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ALDO MUSACCHIO

Iceland (A)

All the fundamentals in our economy are there… in good shape

Geir H. Haarde, Prime Minister of Iceland, March 13, 2008.[1]

Most countries have folk tales of a Faustian character who defies the devil—but the Icelandic Faust, Sæmundur, is the only one to beat the devil. Whether it shows audacity, true genius or pure recklessness can be debated—but beating the devil now seems a small feat compared to fighting rumors and perceptions based on ignorance and investors' herd mentality.

Sigrún Davíðsdóttir, Icelandic writer and economist, March 31, 2008.[2]

In May of 2008, a team of analysts from Moody's, a ratings agency, considered Iceland. They had to decide whether to maintain Iceland's Aaa long-term sovereign bond rating (for foreign-currency debt), granted to only the highest grade debt, or downgrade the country's sovereign bonds to Aa1, or lower (see **Exhibits 2a** and **2b** for ratings). Investor sentiment toward Iceland had changed radically in March, and the Moody's team was fearful that the situation could spiral out of control.

In March 2008 the price of insuring Icelandic bank bonds against default had skyrocketed, and between March and April the Icelandic króna (ISK) exchange rate against the dollar had depreciated 13%. (See **Exhibit 4**.) In fact, by April 1, Fitch, a ratings agency, had revised its outlook on Iceland from "stable" to "negative," and on April 17th, S&P, another ratings agency, downgraded the long-term debt of Iceland from A+ to A (with a negative outlook).[3]

The concerns that emerged in March of 2008 threatened to become another in a series of crises to afflict the Icelandic economy. In 2006, an investor panic had caused Iceland's banks and other bond issuers to experience a liquidity crunch that led to sharply higher interest rates. The coordinated action of private banks, the Central Bank of Iceland, and the Chamber of Commerce appeased the panic, but in August 2007, the U.S. subprime mortgage crisis erupted unexpectedly, and investors in Icelandic assets became nervous again. The Moody's team knew that carry traders—investors looking to make a profit by taking advantage of Iceland's higher interest rates—increased Iceland's vulnerability to a confidence crisis because they were quick to liquidate their holdings at the first sign of distress.[4] Therefore, analysts at Moody's needed to figure out whether Iceland had enough liquidity to handle a crisis that could involve a run on Icelandic banks' branches abroad. Moreover, they had to read market sentiment and think carefully about Iceland's capacity to withstand such a crisis of confidence. (**Exhibit 1** shows the factors Moody's considers to rate sovereigns.)

The plunge in the ISK also forced the Icelandic people to confront a decision: would joining the European Union (EU) protect Iceland from capricious swings in investor sentiment? Iceland already enjoyed free access to European markets as a member of the European Economic Area (EEA). As a non-member it retained its autonomy with respect to monetary policy and its ability to protect its

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Professor Aldo Musacchio prepared this case with the assistance of Research Associate Jonathan Selter and Gudrun Urfalino Kristinsdottir from the Europe Research Center of Harvard Business School. HBS cases are developed solely as the basis for class discussion. Cases are not intended to serve as endorsements, sources of primary data, or illustrations of effective or ineffective management.

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fishing and energy sectors from foreign ownership. What, if anything, should Iceland do to avoid a future crisis?

The Icelandic Economy

In 874, Norwegian chieftains established the first permanent settlements on the island that would become Iceland. From 1262 until 1944, Iceland was part of the Norwegian, and later Danish, monarchies. In 1940, Allied forces invaded and occupied the island, and on May 20, 1944, the Icelandic people declared independence from Denmark. Iceland joined NATO in 1949 and agreed to host an American military base.[5]

On June 17, 1944, Iceland formally became an independent republic with an elected parliament, a prime minister and a president. In 2008 the 63 seats of the parliament were divided among five parties as follows: the Independence Party (25), the Left Green Movement (9), the Liberal Party (4), the Progressive Party (7), and the Social Democratic Alliance (18).

Iceland developed largely in isolation from the European continent, some 1000 miles away from the United Kingdom. A 2005 European Commission public opinion poll found that Icelanders valued independence highly, with 85% of Icelanders labeling independence as "very important" as compared to the European Union's average of 53%.[6]

In November 2007, the U.N. Development Program reported Iceland as the most developed nation in the world.[*] With a population of just over 300,000, Iceland also ranked as the fifth richest country as measured by GDP per capita (on a purchasing power parity (PPP) basis).[7] With few mineral resources, it capitalized on the extensive hydroelectric and geothermal power sources, which filled 70% of the nation's energy needs.[8]

The Cod Wars

Until the late 1990s, Iceland's economy had depended largely on fishing. Through the 1970s, Iceland and the United Kingdom faced off over the extension of Iceland's exclusive economic zone beyond its territorial waters. The conflicts, called the "Cod Wars" by the British press, escalated after the Icelandic Coast Guard cut the nets of British trawlers in what the British claimed was open sea. In order to protect its fishermen, Britain sent warships into the disputed waters in 1972. Ultimately, the British backed down and the Cod Wars ended with a victory for Iceland and with an agreement in 1976. In 2008 Iceland still protected its fishing sector from foreign investment.

After the 1980s, Iceland's dependence on fishing declined.[9] By 2001, fishing and marine products accounted for approximately 12% of GDP; by 2006, the share had fallen to 7%.[10] This decline was partly explained by the rise of aluminum production and banking as the most dynamic economic sectors.

Hydro and Geothermal Power

Because of Iceland's high volcanic activity and high levels of precipitation, hydro and geothermal energy was inexpensive compared to other countries. While most electricity for internal consumption was hydro, investment in geothermal power had increased to facilitate the production

[*] According to the rankings of the Human Development Index, which "provides a composite measure of three dimensions of human development: living a long and healthy life (measured by life expectancy), being educated (measured by adult literacy and enrolment), and having a decent standard of living (measured by purchasing power parity, PPP, income)." For more details on the methodology see the United Nations Human Development Report, available at http://hdr.undp.org/.

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of energy-intensive products such as aluminum. The Reykjanes geothermal power plant began producing energy in 2006 with two turbines producing 100 megawatts. Also in 2006, the Hellisheidi geothermal plant began generating power with two 90-megawatt turbines (with an additional 34-megawatts added in 2007).

Aluminum

Iceland's cheap electricity made it an attractive location for energy-intensive aluminum smelters (because electricity can account for 20% to 40% of the cost of producing aluminum). Tómas Már Sigurdsson, Managing Director of Alcoa Iceland, noted that "there is a good reason why we're here. Iceland has the glaciers and geothermal energy," and added that "we cannot export energy from Iceland, and we [Iceland] need only 5 megawatts… for internal consumption if we don't include industries. Thus we need to do something with the energy here in Iceland."[11] Most of the aluminum produced in Iceland was exported to Europe, duty-free. In 2007, aluminum made up 20% of Iceland's exports, very close to fishing's 30%. According to an IMF mission to Iceland, "[a]luminum-sector investment projects stimulated domestic demand, driving up the level of GDP by more than 20 percent over four years."[12]

Iceland's first aluminum smelter, ISAL, opened in 1969 and was owned by the Swiss company Alusuisse. By 1993, its capacity had tripled to 96,000 tons per year (tpy). In 1997, Alusuisse increased capacity once again, to 160,000 tpy.[*] The following year, Nordural, a wholly-owned subsidiary of the Canadian firm Columbia Ventures Corporation, launched a 60,000-tpy plant on the western coast. In 2001, the capacity of the Nordural plant reached 90,000 tpy.[13] Following Nordural's sale to the Century Aluminum Company, a $600 million expansion raised its capacity to 180,000 tpy in 2006.[14] In 2005 Alcoa, an American aluminum company, broke ground on the $1.25 billion, 346,000-tpy Fjardaral smelter near the town of Reydarfjordur.[15] Alcoa, like others, imported most of the capital equipment to build the plant and all of the alumina. The Fjardaral facility opened in 2007 and was expected to reach full capacity in early 2008. Alcoa expected to export at least $1 billion per year in 2008 (or more if prices continued their upward trend).[16] In 2008, Alcoa also started to develop a new $1.2 billion plant in Húsavík, northern Iceland.[17]

Expanding Abroad

In the late 1990s Prime Minister David Oddsson led Iceland through a series of reforms later known as the "Icelandic miracle." His government lowered taxes, cut the budget deficit, deregulated some sectors, and privatized state-owned enterprises. Between 1998 and 1999 state-owned banks were privatized. Domestic investors bought most of the banks because foreigners feared "the fluctuations in the króna exchange rate."[18] Skarphéðinn Berg Steinarsson, CEO of Landic Property and formerly charged with managing the bank privatizations for the Ministry of Finance, explained that "we never expected the privatization of banks to generate such a boom."[19]

Newly privatized Icelandic banks expanded rapidly. Lárus Welding, CEO of Glitnir Bank, commented that the expansion of the banking sector took off after 2001. "Icelandic companies were well capitalized, served a small home market, and thus expanded abroad to take advantage of the favorable international environment. The Icelandic banks supported this development, providing financing and solutions to their clients, and expanding internationally at the same time."[20] According to one of the governors of the Central Bank of Iceland, "banks sharply stepped up their activities outside Iceland by acquiring foreign financial companies and establishing branches. These radical changes [were] reflected in the growth of the three largest Icelandic banks' total assets from 96% of

[*] In 2000, Alcan, the Canadian conglomerate, acquired Alusuisse. Alcan was later acquired by Rio Tinto (in late 2007).

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GDP at the end of 2000 to roughly... [400% of GDP] at the end of 2006." Kaupthing Bank, Iceland's largest by assets, acquired Aragon and JP Nordiska (Swedish brokerages), Tyren (a Norwegian asset management company), Norvestia (a Finnish investment company), A. Sundvall (a Norwegian brokerage and research firm), FIH (a Danish bank), Singer & Friedlander (a British integrated financial services company), and the Belgian operations of Robeco Bank. Glitnir Bank also expanded into other Scandinavian countries, buying Kreditbanken, BN bank, and Norse Securities in Norway, and purchasing investment firm Fischer Partners in Sweden and the Asset Management company FIM in Finland.

Flexible at Home

Iceland followed the economic model of other Nordic nations by having both a market economy and an extensive welfare state, although it maintained tight control over spending and took on relatively little public debt. (See **Exhibit 15**).[21] Life expectancy at birth in Iceland was 81.5 years in 2007, the third highest in the world after Japan and Hong Kong.[22] Additionally, at the end of 2007, the fully-funded pension system of Iceland had assets worth almost 130% of GDP.

According to most executives, an important characteristic of the Icelandic economy was its flexibility. Despite downturns in 2001 and 2006, unemployment remained low, fluctuating between 1% and 3.5% since 1998. Thordur Fridjonsson, President of Nasdaq OMX, Iceland's stock exchange, commented "we have a flexible economy used to volatility. We can control unemployment by reducing immigration in downturns or increasing it in upturns. We can also decrease the number of hours worked and we can control our overtime pay."[23] Friðrik Már Baldursson, professor of economics at Reykjavik University, supported this: "We have a flexible economy. Real wages have come down after the exchange rate depreciates; that is, we have inflation and a fall in real wages but we do not have unemployment." From Baldursson's point of view Iceland had "fairly lenient labor laws compared to many European countries. Costs of hiring and firing are low." In addition, low social benefit levels provided incentives to find work. "In fact, people out of work were stigmatized as lazy, the most terrible of sins in Iceland."[24] (See **Exhibit 9.**)

Exchange Rate Regimes and Inflation

Iceland's good fortunes were built on external funding, as foreign capital financed aluminum, hydro and geothermal energy projects, and financial-sector expansion. Iceland's aluminum-fueled economic expansion came at the cost of sizeable macroeconomic imbalances. According to the report of the 2007 IMF mission to Iceland, "[r]ecord imbalances [i.e., a large current account deficit] built up during the boom,"[25] reflecting the "unsustainable pace of domestic demand."[26] Nevertheless, this was not the first time that macroeconomic imbalances had threatened the health of Iceland's economy.

2001: An Exchange-Rate Odyssey

In the 1980s, Iceland's annual rate of inflation averaged more than 40%. In 1990, the country introduced an anti-inflation plan based on centralized wage bargaining, inflation targeting by the Central Bank, and a fixed exchange rate (pegging the króna to a basket of currencies).[27] Inflation fell below 7% in 1991.[28] By early 2001, however, aluminum-related capital inflows fueled inflationary pressures. The three governors of the Central Bank faced a tough choice. They could maintain the fixed exchange rate and risk increased inflation, or they could abandon the fixed exchange rate. Iceland faced a classic case of the "unholy trinity" (or "the trilemma"), according to which a nation cannot simultaneously have (1) free capital movement, (2) an independent monetary policy and (3) a fixed exchange rate.[29]

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An IMF mission recommended that the Central Bank of Iceland abandon its fixed exchange rate and move to a monetary policy of inflation targeting. On March 27, 2001, in the face of mounting pressures, the Central Bank of Iceland heeded the IMF's advice. The exchange rate depreciated significantly until November. After November of 2001 the exchange rate appreciated rapidly and Icelandic authorities began to fear that with aluminum-sector growth forcing the króna to appreciate, other industries that competed with imports would suffer (See **Exhibit 9**).

Missing the Target

In 2001 the IMF mission to Iceland was confident that floating the króna would help control inflation, but it was "less confident about the prospects of achieving…a soft landing."[30] Both predictions, however, were incorrect. The transition to a floating exchange rate had little discernable effect on Icelandic growth, and Fitch noted that "Iceland engineered a remarkable soft landing in 2001-02 following a period of overheating and credit boom."[31] Inflation, however, still overshot the Central Bank of Iceland's inflation target of 2.5% per year (See **Exhibit 9**).

By June 2005, the OECD noted that, as a result of large capital inflows, "the [Icelandic] economy [was again] overheating."[32] Despite inflation targeting and a floating exchange rate, the board of governors of the Central Bank again faced the problem of "overheating" related to the rapidly expanding aluminum sector, with the largest investment yet to come. Alcoa's 2005 investment in the Fjardaral smelter represented a capital inflow of over $3,600 per inhabitant. This time, however, the Central Bank had an independent monetary policy at its disposal.

The Central Bank of Iceland's main tool to manipulate interest rates was its collateral loan agreement with credit institutions. The interest rate the central bank charged for 7-day loans to domestic banks based on collateral they provided was referred to as the policy rate. Over the period from May 2004 to April 2008 the policy rate was raised from 5.3% to 15.5%. Nevertheless, the central bank failed to keep inflation under the 2.5% inflation target. Arnór Sighvatsson, Chief Economist of the Central Bank of Iceland, noted that "we've had an unusual period. The aluminum and energy sector investments over the last few years were extremely large. At the same time the banking sector was privatized, the restrictions on housing loans by the Housing Finance Fund (HFF) were lifted, and income and consumption taxes were lowered."[33]

Sighvatsson and the IMF mission identified Iceland's Housing Finance Fund (HFF) as one of many obstacles to controlling inflation. In 1999, the HFF had replaced its predecessor, the State Housing Board. The HFF provided housing-related loans to individuals, companies, and local governments. It financed its loans through government-guaranteed inflation-indexed bonds denominated in Icelandic króna. Unsurprisingly, by 2008 the HFF held a 44% share of the Icelandic mortgage market and was an important instrument of the government to get voter support.

The central bank's policy rate had little influence over a large swathe of the Icelandic credit market for three reasons. First, because the HFF funded its mortgage lending via long-term bond issues guaranteed by the government (thus with a Aaa rating), the policy rate did not affect the interest rates on the HFF mortgages.[34] Second, since the mortgage rates charged by private banks used the HFF rates as a benchmark, the Central Bank's monetary policy was also not very effective.[35] Finally, as mortgage lending increased so did housing prices and since households were allowed to borrow against the equity of their homes, private consumption also accelerated rapidly during the upswing of housing prices.[36]

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Carried Away

The activities of the HFF were not the sole source of problems for the Central Bank. Iceland's involvement in the international carry trade undermined monetary policy. "Carry traders" borrowed money in a country with low interest rates and invested it in a currency that offered higher yields. Economic theory dictated that in the long run, the carry trade could not be profitable; gains on interest rate differentials should ultimately be offset by exchange rate depreciation. Despite economists' predictions, however, the magnitude of the interest rate gap that persisted between Japan and Switzerland and countries such as Latvia, Hungary, or Iceland attracted a robust carry trade. The carry traders' biggest risk was a sudden depreciation of the currency in which they were investing relative to the currency in which they were borrowing. Thus some carry traders also invested in financial instruments to hedge against currency depreciation.[37] International investors were not the only actors to engage in the carry trade. Domestic residents of economies with high interest rates could also borrow abroad to take advantage of the interest arbitrage opportunities.

Because Iceland was a developed country with highly efficient financial markets, it became a prime target for "carry traders," who invested in everything from central government debt to commercial paper to housing bonds issued by the HFF. Icelandic banks themselves had engaged in the carry trade, exploiting the spread between domestic and foreign rates to fund their rapid expansion. The banks, and in particular the three largest banks, used a series of financial transactions and the issuing of so-called Glacier bonds to finance their growing balance sheets.[*]

The *Monetary Bulletin* of the Central Bank of Iceland argued that low global interest rates meant that the carry trade partly offset the impact of high domestic interest rates.[38] Increases in Iceland's policy rate caused Icelanders to borrow abroad in foreign currencies, replacing expensive domestic credit with cheaper foreign capital. As a result, domestic demand remained resilient despite rising interest rates. Moreover, according to Arnór Sighvattson, since banks in Iceland could not compete with the low rates of the HFF, they lent to households in euros and Swiss francs. [39]

The 2006 Near-Crisis and Onwards

In early 2006, the chairman of the board of governors of the central bank, David Oddsson, had the unenviable opportunity to prove that he could guide the economy through a shock to the financial system. On February 21, 2006, Fitch revised the outlook on Iceland's sovereign rating from "stable" to "negative" because there was a "rise in net external indebtedness" that "reached unprecedented proportions and…occurred in the context of clear signs of domestic credit and asset price bubbles." In Fitch's view, Iceland would face a crisis as it was forced to correct those imbalances.[40] Fitch's announcement proved to be a self-fulfilling prophecy. A precipitous drop in demand for the króna caused it to depreciate more than 16% between February and March, which further reduced the confidence of international investors. Exchange rate instability continued throughout the first half of the year. Observers worried that Icelandic banks would not be able to refinance their bond issues. (See **Exhibit 10, 11a, 11b, 12, 14A** and **14B**).

[*] Glacier bonds are denominated in Icelandic króna. They are issued by Aaa-rated financial institutions in Switzerland, Austria, Germany, Canada, and other places and sold to retail investors outside of Iceland. These investors buy debt that pays a high return (slightly lower than the interest rate prevailing in Iceland) and are backed by the Aaa rating of the issuing institutions. Since the buyers of these bonds face currency risk because the bonds are denominated in króna, some of them buy swaps to hedge against currency depreciation. Once foreign financial institutions have issued these bonds, they lend the funds to Icelandic banks and companies below the cost of capital in Iceland, but above the interest rate that retail investors in Europe receive for holding Glacier bonds.

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Fortunately, the Icelandic financial system proved its robustness, and the Central Bank shepherded the economy through the brief period of uncertainty. Richard Portes and Friðrik Már Baldursson, wrote that "the 'mini-crisis' of 2006 was an informational crisis"[41] in which "negative coverage of the banks and Icelandic economy … temporarily erod[ed] international investors' confidence."[42] After the crisis, Icelandic banks increased their capital ratios, liquidity, and their funding through domestic and foreign deposits.

Financial Instability after 2006

After 2006, however, Icelandic banks, citizens, and corporations continued to borrow heavily abroad to take advantage of the spread between domestic and foreign interest rates. On the other side, international carry traders stood ready to lend. With such easy access to international credit, Iceland had become the most highly leveraged economy in the rich world.[43] By the end of 2007, total external debt stood at 549% of GDP, and the external debt of Icelandic banks alone presumably totaled more than 400% of GDP. According to the chief economist of Danske Bank, "Iceland [looked] worse on almost all measures than Thailand did before its crisis in 1997, and only moderately healthier than Turkey before its 2001 crisis."[44] Moreover, there was no information on the breakdown of the external debt by type of currency (e.g., a large part of the debt was presumably in Icelandic króna). Yet Almar Gudmundsson, Head of Macro and Credit Strategy of Glitnir Bank, explained "As the Icelandic banks have their headquarters in Iceland, they are considered fully Icelandic for the national accounts, even if a lot of assets and liabilities are for...non-Icelandic businesses. This is why the external accounts are so inflated---the complete balance sheets of the banks are involved. There aren't many countries like this in the world..."[45]

The highly-leveraged financial sector was Moody's chief source of concern.[46] With such vast amounts of foreign capital flowing into the banks, observers began to question the quality of the new assets acquired by Icelandic banks. The IMF noted that "the rapid pace of credit growth suggest[ed] that credit quality could [be] a concern in the event of a sharp domestic downturn."[47] Because of the banks' extremely leveraged positions, any increase in non-performing loans could cause the banks to default on their debt. Yet Jónas Fr. Jónsson, Director General of the Financial Supervisory Authority of Iceland, pointed out that when looking at credit growth and loan quality, one had to keep in mind that the loan portfolio of the Icelandic banks was highly diversified and asserted that "the banks' expansion abroad has pre-dominantly been towards wealthy western economies. About 58% of the banks' income comes from abroad and 55% of loans are made to foreign parties." Also, "historically there has been a low default rate in the Icelandic mortgage market."[48]

In fact, as investors became more risk averse in early 2008 Icelandic banks had a hard time continuing to raise money through new debt. Nevertheless, bankers argued that the financial system was well-placed to withstand the credit crunch. Almar Gudmundsson said that "the leverage of Icelandic banks and the maturity structure of our debt are similar to that of other European banks. Additionally we have enough liquidity to survive 1 to 2 years without new debt issues."[49] (see **Exhibit 11a** and **11b** for the maturity structure of bank debt.**)** Thordur Palsson, Managing Director of Business Development of Kaupthing Bank, maintained that Kaupthing had "liquidity provisions for more than a year" and "did a private placement of debt of €1.3 billion and we are selling some non-core businesses in [the] UK to increase our liquidity."[50]

After 2006, Icelandic banks made concerted efforts to increase deposits as an alternative source of financing. Nevertheless, because Iceland's population was only 300,000, banks focused on increasing their deposits from overseas. In the January report on Iceland, Joan Feldbaum-Vidra, from Moody's stated that "the fact that most of the new deposits [were] in countries other than Iceland may mean that they would more likely be withdrawn in the improbable but possible event of a confidence crisis

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affecting the Icelandic banks."[51] Professor Friðrik Már Baldursson remarked that "in 2006 the banks were blamed for relying on wholesale funding [i.e., issuing bonds] and thus increased deposits. Now they are blamed for having too large deposits abroad. At least with bonds you can know the term structure, but with internet banking it is hard to foresee when depositors will withdraw their money."[52] The risk of an electronic bank run was latent for Kaupthing's operations in England, where in September of 2007 customers of Northern Rock, a British bank, did a run on deposits using the internet.

After the 2006 crisis economists worried that, "If the crisis developed into a wider banking sector crisis, it would probably force the government to assume some of the increased debt burden from the banks."[53] According to a Moody's estimate, in the worst case scenario, a run on deposits outside of Iceland in 2008 would require the Icelandic government to orchestrate a bailout. A run on Icelandic banks could require an intervention of $10 billion in liquidity to pay depositors abroad (in foreign currency). Since the government only had $2.4 billion in foreign exchange reserves and another $1bn from ready credit lines, this was a problem. Given that most of the overseas deposits were other Nordic countries, on May 16th the central banks of Norway, Sweden, and Denmark officially agreed to extend a credit line to the Central Bank of Iceland for up to $2.25 billion to promote financial stability. Moreover, the cost of recapitalizing the banking system and securing credit lines for the initial bailout of Icelandic banks could increase the government's debt burden by $6 to $7 billion.[54] (See **Exhibit 7** and **15.**)

The Debate around EU Accession

Icelanders are proud and independent people. We don't like to be told what to do. But is it possible that now when we are economically challenged we are more willing to run to mama?"

Svafa Grönfeldt, President of Reykjavík University.[55]

As the confidence of investors turned against Iceland in early 2008, executives and politicians began a serious discussion of the advantages of joining the European Union. Iceland was a founding member of the European Economic Area (EEA) in 1994. In return for free access to the EU's internal market, Iceland had had to adopt a significant portion of European law, without any input into how those laws were formed. As a result, however, Iceland would not have to make many future reforms in order to join the EU. Jónas Fr. Jónsson, Director General of the Financial Supervisory Authority of Iceland, explained, "Our legislative framework is very similar to that of other European countries. We are already there."[56]

Some Icelandic executives worried that the existence of a separate currency for such a small country forced companies to pay a higher cost of capital. Skarphéðinn Berg Steinarsson, CEO of Landic Properties, stated that it was "hard to explain to foreign banks that the Icelandic króna is not a risk of significance because we operate in many countries, but in times like this bankers don't like to take any currency risk."[57] Thórður Pálsson, Managing Director of Business Development of Kaupthing Bank, added, "The main problem is not having the ISK [króna] as a currency in a small country, [but] the problem is credibility. The ISK is not like the Swiss franc, an acceptable currency. The ISK has lost value many times and that is why nobody believes in it."[58] According to some executives it would be easy for other Icelandic companies to have accounts in euros. For example, Actavis, a pharmaceutical company, switched its accounting to euros in 2004 and had an easier time getting syndicated loans from European banks.

Iceland could eliminate exchange rate risk by unilaterally adopting the euro, much as Montenegro adopted the German mark in 1997 (and later the euro). Unilateral adoption without joining the EU posed two problems. First, according to Almar Guðmundsson, Head of Macro and

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Credit Strategy of Glitnir Bank, by joining the EU Icelandic banks would have access to credit from the European Central Bank (ECB) (e.g., short-term collateralized loans). Second, in February of 2008, Jürgen Stark, from the ECB's executive board, warned that "the ECB would neither encourage nor facilitate" unilateral euroization in Iceland. Yet the consequences were not clear.[59]

Becoming a full member of the EU, however, posed political costs. The Icelandic government valued the right to protect some fishing, agriculture, and geothermal energy from foreign competition and investment. The biggest fear for many Icelanders was that EU accession would imply that the government could assign initial fishing quotas, but nothing would prevent Icelandic fishing companies from selling those rights to foreign companies. Given that Icelandic fishing companies supported the Independence Party, the strongest party in parliament since 1944, there was strong political opposition against EU accession.

Joining the EU also entailed loss of sovereignty in two other ways. First, the country would lose its *de jure* monetary policy autonomy if it joined the euro. Second, since it is a relatively developed country, it would have to contribute funds to the EU to make transfers to poorer countries. The former Prime Minister, David Oddsson, from the Independence Party, summed up the opposition to joining the European Union when he said, "EU membership would limit our independence, deprive the nation of the control over its natural resources, increase public expenditures and bureaucracy, and lead to a situation that would be less economically beneficial for the country. As a result, the Independence Party thinks that EU membership would not serve the interests of the Icelandic nation in the present situation."[60]

There was no consensus among political parties regarding EU accession though. Prime Minister Geir H. Haarde declared that the Social Democratic Alliance and the Independence Party had different views on the matter of EU membership. According to Haarde, the Social Democratic Alliance wanted to apply for membership but not the Independence Party. Given the agreement between the leadership of both parties as part of the ruling coalition in parliament, Haarde asserted that "the government would not apply for EU membership, as it was not on the coalition's agenda." Moreover, it was not clear whether Iceland could meet the criteria required to adopt the euro. (See **Exhibit 16** outlining the criteria to join the European Monetary Union.**)**

The Art of Sovereign Debt Ratings

With the revival of the international markets for sovereign debt in the 1990s, rating agencies began to play a central role in the international financial architecture. Because of the way financial regulation was structured in the United States and Europe, banks and investment funds depended on the job of rating agencies to determine the riskiness of their portfolios. As financial market integration deepened, the job of rating agencies became more complex. "The agencies could not rate the firms without rating their sovereigns first, because of the sovereign ceiling [i.e., firms are usually not more credit worthy than the government of their home country]."[61] Occasionally, however, in some countries, companies that earned most of their revenues in foreign currency had ratings above those of the government.

In 2008, there were two dominant rating agencies, Moody's and S&P, both rating most of the securities traded in international markets (Fitch had a small share of the market). These rating agencies developed a rating scale to inform investors of the relative probabilities of default of sovereigns and companies. (**Exhibit 2a** shows the sovereign rating scales of Moody's and S&P.) Finally, ratings were not absolute, but only relative measures of default risk. A country with a Aaa rating was less likely to default than a country with a Aa1 rating. Yet, within a range of creditworthiness, comparisons of credit metrics were also important. For instance, an Aaa country

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with a debt to GDP ratio substantially higher than those of other Aaa-rated countries was likely to be downgraded by the rating agencies.[62]

In describing the special nature of sovereign ratings, a Moody's official wrote that rating sovereigns requires a combination of quantitative skills with "sensitivity to historical, political, and cultural factors that do not easily lend themselves to quantification."[63] The list of economic fundamentals that were involved in the analysis of a sovereign was long, but was not supposed to be used in isolation from the context (see **Exhibit 1**). Moreover, one of the most important considerations when rating a sovereign was not only what the government was doing, but also what investors and other rating analysts were thinking.

2008: A Storm Brewing?

In March 2008, the króna plunged (See **Exhibit 4**). Fitch and Moody's placed Iceland on negative watch arguing that "in the current climate of intense global risk aversion" there were concerns about "Iceland's heightened vulnerability to market sentiment in the light of its large gross external financing need (mostly due to banks), its wide current account deficit, and rising net external indebtedness."[64]

In response, Daniel Svavarsson, an economist at the Central Bank of Iceland, claimed that Iceland's imbalances were greatly exaggerated. He agreed that Iceland's gross foreign debt stood at five times GDP and that the country's net international investment position (i.e., the value of foreign assets held by Icelanders minus the value of liabilities of Iceland to foreigners) stood at *negative* 125% of GDP. He disagreed, however, that these were useful measures. Iceland recorded FDI at book value while recording other liabilities and assets at market value. If inward and outward FDI were marked to market, Iceland's net international investment position would fall to only negative 27% of GDP. By the time the English translation of Svavarsson's arguments came out, S&P had already downgraded the "long-term foreign currency [debt] rating on the Republic of Iceland" from A+ to A (with a negative outlook).[65] (See **Exhibit 2a**).

In order to rate Iceland's sovereign debt, the Moody's team had to take into account Iceland's international economic position, the outlook for the country's major industries, the reactions of participants in the carry trade, the health of the banking system, political factors, and S&P's decision to downgrade the long-term debt of Iceland. (See **Exhibit 1** for the list of factors considered by Moody's analysts.) On the evening of May 19th the Moody's team met to make a decision regarding the sovereign rating of Iceland's long-term sovereign debt. Should they downgrade Iceland's sovereign rating?

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Exhibit 1 Moody's Criteria for Evaluating a Sovereign's Outlook

Main categories Moody's considers to rate sovereigns	Some of the main metrics used to rate sovereigns
Economic structure and performance	GDP, GDP per capita, population, GDPin US$ (PPP), GDP growth, inflation, unemployment, gross investment to GDP, gross domestic savings to GDP, exports, imports, net exports, openness of the economy (exports+ imports of goods and services/GDP)
Fiscal indicators	Government revenue to GDP, government expenditures to GDP, fiscal balance to GDP, primary balance to GDP, government debt to GDP, government debt to government revenue
External payments and debt	Real effective exchange rate, unit labor costs, current account balance to GDP, foreign currency debt, foreign currency debt to GDP, foreign currency debt to current account receipts, net foreign direct investment, net international investment position, official exchange reserves (in US$)
Monetary vulnerability and liquidity indicators	Short-term interest rate, domestic credit to GDP, changes in M1 and M2, debt service ratios, external vulnerability indicator (short-term external debt + currently maturing long-term debt / official foreign exchange reserves), and others…
Political and cultural factors	"[Q]uantitative metrics do not tell the whole story. Governments rated Aaa are also generally extremely wealthy, with high and relatively even per capita income and low economic volatility." In fact, "relatively low income dispersion is an important determinant of the political and social cohesion that is the essence of a Aaa-rated country, a characteristic that tends to unite the population in a crisis and drives them to find a solution that serves the greater good of society."
Capacity to absorb the shock of banking crisis and bail outs	When facing a banking crisis, Moody's looks at the capacity the sovereign has to absorb the bailout of the banking system without driving the debt metrics of the country out of line with those of other Aaa countries. For instance, when bailing out the banking system, the change in government debt to GDP should not worsen in comparison to peer Aaa-rated countries.

Source: Adapted from Moody's, *Moody's Rating Methodology Handbook,* April 2002 and Moody's, "Anchors in the Storm: Aaa Governments and Bank Bail-Outs," March 2008.

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Exhibit 2a Ratings for Iceland's Long-Term Foreign-Currency Sovereign Debt

	Moody's Sovereign Rating /outlook
5-Mar-08	Aaa/Negative
21-Oct-02	Aaa
20-Jul-97	Aa3
16-Jun-97	A1/Possible upgrade
24-Jun-96	A1
10-Apr-96	A2/ Possible upgrade
24-May-89	A2

	S&P Sovereign Rating /outlook
1-Apr-08	A+ / Negative
20-Nov-07	A+ / Negative
22-Dec-06	A+ / Stable
5-Jun-06	AA- / Negative
10-Feb-05	AA- / Stable
16-Dec-03	A+ / Positive
15-Nov-02	A+ / Stable
22-Oct-01	A+ / Negative
21-Mar-01	A+ / Stable
27-May-98	A+ / Positive
15-Mar-96	A+ / Stable

Exhibit 2b Moody's Ratings for the Long-Term Foreign-Currency Debt of Icelandic Banks

Landsbanki		Glitnir		Kaupthing*	
Date	Moody's Rating/watch	Date	Moody's Rating/watch	Date	Moody's Rating/watch
14-Mar-2008	A2 / Negative	Mar-2008	A2 / Negative	Feb-2008	A1
28-Feb-2008	A2	Feb-2008	A2	Apr-2007	Aa3
30-Jan-2008	Aa3 / Negative	Jan-2008	Aa3	Feb-2007	Aaa
10-Apr-2007	Aa3	Apr-2007	Aa3	Nov-2004	A1
3-Apr-2007	Aaa / Negative	Feb-2007	Aaa	Dec-2003	A2
24-Feb-2007	Aaa	May-2003	A1	May-2003	A3
7-Mar-2005	A2	May-2000	A2		
14-May-1999	A3	Jan-1999	A3		

Source: Adapted from Moody's, "Iceland," April 2008 and S&P Ratings Direct, available at www.ratingsdirect.com. Bank ratings from the bank web pages, www.glitnirbank.com, www.kaupthing.com, and Bloomberg.

Note: For Moody's, long-term sovereign debt and corporate debt is categorized from highest grade to lowest grade as Aaa, Aa1 ,Aa2, Aa3, A1, A2, A3, Baa1, Baa2, Baa3, Ba1, Ba2, Ba3, B1, B2, B3, Caa1, Caa2, Caa3, Ca, and C. Sovereign and corporate bonds categorized as Baa3 and above are investment grade. For S&P long-term debt is categorized from highest grade to lowest grade as AAA, AA+, AA, AA-, A+, A, A-, BBB+, BBB, BBB-, BB+, BB, BB-, B+, B, B-, CCC+, CCC, CCC-, CC, C, and D. Sovereign and corporate bonds rated as BBB- and above are investment grade.

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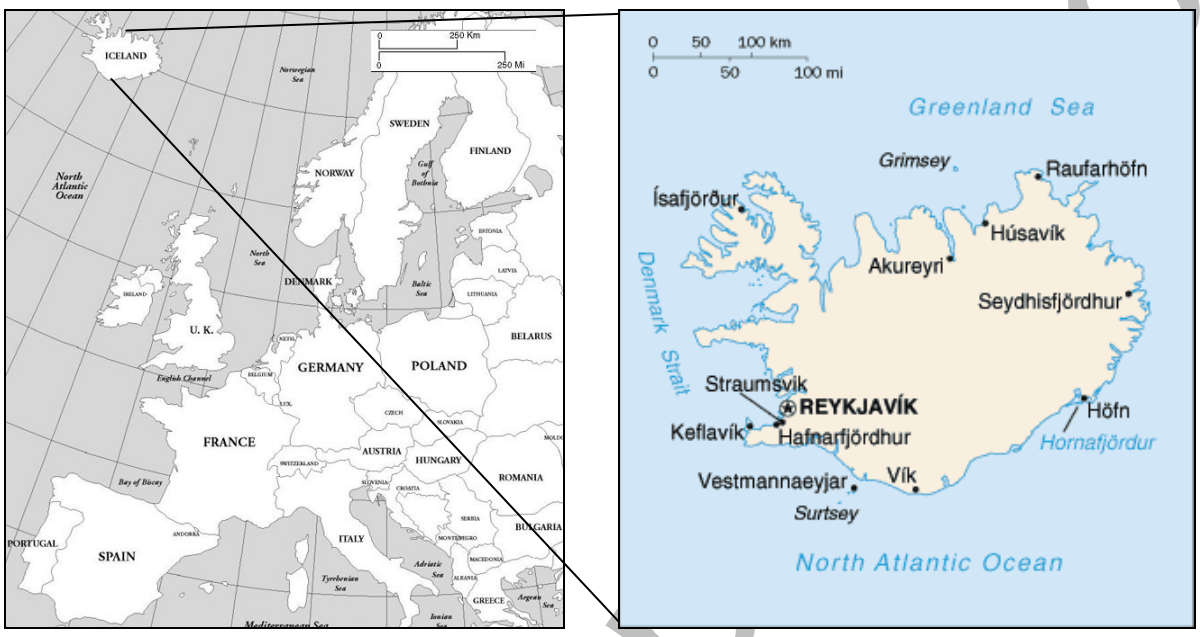
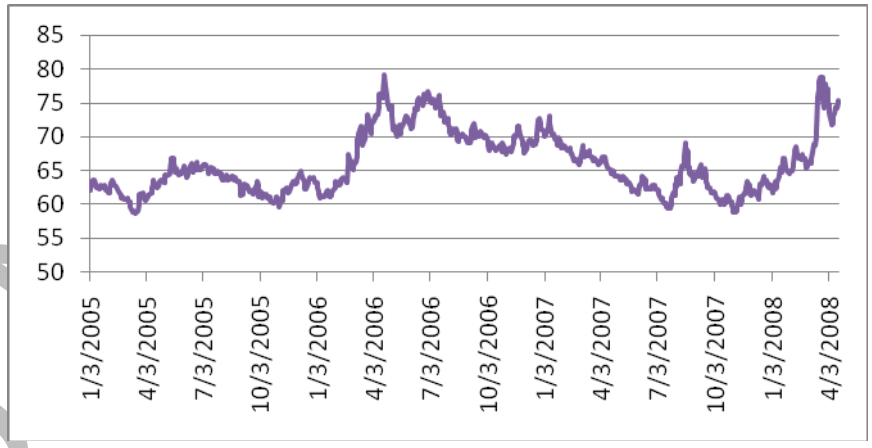
Exhibit 3 Maps of Europe and Iceland



Source: Courtesy of the University of Texas Libraries, The University of Texas at Austin.

Note: Iceland is approximately 1,000 miles away from the United Kingdom.

Exhibit 4 Exchange Rate (ISK per US$, end of the month), January 2005 to April 2008



Source: Adapted from Global Financial Data.

Note: An increase in the exchange rate (ISK per US$) represents a depreciation of the Icelandic króna (ISK).

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Exhibit 5 Iceland's GDP by Sector (% of total GDP)

	1970	1980	1990	2000	2006
Agriculture, hunting, forestry and fishing	10.5	10.6	10.1	7.2	5.2
Agriculture, hunting, and forestry	*4.7*	*3.9*	*2.8*	*1.9*	*1.4*
Fishing	*5.8*	*6.8*	*7.3*	*5.3*	*3.8*
Industry, including energy	32.8	32.9	28.7	23.8	20.6
Mining and quarrying	*0.1*	*0.2*	*0.1*	*0.2*	*0.1*
Manufacturing	*30.2*	*29.6*	*25.4*	*20.7*	*17.6*
Electricity, gas, and water supply	*2.4*	*3.2*	*3.2*	*2.9*	*2.9*
Construction	14.1	11.8	11.7	10.2	12.6
Wholesale and retail trade, hotels, and restaurants	22.0	20.9	20.2	23.1	22.1
Financial, real-estate, and renting	10.0	11.3	13.0	15.4	20.6
Financial intermediation	*2.2*	*3.2*	*3.8*	*4.2*	*6.3*
Real estate and renting	*7.8*	*8.1*	*9.1*	*11.2*	*14.3*
Other service activities (incl. healthcare)	10.7	12.5	16.3	20.3	18.8

Source: Adapted from the webpage of the National Statistical Institute of Iceland, April 3, 2008, available at http://www.statice.is/.

Exhibit 6 Iceland's Population and Labor Force Distribution

	1998	**2000**	**2002**	**2004**	**2006**	**2007**
Population (millions)	0.28	0.28	0.29	0.29	0.31	0.31
Employment by Sector (as a % of labor force)						
Agriculture	4.4	4.4	3.8	3.5	3.8	3.4
Fishing and Fish Processing	9.2	8.2	7.5	6.4	5.0	4.2
Manufacturing	11.8	11.2	10.2	10.6	9.5	9.2
Electricity and Water Supply	1.0	0.8	1.0	1.0	0.9	1.0
Construction	7.4	6.7	7.8	7.4	8.7	8.9
Wholesale, Retail Trade, Repairs	13.9	14.0	13.7	12.7	13.9	14.3
Hotels, Restaurants	3.0	4.1	3.5	3.4	3.6	3.5
Transport, Communication	7.3	6.8	6.2	6.9	7.1	6.3
Financial Intermediation	3.2	4.2	3.9	4.4	4.3	4.9
Real Estate and Business Activities	6.4	8.3	8.5	9.3	9.0	9.7
Public Administration	4.7	4.5	5.0	4.8	5.2	5.0
Education	6.5	6.3	8.1	7.8	7.5	7.6
Health Services, Social Work	14.0	13.2	13.8	14.7	15.0	14.7
Other	7.2%	7.3%	7.1%	7.2%	6.7%	7.1%

Source: Adapted from the webpage of the National Statistical Institute of Iceland available at http://www.statice.is/.

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Exhibit 7 Selected Economic Indicators of Countries with a Aaa Sovereign Rating from Moody's (at the end of 2007)

Country	Nominal GDP, US$ bn (PPP)	GDP Per Capita, US$ (PPP)	Average Real GDP Growth (1998-2007)	Government Revenue as a % of GDP	Government Expenditure as a % of GDP	Government Debt to GDP (%)	Government Debt Service to Revenue (%)	Current Account Balance as a % of GDP	Public + Private External Debt as a % of GDP	Global Competitiveness Index [a]	Government Effectiveness Index [b]
Iceland	13	41,824	4.4	43.2	44.6	29.4	5.4	-15.6	500.2	5.02	2.13
Australia	758	37,098	3.5	34.9	34.0	14.3	2.3	-5.2	86.8	5.17	1.94
Austria	318	38,192	2.4	47.3	48.0	58.4	5.3	5.3	203.9	5.23	1.62
Canada	1,266	38,459	3.3	39.6	39.0	64.9	2.8	0.8	47.0	5.34	2.03
Denmark	203	37,306	2,0	59.2	49.8	22.2	3.2	1.5	153.8	5.55	2.29
Finland	185	35,368	3.6	51.2	47.4	33.1	2.9	5.9	117.7	5.49	2.08
France	2,051	33,273	2.3	50.2	52.8	64.1	5.2	-2.3	183.3	5.18	1.20
Germany	2,807	33,993	1.5	43.2	43.3	62.6	6.2	5.8	147.2	5.51	1.52
Ireland	186	43,383	6.6	36.3	36.6	26.9	2.5	-4.4	824.6	5.03	1.53
Japan	4,284	33,610	1.2	31.7	35.2	184.3	9.0	4.0	37.2	5.43	1.29
Luxembourg	38	82,304	5.3	38.3	37.2	6.0	0.5	12.7	n.a.	4.88	1.73
Netherlands	640	38,763	2.5	47.9	47.4	44.8	4.6	7.5	319.1	5.40	1.86
New Zealand	113	26,613	3.3	43.0	40.7	23.0	n.a.	-6.6	n.a.	4.98	1.94
Norway	250	53,304	2.5	52.6	38.4	50.6	2.6	11.4	117.3	5.20	2.10
Singapore	187	41,680	5.2	14.1	14.5	39.8	0.3	22.8	n.a.	5.45	2.20
Spain	1,351	29,900	3.8	40.0	38.7	34.6	3.8	-9.6	148.5	4.66	1.05
Sweden	336	36,631	3.2	51.8	39.7	36.2	3.4	6.2	n.a.	5.54	2.00
Switzerland	300	39,649	2.0	36.8	35.8	44.5	4.1	15.0	336.5	5.62	2.13
United Kingdom	2,137	35,050	2.9	41.0	44.0	44.8	4.9	-3.5	416.4	5.41	1.83
United States	13,841	45,818	2.9	34.0	36.8	63.2	6.5	-4.7	82.4	5.67	1.64

Source: Adapted from Moody's (www. moodys.com), the Economist Intelligence Unit, *Country Data*, the International Monetary Fund, International Financial Statistics, the World Economic Forum web page (www.weforum.org), and the World Bank's Governance Indicators web page (http://info.worldbank.org/governance/wgi2007/).

[a] The Global Competitiveness Index (from the World Economic Forum's Global Competitiveness Report) ranks countries according to publicly available data and using the results of an Executive Opinion Survey (with over 11,000 respondents in 131 countries). The Global Competitiveness Index scores countries along institutional, development, and macroeconomic variables. The index goes from 0 to 7, with 7 representing the highest rating (the United States is the most competitive country according to this index with a score of 5.67).

[b] The Governmental Effectiveness Index is compiled by the World Bank. It combines responses on the quality of public services and the bureaucracy that provides them, the competence and political independence of civil servants, and the credibility of the government's commitment to its policies. Since the index is normalized all countries are rated from -2.5 to 2.5, with 2.5 given only to the most effective of governments.

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Exhibit 8 Iceland's GDP and its Components

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Real GDP (in US$ mn, 2005 prices)*	12,174	12,672	13,220	13,737	13,753	14,088	15,179	16,251	16,942	17,498
Nominal GDP (US$ mn)	8,292	8,743	8,697	7,922	8,906	10,970	13,241	16,251	16,567	20,043
Real GDP Growth (% pa)	6.32	4.09	4.32	3.91	0.12	2.43	7.75	7.06	4.25	3.28
Components (as a % of nominal GDP)										
Private Consumption	58.1	59.9	60.6	56.2	54.9	57.2	57.1	59.5	58.7	58.4
Government Consumption	22.2	22.9	23.4	23.6	25.4	26.1	25.1	24.6	24.4	24.6
Gross Fixed Investment	24.0	21.8	22.9	21.5	18.2	19.9	23.5	28.4	33.7	27.5
Stockbuilding	0.15	0.02	0.37	-0.27	-0.02	-0.17	-0.10	-0.08	1.16	0.23
Exports of G&S	34.7	33.6	33.6	38.8	37.4	34.3	34.1	31.6	32.0	35.3
Imports of G&S	39.2	38.3	40.9	39.9	35.9	37.4	39.8	44.0	50.0	46.0
Estimated Gross Domestic Savings	19.3	15.7	14.3	20.7	21.2	18.7	16.6	11.4	11.6	12.8

Source: Adapted from the Economist Intelligence Unit, Country Data.

*Real GDP in Icelandic króna at 2000 chained prices, converted to US dollars using the end of the year exchange rate to the US$ dollar.

Exhibit 9 Iceland's Money, Wages, and Demographics

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Exchange Rate (kr/$), avg	70.96	72.34	78.62	97.42	91.66	76.71	70.19	62.98	70.20	63.79
Lending Interest Rate (%)	12.78	13.30	16.80	17.95	15.37	11.95	12.02	14.78	17.93	20.90
Deposit Interest Rate (%)	4.53	4.84	7.11	6.94	4.70	4.83	4.88	7.00	9.70	11.30
Money Market Interest Rate (%)	7.40	8.61	11.15	10.98	8.01	5.01	6.08	8.96	12.83	15.20
Long-term Bond Yield (%)	4.71	4.29	5.30	5.26	5.23	4.41	3.83	3.70	4.38	5.30
Stockmarket Index (2000=100)	65.11	79.46	99.99	72.48	86.60	107.46	185.58	262.63	356.87	
GDP Deflator (avg % change)	5.15	3.26	3.64	8.64	5.63	0.64	2.50	2.87	8.99	6.40
Inflation (avg % change CPI)	1.65	3.23	5.14	6.41	5.20	2.06	3.16	3.99	6.69	5.10
Consumer Price Index (2005=100)	75.19	77.62	81.61	86.83	91.35	93.22	96.17	100.00	106.69	112.10
Nominal Wage Index (2005=100)	63.78	68.12	72.65	79.08	84.73	89.46	93.66	100.00	109.54	119.50
Real Wage Index (2005=100)	84.83	87.76	89.03	91.08	92.76	95.96	97.39	100.00	102.68	106.60
Population (mn)	0.28	0.28	0.28	0.29	0.29	0.29	0.29	0.30	0.31	0.31
Unemployment (%)	2.80	1.88	1.34	1.40	2.51	3.37	3.10	2.05	1.29	1.00
Unit Labor Cost Index in US$ (2005=100)	60.83	63.99	62.61	53.73	62.02	76.33	83.30	100.00	101.46	123.80
Labor Cost (US$/hr)	18.75	19.81	19.84	17.40	20.35	25.70	30.35	37.80	37.42	44.93

Source: Adapted from the Economist Intelligence Unit, Country Data.

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Exhibit 10 Iceland's Gross External Debt (in US$ billions)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total External Debt	5.8	7.2	8.6	9.1	11.0	16.5	27.2	46.1	72.5	113.4
Short-term debt	0.9	1.2	1.4	1.5	2.3	3.7	5.0	7.3	12.2	40.6
Long-term debt	4.9	5.8	7.1	7.4	8.5	12.2	21.3	37.3	57.7	69.7
Owed to direct investors	0.0	0.2	0.1	0.2	0.2	0.6	0.9	1.5	2.6	3.1
General Government Debt	2.0	1.9	2.0	2.3	2.8	3.1	3.5	2.4	3.4	3.9
Short-term debt	0.2	0.3	0.4	0.4	0.4	0.2	0.2	0.0	0.0	0.0
Long-term debt	1.8	1.6	1.6	1.9	2.4	2.9	3.3	2.4	3.4	3.9
Commercial Banks	1.5	2.3	4.2	4.1	5.6	10.2	20.0	37.9	59.3	95.5
Short-term debt	0.5	0.4	0.6	0.7	1.8	3.3	4.6	7.0	11.5	39.9
Long-term debt	1.1	1.9	3.6	3.4	3.9	6.9	15.4	30.8	47.9	55.3
Other Sectors	2.3	2.8	2.2	2.5	2.4	2.6	2.8	4.4	7.2	11.2
Short-term debt	0.2	0.5	0.4	0.4	0.1	0.2	0.2	0.3	0.7	0.7
Long-term debt	2.0	2.3	1.9	2.1	2.2	2.4	2.6	4.1	6.4	10.5
Owed to Direct Investors	0.0	0.2	0.1	0.2	0.2	0.6	0.9	1.5	2.6	3.1
External Debt Ratios										
External debt as a % of GDP										
External debt position	70%	82%	99%	115%	124%	150%	205%	284%	438%	566%
Of which long-term debt	59%	66%	82%	93%	95%	111%	161%	230%	348%	348%
Debt as a % of export revenue										
External debt position	192%	229%	300%	294%	267%	357%	460%	685%	908%	789%
Of which long-term debt	159%	186%	244%	240%	206%	275%	371%	572%	750%	529%

Source: Central Bank of Iceland, *Statistics…* available at http://www.sedlabanki.is/. Some totals may not add up exactly because of rounding errors.

Exhibit 11a Amount of Debt Coming Due in Each Year for the Three Largest Icelandic Banks (Glitnir, Landsbanki, and Kaupthing)

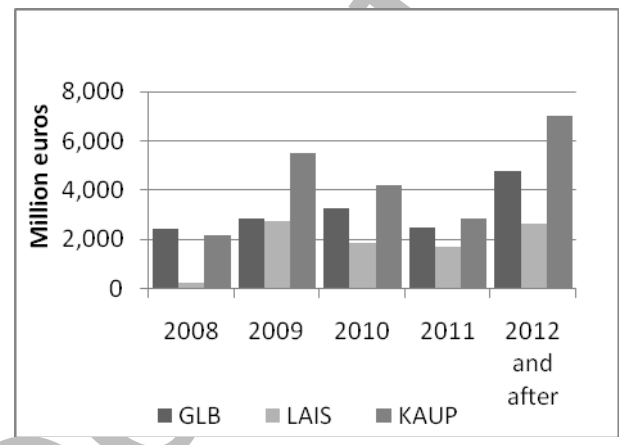
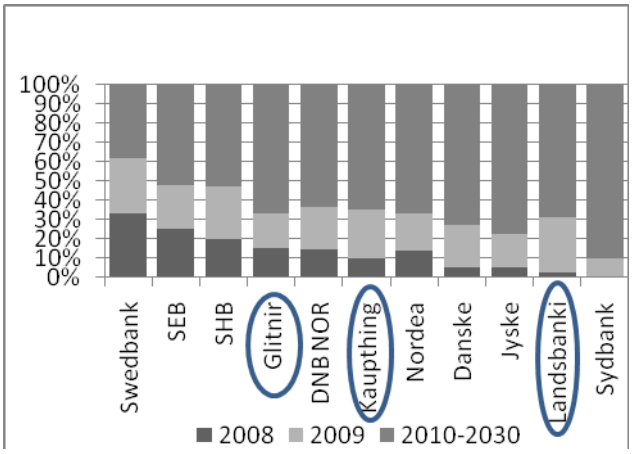


Exhibit 11b Percent of Debt Coming Due in 2008, 2009 and 2010-and-after for Banks in Iceland, Norway, Denmark, and Sweden (Icelandic Banks Circled)



Source: Adapted by the author from data from Glitnir's research department.

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Exhibit 12 Iceland's Balance of Payments (US$ millions)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Current account	-560	-594	-883	-343	137	-523	-1,301	-2,629	-4,220	-3,132
Balance on goods	-352	-310	-476	-61	154	-207	-521	-1,478	-2,230	-1,379
Merchandise Exports	1,925	2,003	1,899	2,018	2,229	2,380	2,883	3,095	3,468	4,797
Merchandise Imports	-2,277	-2,313	-2,375	-2,079	-2,075	-2,587	-3,404	-4,573	-5,698	-6,176
Balance on services	-12	-96	-148	-16	-8	-119	-209	-514	-713	-669
Balance on income	-182	-178	-249	-256	-22	-182	-554	-610	-1,242	-1,024
Receipts	120	128	145	171	295	374	469	1,447	2,576	5,052
Expenditures	-302	-306	-394	-427	-317	-556	-1,023	-2,057	-3,818	-6,076
Current transfer	-14	-10	-10	-10	13	-15	-17	-27	-35	-60
Capital and financial account	560	594	883	343	-137	523	1301	2629	4220	3132
Capital transfer	-5	-1	-3	4	-1	-5	-3	-27	-25	-30
Financial account	717	860	981	151	-37	440	1886	2303	7290	2819
Direct investment	79	-55	-223	-172	-240	-48	-1,844	-4,009	-1,327	-9,090
Abroad	-74	-123	-394	-346	-327	-380	-2,581	-7,090	-5,322	-12,183
In Iceland	153	68	171	174	87	332	737	3,081	3,995	3,093
Portfolio investment	-207	584	637	641	148	2,986	6,629	12,186	11,371	-6,831
Assets	-265	-440	-553	-48	-315	-591	-1,645	-4,687	-2,965	-7,622
Equities	-253	-387	-618	-39	-259	-529	-1,582	-3,267	-985	-2,750
Debt securities	-12	-53	65	-9	-56	-62	-63	-1,420	-1,980	-4,872
Liabilities	58	1,024	1,190	689	463	3,577	8,274	16,873	14,336	791
Equities	4	42	-16	101	49	-46	288	84	1,157	197
Debt securities	54	982	1,206	588	414	3,623	7,986	16,789	13,179	594
Other Investments	845	331	567	-318	55	-2,498	-2,899	-5,874	-2,754	18,740
Errors and omissions	-120	-191	-169	139	-37	393	-379	428	-1828	448
Change in foreign reserves	-32	-74	74	49	-62	-305	-203	-75	-1,217	-105
Memorandum accounts										
Current account to GDP	-6.80%	-6.80%	-10.20%	-4.30%	1.50%	-4.80%	-9.80%	-16.20%	-25.50%	-15.60%
Foreign exchange reserves US$ mn	n.a.	n.a.	n.a.	344	437	772	1070	949	1021	2528

Source: Adapted from the Central Bank of Iceland's statistics page, available at www.sedlabanki.is. Errors and Omissions were adjusted by the author to reflect inconsistent results from aggregating quarterly data.

*The change in foreign exchange reserves and the changes in the stock of foreign exchange reserves may not match because of the constant revaluation of reserve assets, both because of movements in the exchange rate and fluctuations in asset prices.

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Exhibit 13 Iceland's Net International Investment Position (IIP)

Panel A. NIIP According to the IMF Methodology, 2004 –2005

	2004	2005	2006	2007
Net International investment position (US$ bill.)	-8.8	-14.2	-21.9	-22.1
NIIP as a % of GDP	-62.7	-67.4	-84.6	-125.4
Net external debt position				
Net external debt position (US$ billions)	-14.9	-25.6	-37.4	-43.3
Net external debt position (as a % of GDP)	93.3	113.5	152.4	246.4
By sector (as a % of GDP)				
Central bank	-5.8	-4.9	-10.8	-12.9
Central government	18.8	11.2	15.7	19.3
Commercial banks	68.9	93.5	123.4	200.7
Other sectors	11.4	13.7	24.1	39.3

Panel B. Iceland's Foreign Assets and Liabilities (US$ billions)

	2004	2005	2006	2007
Total assets abroad	16.3	41.0	71.4	90.2
Components (as a % of total assets abroad)				
Direct investment abroad	21.4	25.4	21.8	24.3
Portfolio assets	32.4	27.8	25.9	25.8
Other investment	40.6	44.1	48.6	47.4
Reserves	5.7	2.7	3.7	2.5
Total liabilities abroad	25.1	55.2	93.3	112.2
Components (as a % of total liabilities abroad)				
Direct investment in Iceland	7.2	8.8	9.2	9.4
Portfolio liabilities, of which	70.9	70.9	66.1	45.9
Equity capital	*2.7*	*7.0*	*6.0*	*4.5*
Debt securities	*68.2*	*63.9*	*60.1*	*41.4*
Other liabilities, of which	21.9	20.3	24.6	44.7
Long-term loans	*12.0*	*10.8*	*11.4*	*14.4*
Short term-loans	*8.3*	*8.0*	*7.1*	*14.3*
Bank deposits	*1.7*	*1.5*	*6.2*	*16.0*

Source: Adapted from Central Bank of Iceland, *Monetary Bulletin*, March 2008.

Note: Net International Investment Position (NIIP) is the net of the value of foreign assets held by Icelanders minus the value of liabilities of Iceland to foreigners. Data in this exhibit was estimated by the Central Bank of Iceland following the IMF methodology. Both FDI abroad and in Iceland is included in the calculations at book value. Most other liabilities are valued at market prices.

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Exhibit 14A Consolidated Balance Sheet of Kaupthing Bank, 2006-2007 (in US$ millions)

	2007	2006
Assets	**39,958**	**32,473**
Cash and cash balances with central banks	732	857
Loans to credit institutions	4,397	3,886
Loans to customers	24,692	20,327
Financial assets	6,318	5,326
Intangible assets	499	547
Other assets	3,320	1,530
Liabilities and equity	**39,958**	**32,473**
Credit institutions and central banks	2,534	884
Deposits	10,323	6,011
Borrowings	19,548	19,217
Subordinated loans	1,997	1,730
Other liabilities and minority interest	2,974	2,040
Shareholders' equity	2,583	2,590

Source: www.kaupthing.com.

Exhibit 14B Consolidated Balance Sheet of Glitnir Bank, 2006-2007 (in US$ millions)

	2007	2006
Assets	48,176	32,454
Cash and cash balances with central banks	870	291
Derivatives	1,861	1,034
Bonds and debt instruments	4,373	3,300
Shares and equity instruments	1,655	1,551
Loans to banks	4,365	2,522
Loans to consumers	30,960	22,738
Investment in associates	44	62
Investment property	87	-
Property and equipment	66	47
Other assets	1,947	455
Liabilities +Equity	47,138	32,441
Short positions	236	69
Derivatives	1,215	865
Deposits from central banks	73	513
Deposits from banks	792	606
Deposits from customers	11,371	6,243
Debt issued and other borrowed funds	27,374	19,627
Subordinated loans	1,594	1,553
Other liabilities	910	441
Shareholders' Equity	2,665	2,081

Source: www.glitnirbank.com.

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Exhibit 15 Government Budget Surplus/Deficit as a Percentage of GDP, 1998 -2007

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008*
Revenue (incl. tax revenue)	41.6	44.3	44.4	42.9	43.8	44.5	45.6	47.6	45.1	43.2	42.6
Tax revenue	35.6	38.2	38.3	36.5	36.3	37.8	38.8	41.3	38.9	36.9	36.3
Expenditure (incl. interest)	41.1	42.0	42.0	42.8	44.6	46.5	45.3	44.4	43.2	44.6	45.2
Interest expenditure	3.4	3.4	3.1	3.5	2.9	2.9	2.6	2.5	2.3	2.1	2.1
Budget Surplus (+)/Deficit (-)	0.5	2.3	2.4	0.2	-0.8	-2.0	0.3	3.2	1.9	-1.4	-2.7

Source: Statistics Iceland, Economist Intelligence Unit.

*Data for 2008 is a forecast.

Exhibit 16 Convergence Criteria to Join the European Monetary Union

Requirement	Actual target
1. Price stability	Inflation must be within ±1.5 percentage points of the average of the three EU countries with the lowest inflation rates (in 2007 this average was approximately 1.2%)
2. Interest rates	Long-term interest rates must be within ± 2 percentage points of the average of the three countries with the three lowest inflation rates (in 2007 the average was approximately 4.3%).
3. Government budget deficits	Budget deficits must not exceed 3% of GDP
4. Public debt	Public debt must not exceed 60% of GDP
5. Currency stability	The currency must not have been devalued in the previous two years and should have remained within a normal fluctuation band (originally ±2.25%) in relation to the euro.

Source: Adapted from Richard H.K. Vietor, "European Monetary Union," HBS No. 799-131 (Boston: Harvard Business School Publishing, 1999), p. 6.

Note: Countries can join the European Union without adopting the euro as their currency. New member countries are expected to adopt the euro as soon as they meet the convergence criteria listed above. (The U.K., Denmark, and Sweden have opt-outs from this arrangement and are not required to adopt the euro.)

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