the new banks as well. Deposits in branches outside Iceland, bonds and other claims on the banks remained in the old banks along with international assets.[173] The idea was to minimise legal risks, both of a finding of a violation of the property-rights provisions of Iceland's constitution and a finding of unlawful discrimination between Icelandic and international creditors. For this purpose it was decided to carve a new domestic banking system out of the failing banks, leaving the international part in the old banks. It was seen as unavoidable to apply the 'domestic vs. international' classification to both liabilities and assets. The possibility of moving bank bonds denominated in Icelandic kronur (owned mostly by Icelandic parties, including the Central Bank of Iceland, mutual funds and pension funds) was discussed but rejected.

On 28 October 2011 – more than three years after the crisis hit – Iceland's Supreme Court confirmed the constitutionality of the Emergency Legislation. The EFTA Surveillance Authority had determined earlier that the split did not violate EEA law. The basis for both these findings is that the split and the remedies used were within the government's legal room to manoeuver under these circumstances and proportionate to their aims.[174] As noted above, the principle applied was that of ring-fencing domestic interests. It would have been much more difficult to argue that a bad-bank/good-bank split was imperative. Moving all the good loans to new banks along with domestic deposits and leaving bad loans in the old would have been less likely to pass legal muster. [175]

Even if the Icelandic state accessed international bond markets in 2011 and 2012, the markets are still almost fully closed to other Icelandic parties, public and private. For example, none of the new Icelandic banks have international credit ratings. In March 2013 one of these banks (Arion banki – the bank set up on the ruins of Kaupthing) issued a small amount of bonds in Norway ($ 90 mn) with a margin of 5% over Nibor (the Norwegian counterpart to Libor). One may ask whether the retroactive changes in creditor priority contained in the Emergency Legislation[176] may have had costly consequences regarding Iceland's access to markets. It is, however, impossible to disentangle the impact of the Emergency Legislation on investor attitudes towards Iceland from other issues that may have adverse consequences for international investors locked into Iceland and the economic situation in Iceland, *e.g.* the high

[173] In some cases it was difficult to make this classification.

[174] See Helgadottir (2012) for a legal perspective on what state reactions are permissible in an economic crisis.

[175] After the EFTA court's decision in the Icesave case (see below) it is natural to speculate whether the cherry picking of assets involved in a 'bad-bank/good-bank' split, as well as inclusion of bank bonds denominated in kronur, would possibly have been found legal. Recall that the central bank's losses on bank bonds are the single biggest fiscal cost of the crisis. Pension funds and mutual funds suffered substantial losses on ISK-denominated bank bonds as well.

[176] In 2012 Greece acted similarly, imposing retroactive collective action clauses on bonds issued under Greek law.

level of indebtedness of Icelandic parties, public and private, as well as both current and potential future actions of the authorities.

We have briefly mentioned the Icesave dispute, which can also be placed in the 'repudiation of debt' category and has ignited high emotions inside and outside Iceland.[177] Recovery from the Landsbanki estate is now predicted to be much better than originally estimated. All priority claims, including those of the deposit insurance funds of Iceland, the Netherlands and the UK, are set to be covered (Landsbanki Íslands Winding-up Board, 2012).[178] Deals between Iceland, on the one hand, and the UK and Netherlands, on the other hand, were twice sent to a referendum by the President of Iceland and rejected. A case was subsequently brought against Iceland before the EFTA court, which ruled in Iceland's favour on 28 January 2013.

It has become clear that the Icesave dispute was not merely handled badly, but turned out to be unnecessary. Politics started it on the UK and Dutch side, then Icelandic politics took over. The result was damage to political relations and an unquantifiable component of financial damage.

6.2 Fiscal consolidation

In October 2008 the IMF estimated the *gross* fiscal cost of the crisis to be 80% of GDP – over half of that due to foreign deposit insurance. There was pessimism about asset recovery, so net costs were projected to be similar to gross costs (IMF 2008). Still, it was decided to postpone spending cuts for one year. This was wise. In the winter of 2008–09, as private demand collapsed and unemployment shot up to levels not seen since the Great Depression, the support given to aggregate demand by public spending was very important.

The crisis did lead to substantial costs for the Icelandic state, though not as great as the initial pessimistic estimates. The *net* direct fiscal cost of the crisis amounts to over 20% of GDP and

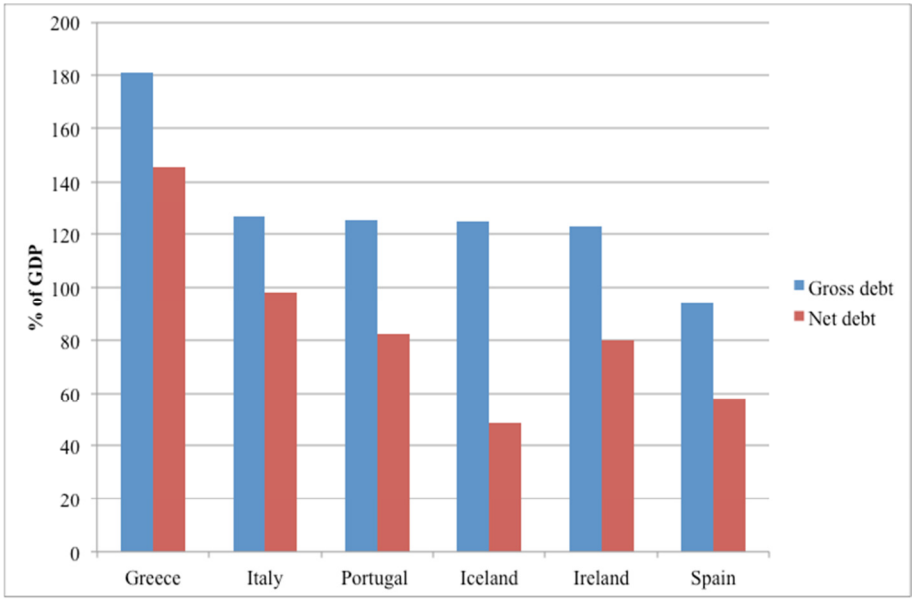
[177] On the Icesave issue see *e.g.* Baldursson (2010, 2011b) and Sibert (2010).

[178] However, approximately 20% of the estimated recovery at Landsbanki depends on the aforementioned bond, issued by the new Landsbanki and held by the old bank. In September 2013 he UK deposit insurance fund – the Financial Services Compensation Scheme (FSCS) – imposed a levy of £1.1 bn on British banks in order to cover the FSCS's losses on deposit insurance relating to failed Icelandic banks (British Bankers' Association 2013). The losses related to Heritable Bank and KSF are estimated at £.4-.5 bn (cf. table p. 52 of FSCS 2013). The FSCS therefore appears to expect a loss of £.6-.7 bn due to Icesave. Additional payments of £.7 bn are needed to cover the FSCS's Icesave claim in full. Hence, the FSCS seems to be largely discounting further payments out of the Landsbanki estate – in particular those depending on the bond. The FSCS has apparently not seen the need to impose a corresponding levy due to the losses on deposit insurance relating to failed British banks. In particular, the FSCS paid out £15.6 bn in compensation to customers of Bradford & Bingley (B&B) in 2008 – this is 77% of the total compensation paid by the FSCS due to the 'major banking failures of 2008/09'. Five years later, FSCS has received no dividends out of the B&B estate. The FSCS notes that '[B&B] management continues to forecast a full repayment of the amount of FSCS's claim … precise timing of the recovery remains uncertain, and could be over many years' (FSCS 2013, p. 54).

comes second only to that of Ireland within the OECD (Laeven and Valencia, 2010).[179] As noted in Section 5.2.3, more than half of this cost is due to the CBI's losses on collateralised lending extended to the failed banks before the crash. Note that these losses were due partly to the change in priority of claims (see above) and partly to unwillingness to give domestic currency bonds priority over foreign currency bonds.

The progressive fiscal tightening of 2-3% of GDP annually in 2010-2012 was painful. Most of the consolidation fell on the expenditure side: taxes increased by a total 1.3% of GDP over these three years, but non-interest expenditures dropped by 5.3%. Unfortunately, little has been done on structural policies (agricultural subsidies, education, barriers to foreign entry, R&D – see OECD 2013). A primary surplus of 1.7% was realised in 2012 and an overall surplus is projected for 2015 (IMF, 2012a). Gross public debt is at 125% of GDP, which places Iceland among the most highly indebted countries in Europe (Figure 5.3). Net public debt is, however, among the lowest in this group at 49% of GDP. Iceland's debt is set to fall in the coming years, unlike the other countries shown in Figure 6.3.

Figure 6.3 General government debt
December 2012 (predicted)



Source: OECD Economic Outlook, November 2012

That gross fiscal debt is still excessively high in Iceland is in large part due to currency reserves financed by external loans, and equity stakes in the new banks financed by domestic borrowing.[180] These positions can and should be unwound in coming years.

[179] The cost is likely to be higher, however, *e.g.* due to the CBI's loss on a €0.5 bn loan extended to Kaupthing in October 2008, which is likely to amount to 2.5% of GDP.

[180] Unfunded pension liabilities of government employees amounting to 25% of GDP are included in the Icelandic debt numbers. In general OECD and Eurostat statistics on gross government debt differ, with the former being higher. For 2011 the average difference for the group of countries shown in Fig. 6.3 is 5.4% of GDP, when Iceland is excluded. In Iceland's case Eurostat shows gross government debt at 98.8% of GDP at end-2011, so the difference in that case is sixfold, 29.2% of GDP.

6.3 Financial policy

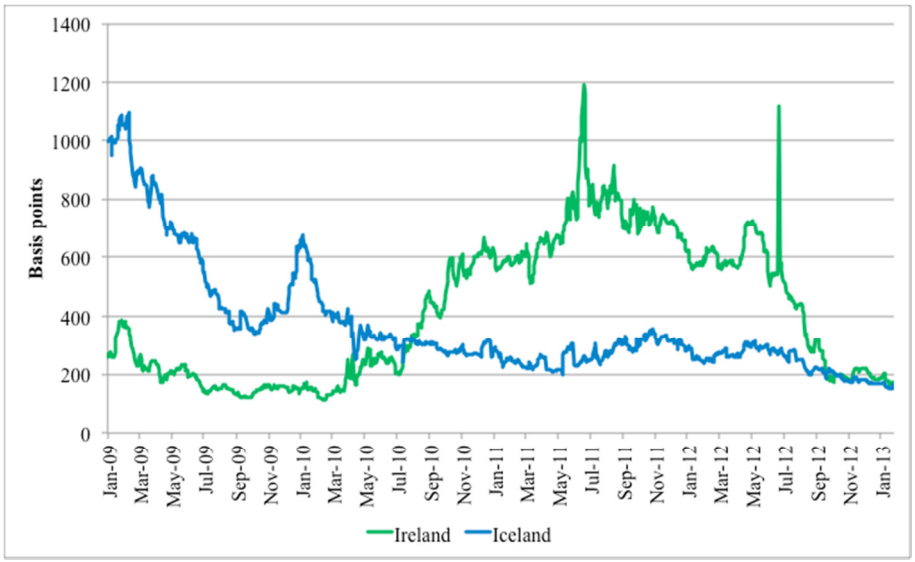
It was clear from the outset that an efficient insolvency regime would be needed for Iceland in order to manage widespread insolvency among firms as well as households after the crisis and to place the new banks on a sound footing quickly, to make them good banks. Progress on this front has been slow. This has been a costly failure. The debt workout of firms has been very slow – non-performing loans are still 19% of the loan books of the banks. It took more than two years to change the law on personal insolvency so that households deeply in debt can be provided a fresh start as under the US regime, and the implementation has been very slow. The consequence – and to some degree the cause – of this has been that the government has partly given in to demands for across-the-board debt reduction. This is costly and regressive, since there is a strong positive correlation between debt, assets, and income.

There have been no major changes in the financial sector regulatory framework since the crisis. Institutions have, however, been strengthened: staff at the FSA has been more than doubled, from about 50 to 110, and a Special Prosecutor investigating actions in the banking sector has over 100 staff.

6.4 How successful was the IMF programme?

Danielsson (2011b) has argued that Iceland's IMF programme has been unsuccessful. We disagree. The programme was of course not perfectly designed. And implementation and execution could have been more decisive, especially as regards restructuring of the banking sector and private sector debt.

Figure 6.4 CDS spreads for Iceland and Ireland



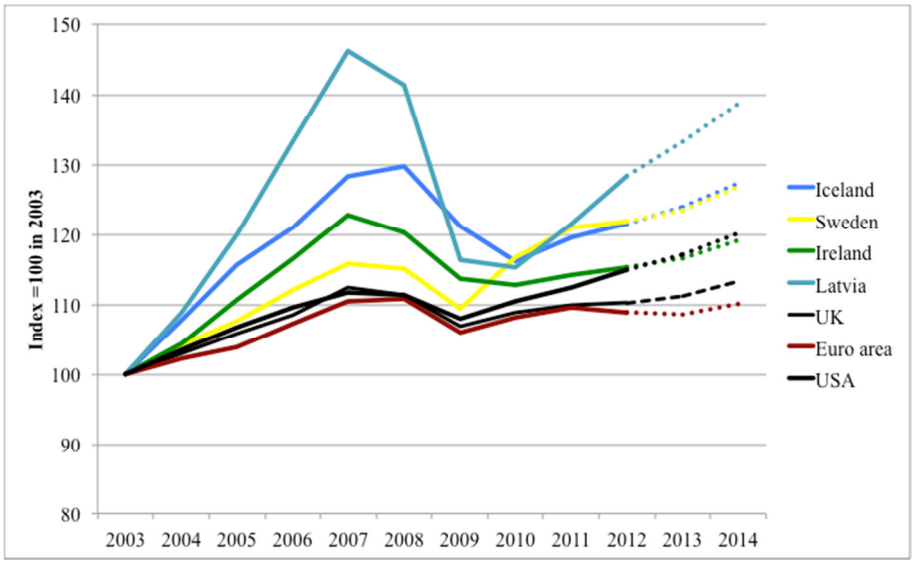
Source: CBI

That said, Iceland's situation has gradually been normalised over the three years of the IMF programme (see Figure 6.4 for the market reaction). It is by no means ideal yet.

Unemployment is still high by Icelandic standards, growth and investment are well below pre-crisis rates, inflation is at 4%, and the capital controls are still in place. Moreover, assets and liabilities connected to the old banks and other international investments made during the boom years have not been worked out and still remain on the balance sheet of Iceland. So even if the net international investment position is now estimated at a manageable 60% of GDP, this number is still subject to considerable uncertainty. And the huge overhang of foreign-owned krona-denominated assets presents a formidable obstacle to lifting the capital controls.

Nevertheless, in spite of the financial crisis Iceland has had one of the highest average rates of growth in the OECD over the last decade (Fig. 6.5). Unemployment is historically very high but low compared to many other countries (Fig. 6.6). And Iceland re-entered capital markets in June 2011, less than three years after the biggest banking crisis any country has suffered (before Cyprus). Evidently, considerable success has been attained since the crisis. There are two key policies behind that success: the Icelandic Emergency Legislation, with its heterodox policies, and Iceland's programme with the IMF.

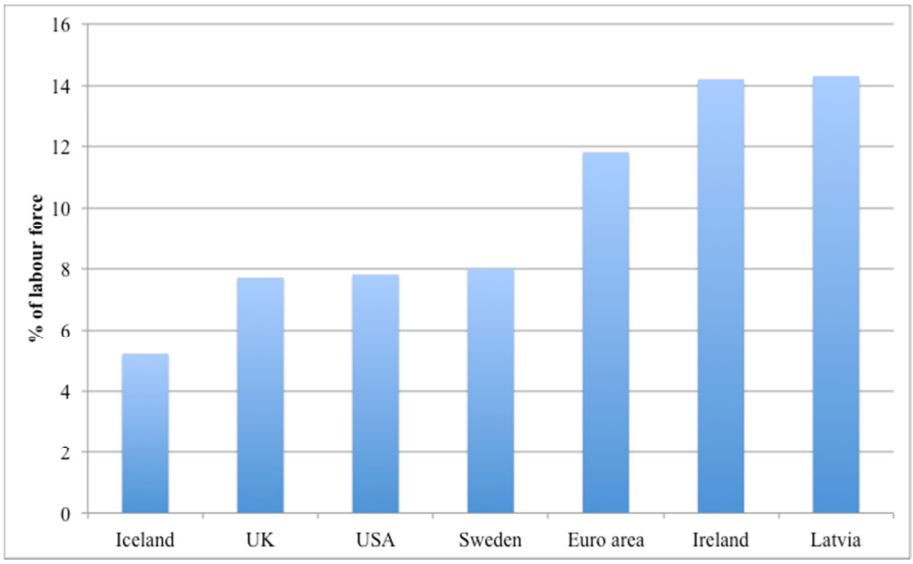
Figure 6.5 Gross Domestic Product in selected countries/areas
Volume indices set to 100 in 2003. Forecasts for 2013-2014



Source: Eurostat

Figure 6.6 Unemployment in selected countries/areas

Registered unemployment, seasonally adjusted, December 2012



Source: Eurostat

7 Conclusions

In this paper we have given an overview of the rise and fall of the Icelandic banks and the macroeconomic environment in which they operated. Our main conclusions are as follows:

1. Building an international banking sector was not a conscious policy choice of government, but was driven by the owners. The government made no attempt to stop the expansion.
2. Ownership of the banks became concentrated, with a narrow group of owners behind each bank. The owners were ambitious investors who considered the Icelandic market too small. All sought to become investors on a European scale and – for a while – realised their plans in highly leveraged deals. And many of their foreign investments were solid, even after autumn 2008.[181] Nor did they buy toxic US securities, as (for example) the German Landesbanken did.
3. The concentrated ownership structure combined with lax monitoring and enforcement of regulations engendered *moral hazard*. We now know that the owners succumbed to the temptation of lending to their own companies. This led to lending which was too concentrated on a relatively narrow group of borrowers.
4. Lending to holding companies was a substantial part of the total. The holding companies appear to have invested heavily in shares on the Icelandic stock exchange – that is, in Icelandic financial sector shares. This was serious speculation, indeed – it would have thrilled Aristide Saccard (see our prefatory quotation).

[181] For example, FIH and BN Bank survived; Iceland (the retailer) was bought as part of a £ 300 mn deal in 2004 and sold in 2012 for £ 1.5 bn (the other assets were also sold for £ 1.5 bn, so the investment multiplied tenfold). The image conveyed by Michael Lewis (2009) and others that the Icelandic bankers were cowboys who knew nothing of business is one of the myths associated with the Iceland story.

5. There was also considerable lending from one group of owners to another, *e.g.* Landsbanki (owned by Thor Bjorgolfsson and his father) lent a great deal to Baugur Group.
6. The resulting *concentration of risk* made the system very fragile. This related lending and cross-bank exposure grew explosively from autumn 2007 until the crash. We were not aware of it in writing our 2007 report nor thereafter, until the SIC revealed the data in 2010. Nor did the IMF and OECD have any knowledge of these developments.
7. In 2006 international analysts raised concerns, which led to the 'mini-crisis' in the first quarter of that year. That crisis was confined to Iceland, and the banks emerged unscathed, although it has now been revealed that there was serious risk of a systemic collapse. They then undertook to remedy certain aspects of their operations. But their growth continued unabated.
8. In the early stages of the international financial crisis – late 2007 – Icelandic bankers said that the 2006 mini-crisis had been an important wake-up call which had prepared the banks well for the more serious international crisis. The banks did in fact improve many of the characteristics and practices for which they had been criticised. But the data uncovered by the SIC report show that these improvements were largely superficial. The mini-crisis of 2006 offered an opportunity for the banks to rethink their strategy. *Ex post*, it is clear they did not.
9. A macroeconomic boom began in Iceland in 2004, peaking in 2007. The growth of the financial sector was in part a cause but also a consequence of this boom. Great internal and external imbalances resulted: inflation, a housing bubble, a large current account deficit, and a very strained labour market. Debt-financed investments abroad expanded external assets and liabilities, so that the country resembled a large venture-capital firm.
10. Fiscal and structural policies were supportive of the overheating, rather than working against it: taxes were lowered and expenditure increased; the government's housing financing fund competed vigorously with the banks for financing housing; large-scale investments in the energy sector were led by government-owned companies.
11. The CBI attempted to stem inflation by raising interest rates, but it erred in focusing overtly on preventing the krona from depreciating. This encouraged destabilising short-term capital inflows (carry trade) and domestic borrowing in foreign currency.
12. The banks fuelled the boom by lending into it - to a considerable extent with funds borrowed abroad. Overvalued and overleveraged asset holdings financed to a considerable degree by foreign currency loans undermined the loan quality of the banks.
13. We were critical of the macroeconomic imbalances in our 2007 report and summarised the risks thus: 'Down the road awaits currency crisis, debt crisis, or both.' The international financial crisis shortened the road. The current account deficit was not the main problem. The key external sector issue was, instead, the inadequacy of foreign exchange reserves to backstop the banks' foreign exchange exposures.
14. After the global financial turmoil began in August 2007 the banks, as well as their owners, found it increasingly difficult to access international capital markets

15. Lending to owners and loans with the purpose of supporting the banks' share prices dramatically increased from this point onwards. Rather than deleveraging and securing their liquidity positions, especially in foreign currency, the banks gambled on resurrection, expanding their balance sheets and refinancing the investments of their owners and other big borrowers – all this apparently unseen and certainly unhindered by the regulators. When Bear Stearns fell – at the latest – the authorities should have seen the dangers ahead and should have required rapid deleveraging.
16. When the price of bank shares came under pressure in Fall/Winter 2007, the banks supported the price by purchases in the stock market, just as the Union Générale had done 125 years before. Accumulated shares were offloaded in private deals outside the stock exchange usually financed by the banks themselves, again covertly. Neither the stock exchange nor the FSA seems to have investigated the extent to which the banks supported their own share prices.
17. The Icelandic FSA was (and is) responsible for monitoring single financial institutions. The SIC report revealed serious weaknesses in the banks' assets, especially their loan portfolios. The SIC report also shows that the FSA had a very imperfect idea of the magnitude of large, single exposures and lending to the banks' owners, although the FSA strongly maintained otherwise in autumn 2007. Enforcement of regulation on large exposures was weak, in part because of strong resistance from the banks.
18. On the other hand, the FSA did monitor regulatory capital ratios – but the banks all exceeded the Basel 8% CAR up to September 2008. This suggests that either the CAR is not informative or 8% may be too low (Admati and Hellwig, 2013, and Miles *et al.* 2012).
19. The CBI was responsible for financial stability but had a limited understanding of the systemic risks created by lending to owners and related parties
20. There was insufficient cooperation between regulatory institutions. Even if the CBI was not allowed to access information on individual borrowers, it should have been possible to perform an analysis of the extent of lending to single borrowers and related parties similar to that presented in SIC (2010a). The FSA and the CBI, between them, had the powers and means to acquire and analyse data of this kind. But they did not.
21. The banks reported healthy profits and capital ratios right until their collapse in October 2008. Only a month before the collapse the banks had all reported strong liquidity positions to the CBI. Two months before, the banks had reported in public quarterly reports that they had sufficient liquidity to cover payments for the next year. These reports were misleading. But the fall of Lehman also had a materially adverse effect on the liquidity situation.
22. After the planned nationalisation of Glitnir was announced at end-September 2008, the banks' financing began unravelling at an increasing pace. A financing gap more than twice the size of the CBI's currency reserves opened up. In any case, foreign reserves were not the key issue. Rather, it was whether the Icelandic state could risk taking on the associated liability. The immediate needs of the banks amounted to approximately half Iceland's GDP at current exchange rates. Assuming that deposits and payments on loans over the next year would have to be funded as well brought the

contingent liability up to threefold GDP. In our view it was unjustifiable for the state to take on the contingent liability. And even with 'exceptional access', an earlier IMF programme could not have been sufficient to meet the gap.

23. The UK FSA and Treasury provided much of the final push that sent the banks over the edge. Cross-border interaction differed from country to country, with the UK taking the most aggressive stance. Damage, both to Iceland and the UK, might have been limited had the authorities cooperated on safeguarding interests of depositors and taxpayers in both countries rather than acting unilaterally.
24. The rapid unravelling of the banks' liquidity position highlights the key role of regulation in understanding how liquidity can apparently dry up in very short time. Banks may count among liquid funds various types of assets, scheduled payments on loans and contracts. In a systemic crisis assets may become illiquid and fall considerably in value, scheduled loan payments may fail, contracts for credit lines can become null and void and loan covenants dependent on credit ratings may cause the loans to come due immediately. The Icelandic banks were less than truthful about their difficult liquidity situation in the days immediately before the fall of Lehman. It is far from clear, however, that they would have survived even if they had in fact had sufficient liquidity, as defined in the regulations. Neither would a shorter time horizon for liquidity coverage – they were in the first instance required to have sufficient liquidity for one month – have made much difference.
25. On the liability side, the partial shift from market funding to deposits that began as a response to the mini-crisis of 2006 proved to be no effective defence against the dynamics unleashed by the global financial crisis. There was no significant run on deposits until the very end, but the run on their remaining market funding in September 2008, exacerbated by ballooning CDS market spreads, was sufficient to doom the banks.
26. For the most part Iceland avoided attempting to bail out its banks, mainly due to lack of resources. The contagion from the banks' failure to sovereign debt was therefore limited.
27. The cost of the crisis to Iceland has, however, been substantial. Net direct fiscal costs alone are estimated at more than 20% of GDP and gross public debt stands at 125% of GDP. But they were limited by the Emergency Legislation that ring-fenced domestic assets and liabilities in new banks and gave deposits and deposit insurance priority status. Bondholders were left with claims to what remained of assets in the old 'parent' banks. Depositors in international (UK and Netherlands) branches of Landsbanki were not fully covered, however, as was done with Icelandic depositors. The resulting Icesave dispute was finally resolved in Iceland's favour by the EFTA court in February 2013. In any case, recovery from the Landsbanki estate is now expected to cover all deposits and more. The sovereign has managed to stay current on its debt and has accessed international capital markets twice after the crisis.
28. Foreign kronur holdings locked into Iceland by capital controls are estimated at 44% of GDP. In addition, foreign currency payments related to the resolution of Landsbanki pose a balance of payments problem over the medium term. It is very

difficult to lift the capital controls under such circumstances. Unwinding this situation without serious disruption is a major policy challenge for Icelandic authorities.

29. Weaknesses were seriously exacerbated over the last year of the banks' existence. This raises the question of whether damage could have been limited by earlier action. This is underscored by the offer of the Governor of the Bank of England made in April 2008 to help Iceland in reducing the size of the banking system. Was this a realistic option? All analysts outside of the banks, in particular those at the CBI and FSA, believed that the banks were solvent. The FSA's regular stress tests confirmed this (the positive results of the last one were announced in August 2008). It seems likely that direct deleveraging by the banks would have been perceived as 'fire sales'. It would have been extremely difficult for the government to force such sales directly. By imposing prudential regulation, however, the government could have limited the loan expansion at the banks during the second and third quarters of 2008 and encouraged asset sales. Regardless of lack of information on lending, this would have been a prudent action by early 2008 – just as Bear Stearns should have prompted US regulators to focus on forcing Lehman (and others) to deleverage during this same period.
30. There was some difference in behaviour among banks during 2008. While Landsbanki and Kaupthing expanded their lending in April-September 2008, Glitnir was deleveraging throughout the year. Glitnir had also come very close to closing a sale of some of its Norwegian assets in September 2008, a deal abandoned after the fall of Lehman.
31. The decision to nationalise Glitnir on 29 September 2008 was poorly prepared and executed by both Glitnir and the CBI. By allowing the press to learn of the talks at the CBI, Glitnir and the authorities had to present what was to be done before the opening of markets on Monday morning. Their actions were utterly futile, and this could have been foreseen with better analysis. It is also clear that two weeks or so, which could have been used to explore other alternatives, were lost.
32. After the collapse of the banks, Iceland entered into a programme with the IMF which concluded in August 2011. Although some problems remain unsolved, Iceland's adjustment has been successful in many respects. But Iceland faces major obstacles in lifting the capital controls imposed during the crisis and, despite unemployment that is very high in historical terms, is struggling to control inflation.
33. Regulators and others – including ourselves – put too much faith in the banks' annual and quarterly reports which presented profitable, solvent and liquid banks until the very end. The SIC report made public unprecedented information on what went on behind the scenes at the banks, within regulatory institutions, and at the highest level of government. This may distort the picture somewhat when it comes to a comparison of Iceland and other countries – we do not (yet) have comparable information for the USA, UK, Ireland, Spain, Greece, or Cyprus.

The key policy lessons we draw from this sad but fascinating affair are the following:

- Adequate information and disclosure are essential to avoid moral hazard and maintain a healthy financial sector.

- Conventional criteria for assessing the health of banks (*e.g.*, CARs and stress tests) may be seriously misleading.
- The bigger the banking system relative to the economy, the more important are effective supervision and regulation, as well as insuring that the lender of last resort is capable of filling that role.
- Supervision and regulation may be ineffective even with apparently adequate resources and an adequate regulatory framework, if the authorities are unwilling to use their powers to enforce disclosure. Again, information is key.
- Liquidity is ephemeral; even legally committed funding may vanish in a crisis. Regulators need detailed information on, for example, loan repayment accelerations that would be triggered by covenants dependent on credit ratings, potential margin calls dependent on asset prices, etc.
- It is impossible to assess solvency in a crisis.
- Bankers will gamble for resurrection. Again, the only counterweight is good supervision and regulation based on adequate information.
- International cooperation to safeguard the interests of depositors and taxpayers would be more effective than unilateral actions.
- In Iceland, serious macroeconomic imbalances (partly policy-induced) interacted in a destabilising manner with domestic financial sector weakness, domestic lending in foreign currency, and the carry trade – all seriously exacerbated by the global financial crisis. There is a strong case for banning foreign currency borrowing by households and for restricting unhedged foreign currency borrowing by non-financial firms. More broadly, macroprudential measures are essential in an economy open to capital flows.
- Iceland's response to the crisis, including its heterodox policies, has been relatively successful. This contrasts with the Troika programmes for the crisis-hit euro area countries, which have repeatedly gone 'off track' despite the authorities' statements to the contrary. Comparisons between Iceland and Cyprus would perhaps be premature at this stage, but they are bound to attract great attention in the months to come.

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