Már Guðmundsson: The financial crisis in Iceland and the fault lines in cross-border banking

Speech by Mr Már Guðmundsson, Governor of the Central Bank of Iceland, at FIBE, Bergen, 7 January 2010.

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It gives me great pleasure to be here in Bergen this morning to give an address on the financial crisis in Iceland, and I would like to take this opportunity to thank the organisers for inviting me to do so. You call this session *Icelandic mysteries.* At this juncture, this is a more apt phrase than you might think. We are currently waiting for the findings of a parliament-appointed committee that has been working hard for over a year, collecting evidence and analysing the causes of the financial crisis in Iceland. The committee is due to release its report in early February, and we hear the report and supporting material will be well in excess of a thousand pages. We know how the Icelandic banks failed in the autumn of 2008 and can identify some of the key vulnerabilities that led to their demise. However, some important pieces of the puzzle are still missing, in particular regarding the governance and risk management of the banks, on the one hand, and the Icelandic authorities' crisis management and interaction with their counterparts in other countries, on the other.

So what I will present here today is unavoidably a partial picture.[1] You could say that it is just as well, for this is a complex saga with many twists. To paint with a broad brush, we can say that economic and financial developments in Iceland during the last decade or so are a combination of two separate but interrelated stories. On the one hand, there is Iceland's boom-bust cycle and problems with macroeconomic management in small, open and financially integrated economies. This is a well known story that has played out in Iceland and other countries several times. On the other hand, we have the story of the rise and fall of three cross-border banks operated on the basis of EU legislation (the European "passport"). That story, at least for smaller countries, is much more unique than the first.

In my remarks today, I will concentrate mostly on the second story, which is probably more suited to this audience, as I understand that the conference is oriented towards microeconomics and finance. However, it must be remembered that although these two stories are different, they interact in important ways. Thus the unsustainable boom that Iceland experienced during the years 2005–2007 was fuelled by a combination of favourable external conditions, macroeconomic mismanagement, and aggressive domestic bank lending. It may well be that the banks' international activities and the easy access to foreign credit that came with those activities fuelled stronger growth in domestic bank lending than would have occurred in a more traditional small-country banking system. But we cannot be sure to what degree, as we know that unsustainable domestic credit booms fuelled by capital inflows can very well take place in countries that are not home countries to international banks.

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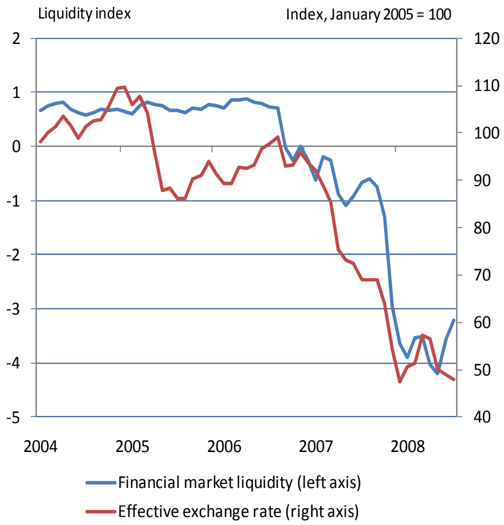
1 Several books have already been published, both in Icelandic and English, on the financial crisis in Iceland. See, for instance, Jónsson, Ásgeir (2009). *Why Iceland?: How One of the World's Smallest Countries Became the Meltdown's Biggest Casualty*. McGraw-Hill Professional. Thorvaldsson, Armann (2009). *Frozen Assets: How I Lived Iceland's Boom and Bust.* ISBN-13: 978-0470749548. Boyes, Roger (2009). *Meltdown Iceland: Lessons on the World Financial Crisis from a Small Bankrupt Island*. Ingimundur Fridriksson, a former member of the Board of Governors of the Central Bank of Iceland, has analysed important aspects of the crisis in two speeches: Fridriksson, Ingimundur (2009): The banking crisis in Iceland in 2008 (http://www.sedlabanki.is/?PageID=287&NewsID=2035), 6 February 2009, and Fridriksson, Ingimundur (2009): Presentation prepared for a SUERF, CEPS and Belgian Financial Forum Conference on *Crisis Management at Cross-Roads* held in the National Bank of Belgium in Brussels, 16 November 2009. To be published by SUERF along with other conference presentations in early 2010. See also Central Bank of Iceland (2009). *Financial Stability* 2009, 26 October 2009 (pp. 9–37, 90) (http://www.sedlabanki.is/?PageID=1061).

An important channel of interaction was through the exchange rate. On the one hand, low risk aversion and ample liquidity tended to boost both the exchange rate of the króna and the banks' share prices at the same time. On the other hand, a speculative position against the share price of the banks tended to weaken the króna, as the banks were listed in Iceland and their equity denominated in krónur. Furthermore, as the banks' official accounts and equity were denominated in Icelandic krónur, while ⅔ of their balance sheet was in fact denominated in foreign currency, they tended to hedge their equity, which, during the weakening phase of the króna, tended to weaken it further. These relationships emerge clearly in the graphs below, which show the strong correlation between international liquidity conditions, as measured by an index constructed by the Bank of England, the exchange rate of the Icelandic króna and share prices of listed financial institutions.

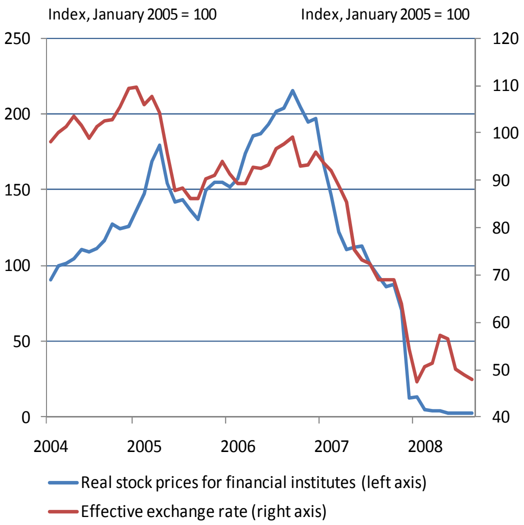
International financial market liquidity and the króna exchange rate



The liquidity index shows the number of standard deviations from the mean (exponential moving average) from a simple average of nine liquidity measures,

Source: Bank of England, Central Bank of Iceland.

The króna exchange rate and bank stock prices



Source: EcoWin Reuters, Central Bank of Iceland.

As so often occurs in great tragedies, the two stories converged in a grand finale in early October 2008, when nearly nine-tenths of Iceland's banking system collapsed when its three large cross-border banks – Glitnir, Landsbanki, and Kaupthing – were taken into special resolution regimes on the basis of the emergency legislation that had just been passed by Parliament. This added significantly to the recessionary forces that were already at play in the Icelandic economy as the macroeconomic imbalances created in 2005–2007 subsided. But here again, it is still an open question what is due to what, i.e., what is the specific contribution of the banking collapse over and above an international recession and a domestic macroeconomic adjustment? The fact of the matter is that the contraction in 2009 has proven smaller than originally predicted, with the fall in GDP now expected to be around 7½–8%, as opposed to the 10% forecasted earlier in the year, and unemployment still around 8%. Conditions are expected to deteriorate further in the first half of this year, however, with unemployment peaking at around 10%. But who knows? Maybe the economy will prove more resilient and will surprise once again on the upside.

It is clear from these numbers that, in terms of the macroeconomic impact of the international financial and economic crisis, Iceland is not at the top of the league. There are probably several explanations for this. Automatic fiscal stabilisers were allowed to work more or less freely in 2009, with fiscal consolidation taking hold this year. Last year, Icelanders were allowed early withdrawal from their third-pillar pension funds, to the tune of 1½% of GDP, which is equivalent to a fiscal stimulus. The financial restructuring of corporations and households has been delayed and, although this is detrimental for medium-term recovery, it has postponed some of the pain. The depreciated exchange rate has stimulated the traded goods sector. The manufacture of consumer and capital goods has a relatively low weight in the Icelandic economy, but the demand for these was hit disproportionally during the post-Lehman economic confidence crisis in the second half of 2008 and first half of 2009. Finally, although the destruction of wealth that Iceland has experienced as a result of the collapse of the Icelandic banks is enormous, it is not proportionate to the size of the banks, as foreign creditors will lose much more.

Let us now turn our attention from the macroeconomic part and explore further the story of Iceland's cross-border banks, which to my mind holds important lessons for cross-border banking more generally, both from the standpoint of the small economy and at the European and global levels.

In the rest of my remarks, I will first give you a short overview of how the Icelandic banks failed. I will proceed to explain the build-up of these cross-border banks and the associated vulnerabilities. I will then return to the collapse of the banking system by discussing crisis management and resolution before turning to some of the causes. Finally, I will reflect on the lessons learnt and some of the issues that remain unresolved.

How did the banks fail?

Iceland's three cross-border banks all failed and were placed in special resolution regimes during the first full week of October 2008. Refinancing their foreign currency liabilities had become a concern in the mini-crisis of 2006, as I will discuss later, but proved increasingly difficult as the global financial crisis tightened its grip in successive waves from the autumn of 2007 onwards. The banks were thus forced to halt any further expansion and begin deleveraging in order to create the foreign exchange liquidity they needed in order to survive until foreign funding markets opened again. In the conditions then reigning, it was not easy to dispose of assets; however, two of the banks, Landsbanki and Kaupthing, were able to improve their foreign liquidity position by collecting deposits abroad. Kaupthing did so mostly through subsidiaries, but Landsbanki collected deposits primarily through branches in the UK and the Netherlands. This was to prove devastating for Iceland when the bank failed, because of the resulting dispute about the settlement of deposit insurance.

But what had been difficult before the Lehman collapse in mid-September 2008 became almost impossible afterwards. In the immediate aftermath of the Lehman bankruptcy, cross-currency liquidity management of banks and other entities became very difficult as FX swap markets became severely impaired and there was a general scramble for dollar liquidity around the globe. The Lehman bankruptcy led to a major loss of confidence, where concerns over protecting one's own solvency and liquidity led financial institutions worldwide to take action that, although rational from the standpoint of individual institutions, was disastrous for the system as a whole. Credit lines were closed, margin calls were made, and all but the safest assets sold off at fire sale prices. Emerging market assets experienced a sell-off as a part of this process, and funds were repatriated back to the US in order to meet margin calls and repay debt.

In normal times, managing liquidity across currencies from countries with free movement of capital and relatively developed capital markets is not much of an issue. In these conditions, FX swap markets can speedily be used to convert liquidity from one currency to another at spreads that closely reflect the differences in domestic money market rates in the two countries concerned. In other words, the covered interest parity condition broadly holds. Vis-à-vis the US dollar, this relationship showed periodic strain for most currencies after the financial turmoil erupted in late summer 2007, but it broke down almost completely after Lehman. There are probably several reasons for this, some of which were analysed in BIS publications such as the *Quarterly Review* during the period when I was still there.[2] Thus, for instance, we know that before the crisis, European banks had a structural imbalance where they had invested in longer-maturity USD assets and financed them partly in USD interbank markets at shorter maturities. When these dried up, there was probably a scramble to get USD liquidity through FX swap markets, with the result that those markets became dysfunctional as well.

This problem was significantly mitigated with the FX swap lines that the US Fed negotiated with the ECB and other major central banks, especially after these became uncapped in some cases. But the problem was not confined to currency pairs involving the US dollar, and a similar kind of dynamic played out for smaller currencies in Europe vis-à-vis the euro, especially where banking systems had significant short-term foreign refinancing needs, or what can also be called rollover risk in terms of foreign currency.

In some cases, FX swap lines were granted vis-à-vis the dollar, the euro and the yen, and in some cases not. Where swap lines were granted, it helped. And for some of the smaller players, it might not have mattered terribly much which of the major international currencies they hooked on to in this sense, especially after the uncapped swap lines had been established.

What we observed during this peak of the crisis was thus a run on cross-border banking operations. We know how to solve such problems domestically by letting central banks lend to markets and/or institutions through their almost unlimited short-run capacity to expand their domestic balance sheet. However, when it comes to foreign currency, a central bank's capacity to help banks to refinance the foreign liquidity denied them on the market is limited by the size of its reserves or the willingness of its big neighbours to help.

This is what did the Icelandic banks in. At that point, their balance sheet was almost 11 times GDP, with the foreign currency part constituting ⅔, or almost 7½ times GDP. And as is always the case in banking, there was a significant maturity mismatch between the asset and liability sides. Compare these numbers to the reserves of the Central Bank of Iceland, which were 21% of GDP at the time; a swap agreement with the Nordic countries amounting to €1.5 bn, or around 12% of GDP; and committed credit lines of around 2% of GDP, or a total of around 35%. This is dwarfed by the foreign currency liabilities of the banks, even if some of them were, of course, longer-term. These defences could only buy limited breathing space in the face of a full-scale run on cross-border operations of banks this size. Further research is needed before we can assess to what degree such breathing space would have facilitated a more orderly and less costly episode than the complete collapse that took place.

At any rate, it is clear that this limited ability was one of the factors behind the decision not to grant Glitnir a loan of last resort amounting to €600 m, which it requested on 25 September in order to cover a loan repayment in mid-October. Instead, the Government, on the advice of the Central Bank, announced on 29 September that it was taking a 75% equity stake in Glitnir valued at €600 m. This implied a big fall from what such a stake was valued at in the market the week before. In the following week, the equity price collapsed further, ending the week 75% below its value at the end of the preceding week.

This action did not boost market confidence in the Icelandic banking system. On the contrary, it intensified the run. On the following day, both the sovereign and the banks were

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[2] Baba, Naohiko, Frank Packer and Teppei Nagano, (2008). "The spillover of money market turbulance to FX swap and cross-currency swap markets", *BIS Quarterly Review*, March 2008, 73–86; Baba, Naohiko, and Frank Packer, (2008). "Interpreting deviations from covered interest parity during the financial market turmoil of 2007–08", *BIS Working Papers*, No. 267. See also Box III-1, "The recent turmoil in the Icelandic foreign exchange swap market" in the Central Bank of Iceland *Monetary Bulletin* 2008/1, pp. 26–29.

downgraded by two notches, followed by widespread margin calls and closing of credit lines. The foreign deposits that had helped to alleviate the foreign liquidity squeeze experienced outflows. And the equity loss involved in the Glitnir takeover created a domino effect within the Icelandic financial system.

It was becoming clear that the entire system was on the brink of collapse, and on 6 October 2008, the Icelandic Parliament passed emergency legislation with the objective of ensuring continued domestic banking operations. The following day, the Icelandic Financial Supervisory Authority (FME) intervened in the operations of Glitnir and Landsbanki. On October 8, following perfunctory exchanges between the UK Chancellor of the Exchequer and the Icelandic Minister of Finance, the UK government froze the assets of Icelandic banks in the UK and took over Singer & Friedlander, a British-licensed subsidiary of Kaupthing. The deposit part of Singer & Friedlander was transferred to ING. Later that day, a system-wide response of central banks and governments emerged, emphasising international coordination. Such efforts were too little and too late for the Icelandic banks, and on October 9, the FME intervened in Kaupthing Bank.

The collapse of these three banks was quite large, not only relative to Iceland, but also on an absolute scale. According to Moody's list of defaults during the period 1920–2008,[3] Kaupthing, at USD 20 bn, ranks 4th after Lehman, Worldcom and GMAC, with Glitnir close on its heels. The combined balance sheet of these failed banks was much larger than that of Worldcom, and only Lehman's was bigger. And the effect was felt far and wide, as these banks were truly international. Kaupthing alone was active in 13 jurisdictions.

It might be of some interest that the possibility that the Icelandic banks might fail in precisely the way they did was much more widely foreseen than is currently acknowledged. Available on the BIS website is a speech that I gave on 18 May 2007 before the Institut International d'Études Bancaires, entitled *Financial globalisation and challenges for prudential policies and macroeconomic management*, where I said: "...emergency liquidity assistance will be complicated or even impossible for central banks to deliver when internationally active banks face liquidity problems in currencies other than that of their home country. Iceland is a case in point."[4] But this was before the breakout of the financial turmoil in August of the same year, and in company with many others, I saw this as a tail event rather than an immediate possibility, although concern was beginning to creep in. However, as the financial crisis intensified, the risks mounted, and by early 2008, both the banks themselves and the Icelandic authorities were acutely aware of it.[5] This is why the Central Bank was actively seeking to conclude FX swap agreements with major central banks and why, in May 2008, parliament authorised large-scale foreign borrowing in order to boost reserves. Both efforts were largely unsuccessful, except for the €1.5 bn swap agreement with the Nordic countries. The committee investigating the collapse will probably throw light on why that was.

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3 Moody's Global Credit Research (2009). Corporate Default and Recovery Rates, 1920–2008. 26 February 2009.

4 Gudmundsson, Már (2007). "Financial globalisation and challenges for prudential policies and macroeconomic management." Speech by Deputy Head of the Monetary and Economic Department of the BIS, at a meeting of the Institut International d'Études Bancaires, Reykjavik, Iceland, 18 May 2007 (http://www.bis.org/speeches/sp070525.htm).

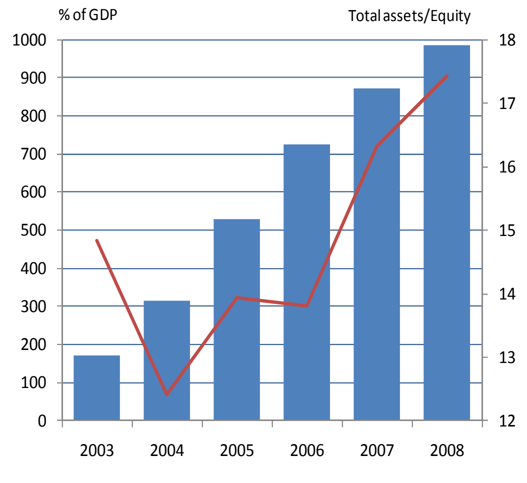
5 A report written by William Buiter and Anne Siebert in the spring of 2008 for one of the banks that failed later in the year gives sound analysis of the problems facing the Icelandic banking system at the time. See Buiter, William H., and Anne Sibert, (2008). "The Icelandic banking crisis and what to do about it: The lender of last resort theory of optimal currency areas", *CEPR Policy Insight*, No. 26, October 2008. (http://www.cepr.org/pubs/policyinsights/PolicyInsight26.pdf).

The build-up

So how were these mammoths created? Following a process of consolidation and privatisation, which was largely completed in 2003, the Icelandic banks grew very rapidly. With headquarters in Reykjavik, they expanded their activities abroad, for the most part by acquiring financial institutions in other countries, opening up bank branches, and stepping up their foreign operations. This phenomenal growth was made easier by Iceland's membership in the European Economic Area (EEA). The EEA Agreement provided a legal and regulatory framework based on EU Directives. This meant that the operating licences held by Icelandic financial institutions were not limited to Iceland but included all the countries in the EEA. The European "Passport" gave the banks the scope to operate throughout the EEA, including permission to operate branches in other EEA countries.

Statistics give a picture of rapid-fire growth over a very short period (see graph). From 2003 to 2007, the banks' total assets grew from less than two times Iceland's GDP to almost nine times. Right before their collapse, total assets amounted to eleven times GDP. Over 40% of total assets were in foreign subsidiaries, 60% of total lending was to non-residents, and 60% of income was from foreign sources. Over two-thirds of lending and over three-quarters of deposits were denominated in foreign currency, notably in pounds sterling. Around 85% of the banks' foreign lending was in Europe, with half in the Nordic countries, a third in the United Kingdom, and a tenth in the Benelux countries.

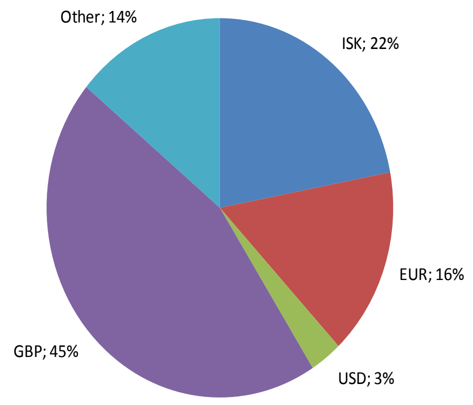
Banks' balance sheet expansion and leverage



Consolidated accounts of three largest commercial banks. 2008 data is end-June.

Source: Central Bank of Iceland.

Currency composition of deposits 2007



Deposits to customers. From the largest commercial banks' consolidated accounts.

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

It is important to note that the phenomenal growth of the Icelandic banks was enabled but not caused by the common European legal and regulatory framework. As we all know, from the early 2000s to the middle of 2007, highly unusual conditions developed in the international financial markets. The supply of credit was plentiful, and interest rates were lower than they had been at any time in the 20th century. The financial markets eagerly sought bonds, including those of the Icelandic banks, which were suited for use in various kinds of structured products, partly because their ratings were high compared to their CDS spreads. The banks were under regular scrutiny by international credit rating agencies, which at one point took them to triple-A. In turn, the good ratings facilitated their push into the bond market. Finally, the banks became an important part of the Icelandic economy, their expansion and that of Icelandic firms enjoyed broad support, they paid high salaries, and the Treasury received sizable tax receipts based on their activities, direct and indirect.

In the first half of 2006, the Icelandic banks narrowly escaped the so-called mini-crisis. In late 2005 and into 2006, the banks began to attract international attention. A notable shift in market attitudes was reflected in rising credit default swaps. Analytical coverage of the banks became critical, expressing significant concerns about their ability to manage risk or to exploit economies of scale given such rapid growth. The enormous dependence on wholesale financing given the low share of deposits as a proportion of total funding, lack of transparency, cross-ownership ties and connected lending, and other points were also mentioned. Up to that time, the banks had actively sought to raise funds with large international bond issues and were strained to bring in funds for all their activities, which now become more difficult.

Both the banks and the authorities reacted to the criticism by cleaning up their act, but also by taking the offensive with a propaganda campaign.[6] That worked. In retrospect, one could even say this was unfortunate, as it would have been much easier to reduce the size and the riskiness of the system in the conditions prevailing in 2006 than in 2008. Furthermore, one of the solutions was to start collecting deposits abroad, which was to prove devastating for the Icelandic nation once the banks failed.

The banks also entered new markets, including the US, where issuers with good credit ratings found it easy to sell bonds. As a result, risk appetite returned and Moody's took the banks to triple-A for a while in 2007. Moreover, the Icelandic banks were perhaps better prepared than otherwise for the dramatic reversal of market sentiment that took place in mid-2007. Interestingly, the high credit default swaps compared to their ratings made the banks' bonds good input for structured products. That, however, was to prove a big drawback for the banks once the financial crisis hit for real in 2007 and 2008, as the sell-off of structured products pulled Icelandic bank shares with it and sent CDS spreads through the ceiling.

The fact that the Icelandic banking system was based on EU legislation was conducive to cross-border expansion. However, in spite of all its merits, there were fatal flaws in this system. The basic problem was that, although banking and regulation was European, both supervision and the safety net of deposit insurance and lender of last resort were national. The same applied to a significant degree to crisis management. There was an inherent vulnerability and risk associated with this setup, especially for small countries outside the euro area. This proved fatal for Iceland, in part because it made the mistake of taking European regulatory directives as mostly binding, but not as a minimum. However, the biggest design failure was in the case of deposit insurance, because not only did it violate the principle of matching international private action with international public measures, but it also violated the insurance principle of pooling. European banks need European deposit insurance. That is how it is.

Crisis management and resolution

Let me say a few words about crisis management and resolution in the case of the Icelandic banks. During the height of the crisis, its management left a great deal to be desired, especially the cross-border part:

- There was lack of information sharing and co-operation across affected jurisdictions.
- There was early sale of "good" assets at fire sale prices, which will lead to lower recovery ratio for bond holders.

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6 A report by Tryggvi Thór Herbertsson and Frederic Mishkin was particularly influential in this regard. See Mishkin, Frederic S., and Tryggvi T. Herbertsson, (2006). *Financial stability in Iceland*, Iceland Chamber of Commerce. (http://www.vi.is/files/555877819Financial%20Stability%20in%20Iceland%20Screen%20Version.pdf).

- UK authorities froze and ring-fenced assets.
- Further research will throw light on the UK decision to close Singer & Friedlander, which brought down Kaupthing – however, a lender of last resort (LOLR) loan in Sweden.
- A consequence of all of this is the dispute with UK and Dutch authorities over the settlement of deposit insurance claims related to Landsbanki branches. This problem is still negatively affecting the economic resurrection of Iceland. It is a big topic in its own right, but I am not going to say more about it here, as involves international relations, European legal issues, and balance of payments and debt sustainability issues, and as such, is far beyond the scope of my topic today.

Bank resolution on the Icelandic side has been somewhat more orderly. It was shaped by the initial goal of securing continued banking operations in the country. First, we have the Emergency Act of 6 October 2008, under which the FME acquired broad-based intervention rights; deposits were assigned higher priority than other unsecured claims; and government capital injections received parliamentary approval. Then the Government issued the statement that all deposits in Iceland were guaranteed.[7]

The tool used to reach this goal was to split the banks into new and old banks, along domestic and foreign lines, in such a way that the foreign creditors do not suffer over and above what was implied by giving deposits seniority over other claims. When these drastic actions are assessed, one must bear in mind the dire straits Iceland was in at the time and the sense in the country that it was under financial siege. Furthermore, the banks' assets were 10 times GDP, and in the absence of international cooperation, forced downsizing was the only option. The new banks are 1.7 times GDP.

The domestic system functioned more or less seamlessly throughout, but demand for cash tripled and almost outstripped physical supply for a few days until the Government issued the statement that domestic deposits were safe. International payment flows were seriously affected, however. Payments stopped at first, as the correspondent banking system seized up due to uncertainty, attempts at netting and punitive actions, and the UK freezing order. Normal functioning was gradually restored with Central Bank involvement.[8]

Since November 2008, continuation of the resolution process has been part of an IMF programme whose main elements are stabilisation of exchange rate, a plan for fiscal sustainability, and resurrection of the financial system.[9] All the three banks are now up and running, and two of them are majority-owned by the foreign creditors of the old banks. The savings banks will be financially restructured in the coming weeks.

The causes

Earlier in my remarks I told you how the banks failed. Does this also tell us why they failed? I think it does so only partly. The interplay between trust, liquidity and solvency is complicated

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[7] Central Bank of Iceland (2009). *Financial Stability* 2009. 26 October 2009 (pp. 18–19, 68–70).

[8] *Financial Stability* 2009, 22–37.

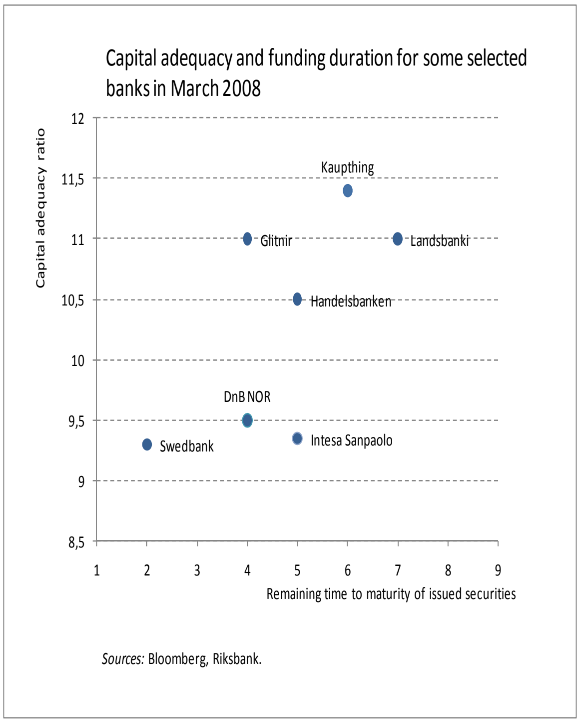
[9] IMF (2008). "Iceland: Request for Stand-By Arrangement – Staff Report", *IMF Country Report* No. 08/362, November 2008. IMF (2009). "Iceland: Staff Report for First Review under Stand-By Arrangement and Request for Extension of the Arrangement, Waivers of Nonobservance of Performance Criteria, and Rephasing of Access", *IMF Country Report* No. 09/306, October 2009. For further information about the IMF Stand-By Arrangment and the economic programme of the government, please refer to the web sites of the Central Bank of Iceland (http://www.sedlabanki.is/?pageid=186&dt_date=2009-01-01), the Prime Minister's Office (http://eng.forsaetisraduneyti.is/), and the International Monetary Fund (http://www.imf.org/external/country/isl/index.htm). See also Central Bank of Iceland (2009). *Financial Stability* 2009. 26 October 2009 (pp. 71–75).

when it comes to banks. Banks fail because they lose trust. That loss of trust might not be warranted, in which case the bank will face a liquidity problem. However, it might still fail if it is not supported by a credible lender of last resort, or if the liquidity problem lasts long enough. The line between liquidity and solvency can be a thin one. An underlying solvency problem will often manifest itself as a liquidity problem, and over time, a liquidity problem will often create a solvency problem.

Did the Icelandic banks face a solvency problem? Not if we look at what used to be the traditional metrics before the crisis, cf. the displayed table.

	Kaupthing	*Landsbanki*	*Glitnir*
CAD ratio	11.2%	10.3%	11.2%
Tier 1 ratio	9.3%	8.2%	8.0%
Leverage ratio	15.1	20.0	19.3
Equity/tangible assets	5.2%	4.0%	3.6%
Bond maturity	5y	5y	3.2y
Deposits/funding	32.3%	72.4%	20.8%
Liquidity ratio	1.95	1.74	1.52

Compared to peers, their capital and leverage ratios were not out of line. Neither do the underlying liquidity problems glare at us through these metrics. But that might say more about the metrics than the reality. Add to this the fact that, around a month before the collapse, the FME issued statements about how well the banks performed on a range of stress tests. However, these stress tests were flawed in the sense that they did not include liquidity. Furthermore, they tested one institution at a time and did therefore not take into account the interconnectedness and contagion elements that proved so important during the collapse.



A great deal of value is lost at the very moment when banks stop being going concerns. However, low estimated recovery rates after the banks' collapse seem to indicate the existence of an underlying solvency problem. It also raises questions about the quality of accounting. This is one of the mysteries that still wait to be solved.

My list of causes for the collapse of the Icelandic banks is the following:

- Large foreign-currency balance sheets with significant maturity mismatches but without a LOLR.
- Size relative to the home base (country and currency).
- Fatal flaws in the EU financial architecture.
- Bad and non-cooperative crisis management across interested jurisdictions.

But there were also triggers and contributing factors:

- The international financial crisis and all the usual suspects that have been named in relation to it, including incentive systems, regulation and supervision.
- Flaws in business models and risk management.
- Iceland's large macroeconomic imbalances.
- Domino vulnerabilities in Iceland's financial sector (e.g., cross-ownership, connected lending, large exposures across institutions).
- Bad governance and accounting?

Lessons and unresolved issues

Before making my final remarks, let me mention briefly some of what I consider the main lessons and unresolved issues in relation to both the Icelandic banking crisis and cross-border banking more generally.

- The risks in cross-border banking were underestimated, especially the cross-currency part.[10]
- The crisis had significant elements of a run on cross-border banking. In Iceland's case, a partial run on deposits in foreign branches and subsidiaries also contributed.
- Sizeable cross-border banking operations in small countries with their own currency are too risky.
- The EU architecture for cross-border banking is profoundly flawed, as it allowed free flow of capital and banking services with domestic safety nets and crisis management.
- Either we regress (de-globalisation and the death of branches) or we move towards EU supervision, deposit insurance, crisis management and resolution regimes for cross-border banks.

[10] Researchers at the BIS have done an excellent work in throwing light on this aspect. See for instance McCauley, Robert M. and Patrick McGuire, (2009). "Dollar appreciation in 2008: safe haven, carry trades, dollar shortage and overhedging", *BIS Quarterly Review,* December 2009; Baba, Naohiko, and Frank Packer, (2009). "From turmoil to crises: Dislocations in the FX swap market before and after the failure of Lehman Brothers", *Journal of International Money and Finance*, 28, 1350–1374; and McGuire, Patrick, and Götz von Peter, (2009). "The US dollar shortage in global banking and the international policy response", *BIS Working Papers*, No. 291.

- Key proposals (e.g., the De Larosière and Turner reports)[11] do not go far enough and do not measure up to the Icelandic experience (wrongly seen as primarily a supervisory failure, which it was only in part).
- Do we need a system of FX swap lines or an FX liquidity pool to provide insurance against a run on cross-border banking (as we have domestically through central bank liquidity provisions and LOLR)?
- The crisis showed that, when all is said and done, "banks are international in life, but national in death!"[12] Will reforms change this, or will we regress? The question remains open.

Concluding remarks

I told you in the beginning that this is a complex saga with many twists. I have only covered a small part of it. However, be sure that there is more to come. I am currently reading a newly published biography of Snorri Sturluson.[13] He and other Icelanders wrote about events that occurred here in Norway and Iceland, in some cases more than two centuries earlier. We might thus be writing about the Icelandic financial crisis for centuries as well! If history is any judge, then we are probably better at it than we were this time at managing, regulating and supervising a cross-border banking system. For the sake of all of us, let us at least hope so.

Thank you very much.

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[11] De Larosiére, Jacques (chair), (2009). *The High-Level Group on Financial Supervision in the EU*, Brussels, 25 February 2009. Financial Services Authority, (2009). *The Turner Review: A regulatory response to the global banking crisis*, March 2009

[12] This apt phrase is attributed to Mervin King, the Governor of the Bank of England.

[13] Gudmundsson, Óskar (2009). Snorri – ævisaga Snorra Sturlusonar 1179–1241 (e. *Snorri – the biography of Snorri Sturluson 1179–1241*). Forlagið – JPV útgáfa, ISBN-13: 978-9935-11-074-9.