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ICELAND'S FINANCIAL COLLAPSE: A GLOBAL CREDIT BUST

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ABSTRACT

This thesis provides a thorough analysis of events leading to the 2008 collapse of Iceland's financial system. The exploration begins by examining the US housing bubble of the 2000s. Overvalued housing assets, subprime mortgages, and inappropriately rated mortgage-backed derivatives contributed to the onset of the global financial crisis. As Americans defaulted on their loans, banks and other financial institutions across the globe who invested in the US housing market suffered, including Fannie Mae, Freddie Mac, and Lehman Brothers. Following the Lehman collapse, banks grew increasingly risk averse and stopped providing each other with short-term loans. Soon thereafter, the global short-term credit market vanished. During this same time period, Iceland's financial sector grew to be quite powerful. Its highly levered banks feverishly pursued many risky investment projects. Three major banks controlled close to 90 percent of the nation's financial assets and possessed balance sheets valued at over 10 times the country's GDP. To reach these levels, these three banks maximized funding through cheap foreign debt and short-term loans. When the short-term credit market dried up, the Icelandic banks could not continue operations and eventually collapsed, bringing down the entire economy. This thesis argues that nine distinct factors contributed to the collapse of the Icelandic financial sector. Additionally, this thesis provides speculation as to how the Icelandic economy will recover.

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Chapter 1

Introduction

1.1 Summary of Historical Events

The financial crisis of 2008, undoubtedly serves as one of the largest economic events in recent history. The drivers of this crisis began in the early 2000s in the United States. During this time period, low interest rates and financing costs combined with government encouragement of homeownership created a boom in the US housing market. As the surge progressed for several years, many Americans opted for loans which they could not afford. As was common, individuals took out massive adjustable-rate mortgages, providing minimal down payments – often only single digit percentages of the loan. Due to the rapid growth of US housing prices over this time period, individuals expected future rises in their real estate value to more than justify the debt burden associated with these loans. Additionally, many banks began offering loans to subprime borrowers. To eliminate potential risk of default and non-payment, subprime lenders took two risk aversion actions. The lenders took out insurance on the mortgages by purchasing credit default swaps from other banks and insurance agencies. In other cases, the subprime lenders pooled different housing assets together to create mortgage-backed derivatives to then be sold to investors. Due to their complexity, such assets were mistakenly rated very highly by the various ratings agencies. Looking to generate safe returns, investing institutions across the globe filled their balance sheets with such housing assets. By late 2007, the US housing bubble finally burst. Housing prices stagnated and then began to fall. Suddenly, Americans across the country realized that their mortgages exceeded the value of their homes. Homeowners began to default on their mortgages and abandon their homes. Concurrently, a recession hit the country forcing many

middle-class Americans out of their jobs. A massive wave of bankruptcies and defaults swept across the US housing market. Once heavily desired, US housing assets now were outright avoided. US mortgage-backed assets rightfully earned the nickname toxic assets. Those who had invested heavily in such derivatives found themselves in dire straits. In the US three major banks collapsed: Fannie Mae, Freddie Mac, and Lehman brothers. In wake of these failures, other banks grew extremely risk averse and untrusting of each other. Following Lehman's bankruptcy, the global market for short-term credit virtually dried up. What started as a boom to the US economy grew into a global financial crisis.

While the US housing market experienced rapid growth during the early 2000s, the country of Iceland emerged out of obscurity into a global financial hub. Icelandic deregulation of its financial sector enabled to country to reach economic prosperity. Prior to the late twentieth century, Icelandic banks were all government controlled, no formal securities markets existed, and real interest rates were negative. The country was merely a blip on the global economic radar. However, following the deregulation three major banks emerged within Iceland: Glitnir, Kaupthing, and Landsbanki. After saturating domestic markets, the institutions spread across Europe and later the world. Controlled by a group of young portfolio managers referred to as the New Viking Raiders, the banks were known for their aggressive, risky investment practices and use of significant foreign denominated debt. Generating high returns, these banks offered high interest rates to investors in order to gain market share. The highly valued Krona coupled with generous interest rates brought a stream of credit to Iceland. Taking advantage of the readily available financing, Glitnir, Kaupthing, and Landsbanki expanded even more growing their leverage ratios to more than thirty to one. The banks became heavily reliant on short-term credit, often keeping massive short-term loans rolling forward for months at a time. This system remained viable for nearly a decade, only to come crashing down with US housing market collapse. With short-term credit suddenly unavailable following the Lehman Brothers collapse,

all three major Icelandic banks defaulted on loans and went bankrupt. Due to their size, the Icelandic government could not offer a bailout to these banks. The country was forced into a downward economic spiral.

1.2 Purpose of This Thesis

The collapse of the Icelandic economy and financial system marks one of the largest in modern history. The reach of Glitnir's, Kaupthing's, and Landsbanki's failure is truly global. These events help to show how globalized and interconnected the world's economy has become. Through careful analysis of historical events this thesis will prove that the following factors contributed to the collapse of Iceland's financial sector as well as the global financial crisis of 2008.

a) The US government encouraged homeownership through low interest rates and cheap financing.
b) US banks offered mortgages to subprime borrowers. The banks then pooled these mortgages together to create mortgage-backed derivatives, which were then sold to investors across the globe.
c) Misunderstanding the riskiness and quality of these assets due to their complexity, ratings agencies mistakenly ranked these derivatives as investment grade.
d) US housing assets became incredibly overvalued creating an economic bubble. Once the bubble burst, many Americans defaulted on their loans causing the mortgage-backed derivatives to drop significantly in value.
e) Deregulation of the Icelandic financial sector allowed three banks to manipulate and possess nearly 90 percent of the nation's financial assets.

f) High interest rates in Iceland created an artificially high exchange rate for the Icelandic Krona and brought a massive supply of cheap, foreign credit into the country.

g) The young, inexperienced portfolio managers at the Icelandic banks practiced highly risky investing activities, used significant levels of leverage, and relied heavily on short-term credit.

h) The collapse of Lehman Brothers caused global lending institutions to become extremely risk averse, effectively eliminating the short-term credit market.

i) The Icelandic banks outgrew the country of Iceland and became too big to save. The country could not afford to bailout the banks due to their sheer size.

Following the exploration of Iceland's economic failures, this thesis proceeds to discuss the important lesson to draw from the economic collapse as well provide possible solutions which the nation could implement in order to quicken economic recovery and prevent such a catastrophe from reoccurring in the future.

Chapter 2

Literature Review

Prior to beginning any analysis or forming any conclusions on the subject, it is essential to first explore what others have written about Iceland's financial failures during the global financial crisis of 2008. The first report used for research purposes is titled "System Failure in Iceland and the 2008 Global Financial Crisis" and is written by Thrainn Eggertsson and Tryggvi Thor Herbertsson professors at the University of Iceland and the University of Reykjavik, respectively. Eggertsson and Herbertsson begin by discussing Iceland's rise to a global economic power. Prior to the mid twentieth century, traditionalists delayed urbanization and slowed economic development, thus stagnating Icelandic economic growth (Eggertsson & Herbertsson, 2009). However, throughout the 1970-1990s the country began to recognize the need to join free trade areas and economic unions. Along with this, the country privatized and deregulated much of the economy, enabling the nation to enter a period of rapid growth.

After discussing the initial period of growth, Eggertsson and Herbertsson discuss the creation of the new financial markets. With these new markets came a wave of banking and financial service offerings to the Icelandic people. By the late 1990s and early 2000s, Eggertsson and Herbertsson explain that three major Icelandic banks rose to power: Glitnir, Kaupthing, and Landsbanki. These banks began to make major investments across the globe and take on significant leverage. Eggertsson and Herbertsson insist that in just five years Icelandic banking institutions rose from obscurity to global financial powerhouses.

After thoroughly discussing Iceland's economic rise to power, Eggertsson and Herbertsson begin to explain some of the side effects associated with this growth. Namely, the

two mention the abnormally high interest rates and Krona value. These two factors enabled many investors to practice the Krona carry trade or take out very high yield bonds. Additionally, Icelanders utilized their valuable currency to take out cheap foreign loans. Banks utilized the same practice and took on massive foreign denominated debt.

Following the analysis of rapid growth throughout the Icelandic financial system, Eggertsson and Herbertsson mention some of the early warnings of a potential economic collapse. They claim that the general lack of transparency, cross-ties between financial institutions in Iceland, heavy reliance on short-term borrowing, low quality of assets, and inability of the Icelandic government to act as lender of last resort all should have raised red flags amongst global investors (Eggertsson & Herbertsson, 2009). Additionally, Eggertsson and Herbertsson mention how the three major banks had outgrown the domestic market and needed to continue to expand globally.

By 2007, it was quite apparent that the banks had grown to a far larger magnitude than the country of Iceland itself. Therefore, when a global credit crisis emerged in 2007 caused initially by subprime housing loans in the US, the Icelandic government was unable to support its banking system. The toxic US subprime housing assets were not necessarily held by any Icelandic banks; however, other major global lending institutions did hold these assets. Many of these banks struggled and even collapsed. With new risk aversion policies, all short-term lending to Iceland was essentially cut off. According to Eggertsson and Herbertsson, this credit crunch sent the three Icelandic banks into a downward spiral.

Just a few days after the Lehman Brothers' collapse, the Icelandic banks followed suit. The Icelandic government was now forced to take control of the failing banks. Eggertsson and Herbertsson go on to discuss how new banks were formed. In this creation process, domestic needs were focused on. The new banks contained all domestic assets and liabilities, while all foreign debt remained with the old banks. In doing this, Eggertsson and Herbertsson claim that

the Icelandic government enabled the economy to begin recovery. However, the report was written in 2008, therefore, there is no further discussion of Icelandic recovery.

A second key source which was used for research is a book titled "Zombie Banks" by Yalman Onaran. The book covers different failing global banking systems. However, for the extent of this thesis, the chapter about Iceland's banks was studied. Onaran's coverage of the banking crisis in Iceland begins after the collapse of the three main banks. He begins by explaining the financial panic the Icelandic people felt. Many rushed to banks and ATMs to withdraw money, fearing a Great Depression like scenario. He then begins to explain the creation the three new banks. Just as Eggertsson and Herbertsson had mentioned, Onaran discusses how foreign financial debt remained with the failed banks, while domestic items were moved to the new banks.

Following his discussion of the new bank creation, Onaran jumps bank to the years leading to Iceland's financial collapse. He claims that the privatization of banks coupled with cheap foreign loans led to the country's rapid growth (Onaran 2012). The quick growth amongst the three major banks quickly outgrew the nation itself. The banks began to make investments primarily across Europe as well as other parts of the world. Onaran points out how most Icelandic investments were purchased using strictly foreign denominated debt. By taking on so much debt, the leverage ratios of the banks soared to unheard of heights. Additionally, Onaran acknowledges that this period of time saw much fraud, corruption, and shady financial dealings amongst Icelandic bankers. Although many institutions gave warnings regarding the future of the banks during the mid-2000s, the banks continued on the same expansive growth path until the credit shortage in 2007. Like Eggertsson and Herbertsson claim, Onaran asserts that the size of the banks had outgrown the size of the country and could not possibly be backed in the event of a collapse or economic failure. He claims that the banks had gotten too big to save (Onaran 2012).

Onaran then jumps forward to describe the massive decrease in value, which the Krona suffered. According to him, the Krona lost half of its value in less than a year. Continuing this analysis, he reiterates how most Icelandic debt was held in foreign denominated currencies. Because the Krona had lost so much value, these debts became astronomically more costly to pay off. With their purchasing power drastically cut in half, banks as well as individuals found it exceedingly difficult to pay off their loans.

Following the analysis of the Krona devaluation, Onaran enters a discussion on the lack of rules on cross-border banking. He points out that domestic interests were put far ahead of international interests in the restructuring of the new banks. While domestic deposits were guaranteed, international investors received only mere portions of what they had invested. Onaran mentions that international banking laws are weak in this regard; international institutions have not yet developed proper regulation to solve such issues.

Following his analysis of cross-border banking practices, Onaran discusses Iceland's financial recovery. He claims that the prevention of private debt from becoming public debt has allowed the country to recover quicker (Onaran 2012). That is, by leaving the foreign debt with the failed banks, Iceland's economy could more easily recover from its financial collapse. Onaran claims that the balance sheet clean up, new-old bank splits, asset write-downs, and debt restructuring have all led a quicker Icelandic recovery (Onaran 2012). He believes that the new banks will soon be publicly sold, and foreign creditors will be able to recover a greater chunk of their losses. Onaran, no doubt, provides a solid coverage of the events following the financial collapse in Iceland.

A third source used for research is the book "A Colossal Failure of Common Sense: The Inside Story of the Collapse of Lehman Brothers" written by Lawrence McDonald and Patrick Robinson. While this book covered a wide variety of topics ranging from the Bear Sterns collapse to Delta Airlines and General Motors issues, this thesis primarily focuses on the chapters about

subprime US housing assets and their effect on global markets. McDonald and Robinson begin by explaining how the US housing market grew to artificially high levels. Through most of the 2000s, housing prices continued to rise at unprecedented levels. Homeowners purchased homes which they could not afford under the belief that the rise in real estate and housing value would make the purchase worthwhile and offset the risk of carrying such high levels of debt. On top of this, many banks provided loans to subprime borrowers. After making the subprime loan, the bank than packaged the loan with others into complex collateralized debt obligations (CDOs). Due to their complexity, these CDOs were ranked AAA investment grade, when in reality they were junk investments. McDonald and Robinson assert that Lehman was one of the largest purchasers of these subprime housing assets. Therefore, when the US housing bubble finally burst and millions of Americans defaulted on their loans, Lehman's balance sheets reflected the carnage. Unable to properly value the now toxic housing assets, Lehman suffered massive losses and eventually collapsed in 2008.

After discussing the US housing bubble and the Lehman collapse, McDonald and Robinson explain the short-term loan market also referred to as the commercial paper market. The two define the commercial paper market as one where massive hundred million dollar loans are made between blue chip companies for a short period of time, generally less than two months (McDonald & Robinson 2009). Many major corporations rely on such loans for day-to-day operations. However, following the Lehman collapse, this vital market suddenly dried up. Major firms struggled to meet cash flow requirements and several defaulted. McDonald and Robinson point out that this credit shortage was not limited just to the US; rather, it spread across the globe, reaching even Iceland.

Further research on the Lehman Brothers' collapse was conducted by Luigi Zingales in his report "Causes and Effects of the Lehman Brothers Bankruptcy." In his analysis, Zingales argues that the Lehman collapse was brought on by three factors: bad regulation, lack of

transparency, and market complacency (Zinglaes 2008). He starts by describing how the US housing market became so overvalued, arguing that prolonged low interest rates and government encouragement to purchase homes were major factors. Because housing prices continued to increase rapidly over a long period of time, many individuals purchased homes which they could not afford under the belief that the home would rise greatly in value. These individuals were able to make such acquisitions because a great majority of banks began to provide subprime loans. When these subprime loans were pooled together, ratings agencies misunderstood the underlying risks associated with the assets and gave them exaggeratedly high ratings. Zingales believes that the ratings agencies did not properly account for the default risk associated with the mortgages as well as the cross-correlation between the housing market and overall economy (Zingales 2008).

After describing the improperly rated housing assets, Zingales begins to describe the poor regulation around subprime lending. He claims that government sponsored banks Fannie Mae and Freddie Mac stirred up demand for housing assets, despite their quality. Because the government wanted to encourage homeownership, these two agencies were tasked with purchasing mortgages. Due to the investment grade rating of the housing CDOs, Fannie Mae and Freddie Mac, as well as many other investment agencies, filled their balance sheets with such assets. When the housing bubble popped, these banks suffered major losses as a result of the write-down of these assets and required significant government assistance.

Following his Fannie Mae and Freddie Mac discussion, Zingales begins to explore the factors leading to the Lehman collapse. He states that the Lehman collapse can be attributed to its highly levered position coupled with its reliance on short-term debt financing (Zingales 2008). Prior to collapse, Lehman's leverage ratio was greater than thirty to one. When it became clear how toxic the US housing derivatives were and how saturated the Lehman balance sheet was with such assets, short term credit to Lehman was severed. Unable to meet debt requirements, Lehman defaulted on debt and collapsed soon thereafter. With no US government bailout, banks became

much more conservative in lending practices. According the Zingales, the short-term global credit market disappeared with Lehman.

For additional information regarding subprime lending in the US housing market, John Taylor's "The Financial Crisis and the Policy Responses: An Empirical Analysis of What Went Wrong" was studied. Although this report was quite broad and explored several issues related to the US housing market, this thesis focused primarily on the section about adjustable-rate subprime mortgages. Like Zingales, McDonald, and Robinson claim, Taylor also believes that the ratings agencies underestimated the risks associated with subprime housing assets. He believes that poor accountability at the rating agencies, coupled with the complexity of the CDOs led to this risk assessment mistake (Taylor 2008). Taylor goes on to describe how all housing assets were not necessarily poor investments; yet, because investors were unable to differentiate the toxic from non-toxic assets, many began to avoid housing backed derivatives all together. Fannie Mae, Freddie Mac, and Lehman Brothers, however, filled their balance sheets with these housing assets. When the housing bubble burst and millions of Americans defaulted on their loans, these agencies were doomed.

A final source which was used during the research process specifically explored Fannie Mae and Freddie Mac's involvement in the global financial crisis. The report titled "The Last Trillion Dollar Commitment: The Destruction of Fannie Mae and Freddie Mac" and is written by Peter Wallison and Charles Calomiris. The two begin by explaining the purpose and operating principles of Fannie Mae and Freddie Mac. While operating like a private bank for the most part, both institutions have connections to the US government. Wallison and Calomiris point out that both banks have lines of credit directly with the US Treasury. In addition, members of the senior management are appointed directly by the US government. Because of these connections, the banks must satisfy the needs of both independent shareholders as well as the US Treasury. The government requires the banks to keep mortgage interest rates low to allow for more affordable

housing. Shareholders on the other hand want to fight regulation and increased capital requirements in order to minimize risk and maximize profitability (Wallison and Calormiris 2008). In staying true to both stakeholders, the banks invested heavily in US mortgage-backed derivatives. These CDOs, even those involving subprime borrowers, were highly rated and considered quality investments. By making these investments, Fannie Mae and Freddie Mac kept housing affordable for US citizens while earning substantial returns for investors. Wallison and Calormiris go on to describe how highly exposed both banks were to the housing market. When the housing bubble burst and Americans across the country defaulted on their mortgages, the banks of course suffered. Both went bankrupt and were later saved by the US government.

Clearly, significant research has been conducted regarding the rise of Iceland's modern financial system, the US housing bubble of the 2000s, the 2008 global financial crisis, the scarcity of short-term credit following the crisis, the collapse of Lehman Brothers, Fannie Mae, Freddie Mac, and the major Icelandic banks, as well as Iceland's response to the collapse of its financial institutions. This thesis will thoroughly explore and connect all of these events to provide further analysis and understanding of collapse of the Icelandic economy. Additionally, this research will help determine which global factors led to this financial failure.

Chapter 3

Iceland's Financial Collapse

3.1 Iceland's Historical Financial System

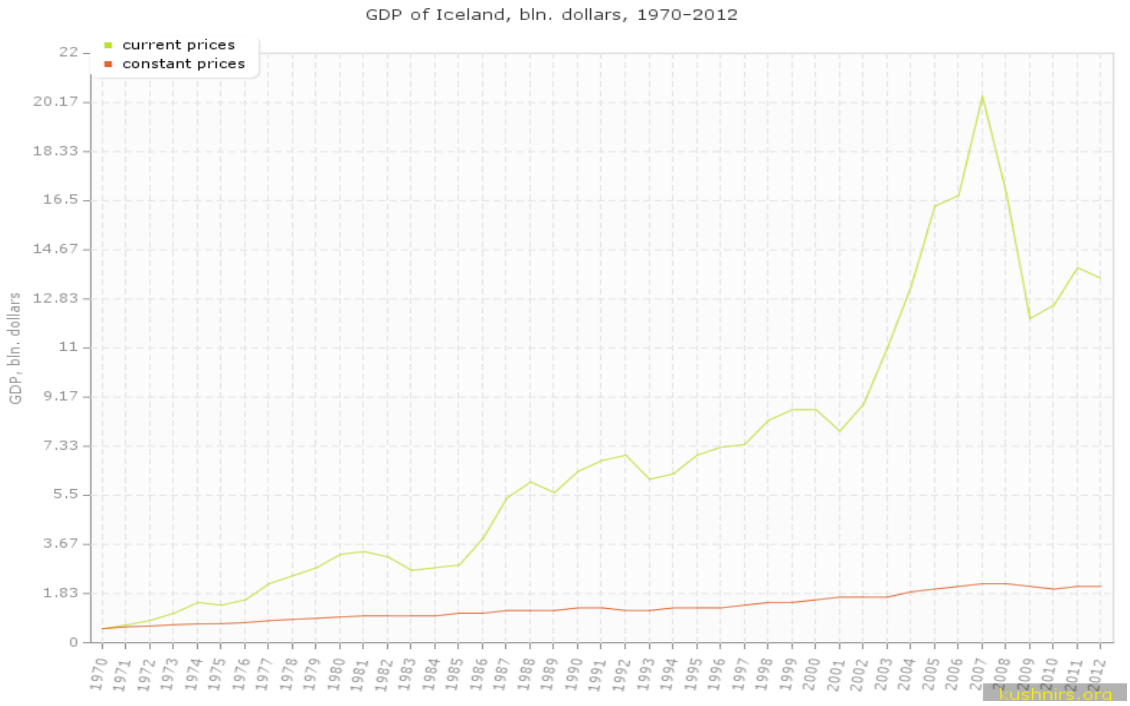
Prior to the 1990s, the island nation of Iceland, with a Population slightly over 275,000 and a size close to that of Kentucky, played just a slight role in the global economy (Encyclopedia of the Nations, 2013). Through most of the twentieth century, Iceland remained a conservative fishing and agricultural nation with several smaller industrial sectors including energy production, tourism, and biotechnology. The banks were state-owned and highly regulated by government agencies. The government outlawed foreign direct investment unless directly run through select state organizations. In addition, the government set nominal interest rates, which rarely changed. Because nominal inflation grew year-to-year, it quickly rose significantly higher than the nominal interest rate and caused real interest rates to become negative. Thus, when adjusted for inflation, banks actually lost money on each issued loan and individuals depositing money within banks lost more purchasing power than they would have had they locked their money in a safe at home. Icelandic bank loans acted more as government subsidies than as loans. In any capitalist system with privatized banks, no such loans would be issued without higher nominal interest rates. Due to the negative real interest rate, individuals faced difficulties in obtaining credit. In fact, mangers of the financial system rationed available credit amongst big business and others receiving special government favors (Eggertsson & Herbertsson, 2009). On top of this, no formal securities market existed in Iceland, making capital even more difficult to obtain. Small business and new ventures struggled to obtain necessary financing, while larger, better established industries such as fisheries and farms received most of the available government funding.

Such strict government control over a nation's financial system can lead to catastrophic national economic issues. By the 1970s, Iceland fell victim to such problems. During this decade, inflation reached record levels. It grew so high in fact that the average real lending rates at the commercial banks ranged from -5.1% to -26.5% (Eggertsson & Herbertsson, 2009). Such low real interest rates hurt both banks and individuals. The average annual capital loss incurred by depositors during this time period, measured as a percentage of GNP, ranges from 2.1% to 7.46% (Eggertsson & Herbertsson, 2009). Individuals responded by ridding their portfolios of monetary assets and investing in real estate and other tangible assets. By 1978, Iceland's domestic banking system shrunk nearly 50%, making loans even more difficult to obtain (Eggertsson & Herbertsson, 2009). Without major economic restructure, a crash of Iceland's financial system seemed imminent.

3.2 Deregulation and Changes to the Financial System

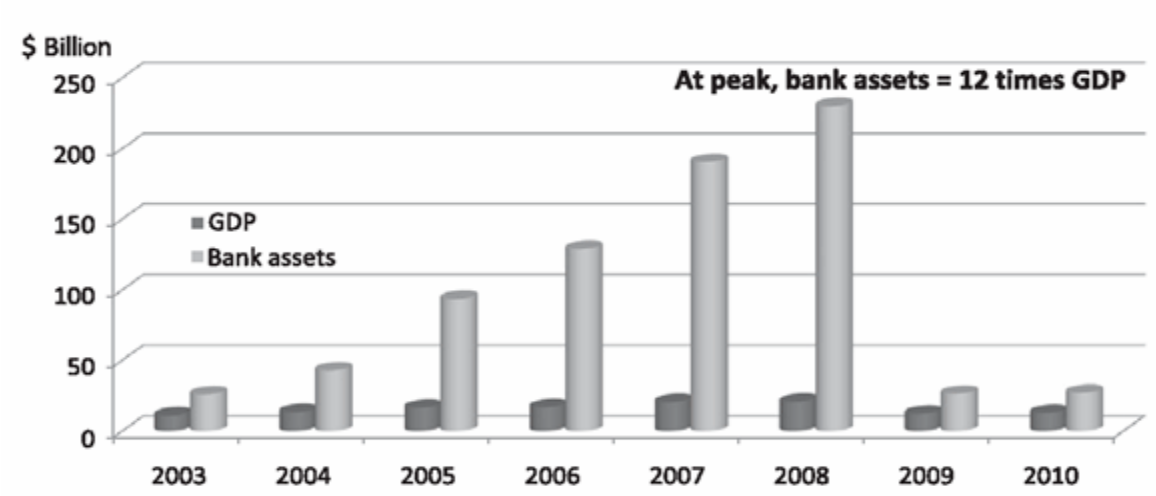
To eliminate these pressing financial issues for both banks and depositors, Iceland underwent a period of massive deregulation. Starting in 1984, Iceland's government adopted a free-floating interest rate. Shortly thereafter, formal securities markets of all kinds emerged, including stock, bond, and options markets. Additionally, capital movements were liberalized and eventually entirely deregulated by 1995. Soon after, domestic banks became privatized. For the first time in Icelandic history, individuals easily could obtain financing. Slowly, Iceland's financial system grew to resemble those of other modernized, capitalist countries, and the nation entered the global financial marketplace. During the years of deregulation, GDP skyrocketed.

Figure 3.1 Iceland's GDP Over Time (Kushnir 2014)



Commercial banks and the newly formed securities firms united and began to focus on investment banking. In 19995, assets within Icelandic banks equaled about half the nation's GDP; however, in less than 10 years these assets grew in value to more than 2.5 times GDP and by 2007 were equal to more than 10 times GDP (Eggertsson & Herbertsson, 2009).

Figure 3.2 Iceland's Bank Assets vs GDP (Taylor 2009)



Because the former state-owned banks existed merely as depositories and lenders to government approved firms, previous employees had little experience with the highly risky practices often involved with investment banking. Thus many of these former managers and executives were replaced by younger, recently graduated economics and finance professionals. With deregulation and the many changes that followed, Iceland's banking and financial system shifted from a small-scale, low-risk structure to an international banking system oriented toward high-risk, leveraged investments managed by executives with limited experience (Eggertsson & Herbertsson, 2009).

Significant change generated through the adoption of the new financial system first occurred within the nation's pension fund system. Due to the negative real interest rates associated with the previous system, pension funds had experienced severe losses. Rather than provide a regular monthly annuity to those pensioners enrolled in the program, Iceland's pension program simply offered a one-time housing loan to its members. However, now with the ability to actively invest in different types of securities markets, Iceland's pension system flourished. In 1985, assets within Icelandic pensions were equal to about 20% of GDP; however, by 2004, these assets jumped in value to about 120% of GDP (Eggertsson & Herbertsson, 2009). It is no surprise that many who had worked reshaping the pension program later held executive titles at some of the largest Icelandic banks.

3.3 Rapid Growth and the New Financial System

Three banks – Kaupthing, Landsbanki, and Glitnir – emerged as the dominant Icelandic banks and even ranked among the fastest growing financial institution in the world (Eggertsson & Herbertsson, 2009). After meeting the need of the domestic market, these three banks quickly opened international branches attracting additional depositors and loan seekers. To break into

these already saturated markets, Icelandic banks cut lending rates and raised investing rates. Impressed by the favorable banking terms offered by Icelandic banks, individuals from across the world flocked to Kaupthing, Landsbanki, and Glitnir. Utilizing loans from other banks combined with excess capital, the Icelandic banks invested in all types of ventures ranging from retail chains to airlines to real estate. From the investing activities, it quickly became apparent that these banks were willing to take on highly risky and levered projects.

Kaupthing maintained the title of Iceland's largest bank, operating in 14 countries – 11 European nations as well as the United States, Dubai, and Qatar. The bank offered services any large bank might offer including corporate banking, investment banking, capital markets services, treasury services, asset management, and private wealth management (Eggertsson & Herbertsson, 2009). The other two banks, while not quite as large operated in similar fashion across a similar geographical region.

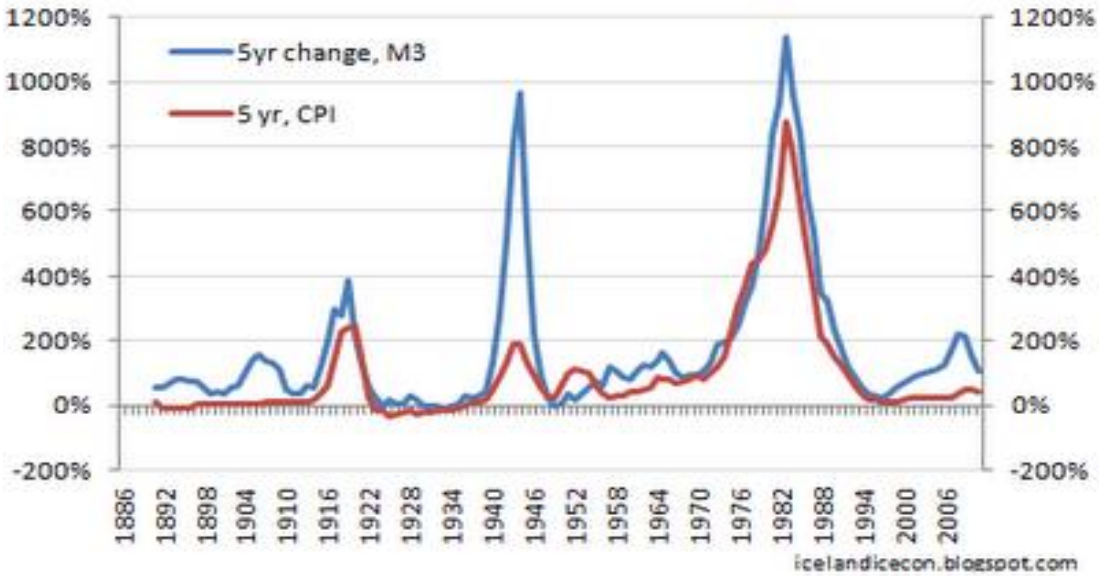
The rise of these three banks along with their easy accessibility across Western Europe and willingness to lend gave rise to a group of extremely wealthy, aggressive investors known as Iceland's New Viking Raiders. Essentially, this group spread throughout the world purchasing valuable entities at high prices using mostly debt provided by Icelandic banks; risk taking, greed, and ambition characterize the New Viking Raiders (Onaran 2012). Together these individuals amassed a vast collection of real estate and businesses across the world. By 2007, the size of Iceland's domestic workforce became less than the number of foreign individuals employed by Icelandic owned firms.

3.4 Global Financing

With the economy booming and the major banks growing at unprecedented levels, Iceland became the third richest nation in the world by the mid-2000s. The Krona, Iceland's

currency, reached its highest ever global exchange rate. See Appendix A. As measured using this figure, the average income in Iceland was almost 40 percent higher than in the United States (Eggertsson & Herbertsson, 2009). Additionally, interest rates remained artificially high throughout the nation. In previous years, high inflation caused national economic issues for the island nation. Therefore, beginning in 2001, concurrent with the introduction of a floating exchange rate, Iceland first introduced inflation targeting. With this practice, a central bank controls inflation by raising the nominal interest rate when nominal inflation reaches a certain level. The IMF and many leading economists encourage the use of this practice to countries suffering from exorbitant levels of inflation.

Figure 3.3 Iceland's Inflation Over Time (Margeirsson)



Generally this strategy minimizes the harmful effects of excessive inflation; however, interest rates must remain at levels comparable to other major international money markets. Iceland failed to apply this constraint and allowed interest rates to soar past those of other major countries. See Appendix B. Thus, both domestic Icelanders and foreign individuals began to take advantage of the flawed economic system within Iceland with what came to be known as the Krona carry trade. To capitalize on this arbitrage opportunity, individuals first take out a foreign denominated loan

in a currency with a low interest rate. With this foreign loan, the individual then invests in Icelandic bonds – also known as Glacier Bonds – or other Icelandic funds. Later, the individual liquidates the investments, using the returns to pay off the principal of the initial loan. To guarantee positive earnings, the investor can even lock in favorable exchange rates with forward or options contracts. Because of the major interest rate differentials the carry trader is almost assured a profitable venture.

Icelanders in particular took advantage of the high Krona exchange rate. With their strong, high-demand currency, domestic consumers took out an increasing number of foreign loans which were used to finance everything from housing improvements to luxury purchases to business ventures. In fact during the early 2000s, Iceland experienced a major real estate boom more than doubling real housing value (Eggertsson & Herbertsson, 2009). Individual Icelanders took on huge amounts of foreign debt with little worry since their own currency remained so strong. On top of this, banks found themselves being offered a seemingly endless supply of foreign credit; they began to make more aggressive, riskier investments. Quickly, these banks found themselves in highly levered positions with most assets purchased almost entirely through foreign denominated debt. On top of this, the central bank, which incessantly worried about inflation, continued to raise interest rates to unprecedented levels. Thus, the carry trade perpetuated and the Krona exchange rate remained at an artificially high level.

Despite the short-term benefits to the Icelandic people, a system like this ultimately is unsustainable in the long-run. This system essentially relies on high Krona demand coupled with continued international lending, both of which can be greatly affected by investor speculation or other global crises indirectly related to Iceland investing activities. Foreign entities must believe that Iceland's interest rates will remain high so that the exchange rate does not falter and the currency remains desirable to hold. The high exchange rate is of utmost importance to Icelandic banks, as the banks are highly levered with most debt payable in foreign currencies. If the Krona

exchange rate decreases against that of the currency in which the debt is held, than the cost to pay off the loan will rise. For example, if the US Dollar-Krona exchange rate falls from 10USD/1ISK to 8USD/1ISK and an Icelandic bank must pay off a 1M USD debt, then the cost of the debt essentially rose from 100,000 ISK to 125,000 ISK.

Additionally, at the first sign of economic crisis, international banks may suddenly cut off global lending. Since the Icelandic banks take on such high leverage, this lending stoppage might lead to catastrophe. Frequently banks take out large loans for investment purposes. This money may then be locked into a project that will not realize expected, maximum returns for a period of time longer than the loan. In order to avoid defaulting on the original loan, the banks may then take out another loan with a different bank to cover interest payments on the first loan. However, if all other banks suddenly stop lending to Iceland, then the Icelandic banks may be forced to quickly liquidate their investments at levels far below market value in order to meet debt obligations and avoid defaulting. For instance, Kaupthing may borrow 1 million Pounds from a British bank to purchase land and then construct a shopping mall in England. Interest payments on the loan most likely begin after the first month. Since the entire loan may be invested in the project, Kaupthing may then take out another smaller loan with a different bank to cover the interest payments until construction is complete and the mall can be sold for a profit. However, if credit suddenly dries up and no bank will lend to Kaupthing, then the Icelandic bank will face a potential default on the original loan. If the debt service cannot be covered in some other way, the bank will find itself in a position where it must immediately liquidate the investment as is, to any buyer willing to make the acquisition. If there is limited demand for this partially completed mall, Kaupthing may be forced to choose from a selection of below market value offers and, therefore, suffer a major loss and the threat of bankruptcy. Now, when the above two situations – interest rate decreases and credit shortages – occur simultaneously even more trouble may arise for the bank and the country. If this situation were to occur, not only would the Krona's value decrease

making foreign loans increasingly more costly to pay off, but new loans would be impossible to obtain and the entire country might face the threat of credit default followed by bankruptcy.

3.5 The Global Credit Crunch

By 2006 and 2007, financial institutions across the globe began to recognize some of the potential problems within Iceland's economy. The Danske Bank, for instance, pointed out some of these problems in its Geyser Crisis report. The report noted a current account deficit of nearly 20% GDP as well as massive levels of debt expansion, leverage, and risk-taking unprecedented anywhere else in the world (Eggertsson & Herbertsson, 2009). Other European nations grew concerned that Iceland exceeded required EU liquidity ratios and provided minimal information and transparency regarding banking portfolios, most of which were managed by young, inexperienced professionals and contained on average, low quality assets. Additionally, many worried that the Icelandic government would be unable to support the banks in a situation where it would need to become lender of last resort. At this point, most funding came to the banks externally and was denominated in foreign currencies. The banks essentially had outgrown the nation: their assets worth nearly ten times more than Iceland's GDP. In other words, Kaupthing, Landsbanki, and Glitnir grew beyond the economic magnitude of Iceland; the fate of the nation was now out of the control of the central bank and government (Eggertsson & Herbertsson, 2009).

While other banks and nations recognized these issues, few predicted what soon would follow. Beginning in 2007, a global credit crisis began to emerge initially brought about by the excess number of subprime housing loans issued by US banks. Despite the poor quality of these complex mortgage-backed securities, credit rating agencies labeled these derivatives as investment-grade. The risk associated with these types of assets was underestimated by the rating

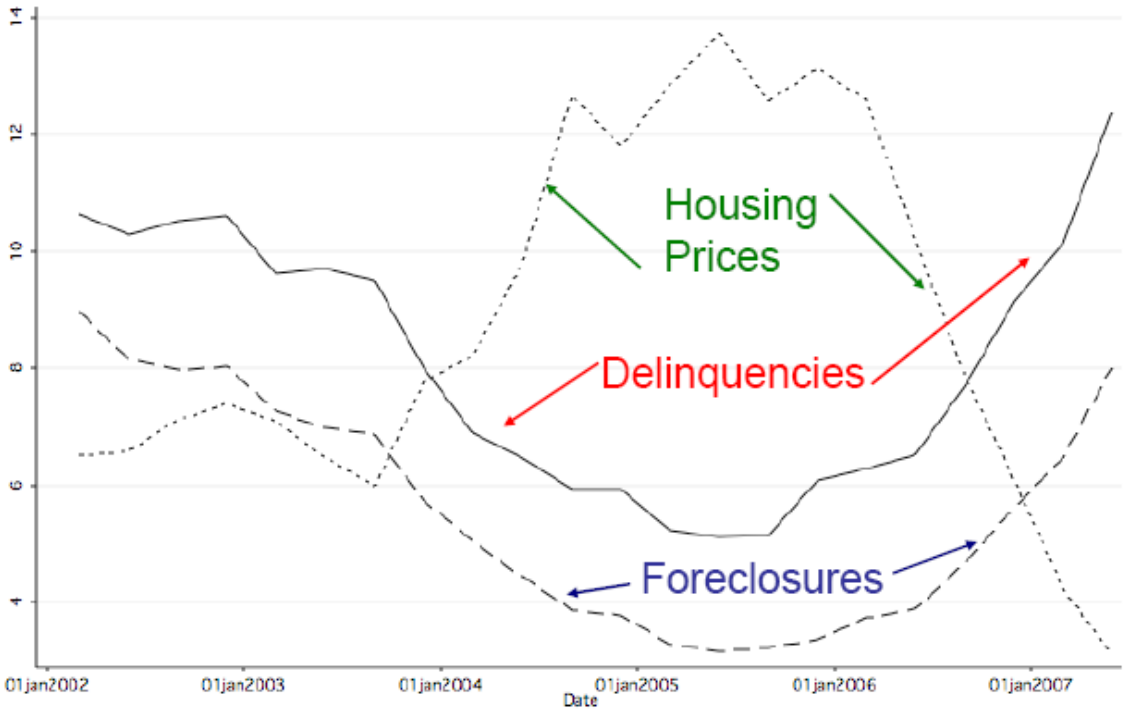
agencies either because of a lack of competition, poor accountability, or most likely an inherent difficulty in assessing risks due to the complexity (Taylor 2008). With the structure of these derivatives, analysts struggled to determine which mortgages were likely to fail and thus which should be considered riskier and less desirable. These mortgages were pooled into tranches with different levels of seniority. Judging by historical records, the senior tranches were considered extremely safe; however, these records did not factor in the probability of default or of a significant drop in national real estate prices, as such a dip had not occurred since the Great Depression (Zingales 2008). Therefore, many banks looking for safe investments which offered reasonable returns inadvertently filled their balance sheets with these investment-grade toxic US housing assets.

US government sponsored banks Fannie Mae and Freddie Mac, who were specifically designed to invest in and guarantee mortgage back securities, were hit the hardest when the US housing bubble burst. The two banks openly invested in subprime mortgages, which may explain the meteoric rise in commitments to junk lending (Wallison and Calormiris 2008). That is, banks began to offer an increasing number of subprime loans due to the existence of Fannie Mae and Freddie Mac. Banks offered these subprime loans to individuals, quickly repackaged them into mortgage-backed derivatives, and then resold the undesirable packages to Fannie Mae, Freddie Mac, and investors worldwide. Additionally, Fannie Mae and Freddie Mac guaranteed many of these subprime mortgages in the event of default with credit default swaps. Because the banks offering the subprime loans almost immediately eliminated these assets from their balance sheets or possessed insurance in the form of a Fannie Mae or Freddie Mac guarantee, the banks minimized the risks associated with subprime lending. Essentially, these banks could transfer all risk to Fannie Mae, Freddie Mac, or whoever else chose to purchase these complex assets or guarantees. Since significant demand existed and revenues could be generated through subprime

lending, banks continued to increase the volume of subprime mortgage lending at an increasing rate. At the time, subprime lending presented a very profitable opportunity.

Unsurprisingly, this unsustainable system inevitably fell apart when the US housing bubble burst in early 2007. With the massive decline in housing prices, homeowners saw house values fall by double digit percentages. Suddenly, many individuals faced mortgages that exceeded the fair market value of their homes. No longer able to justify mortgage payments, an alarming number of homeowners defaulted on their mortgages forcing banks to foreclose on their homes. As housing prices dropped, delinquencies and foreclosures rose.

Figure 3.4 Housing Price vs Delinquencies & Foreclosures (Taylor 2009)



Thousands of mortgages ground to a shuddering halt, the little ripples that had been slightly irritating to the financial world were now not ripples at all; they were big white-foamed breakers crashing onto the beaches of Wall Street and threatening to drown anyone who was late taking cover (McDonald & Robinson 2009). Lenders, however, already eliminated the default risk from their balance sheets, passing it on instead to investors who had purchased the junk asset

pools. Subprime lenders infected the portfolios of banks, investment institutions, and individuals across the globe with these housing assets. Through these subprime mortgage-backed derivatives, the US housing bubble grew into a global economic crisis. Any mortgage brokers involved with subprime lending were in desperate trouble; the crisis was creeping inward from its outer reaches in Iceland, Shanghai, the Swiss Alps, and London (McDonald & Robinson 2009). By the summer of 2008, Fannie Mae and Freddie Mac – the primary holders of US mortgage-backed securities – held approximately $553 billion and $258 billion respectively of subprime loans on their books (Wallison and Calormiris 2008). It comes as no surprise that by September 2008, the two banks went out of business and were assumed by the US government in an attempt to construct a solution to the global economic crisis its deregulated markets created.

3.6 Iceland's Financial Collapse

Although Icelandic banks had not invested heavily in the US housing market, many other international banks suffered great losses due to the bubble. In attempts to recover from these major losses, many international banks eliminated most of their riskier ventures. Despite the favorable interest rates offered, many viewed Icelandic banks as risky investments due to their extremely levered positions coupled with aggressive investment practices of the young, inexperienced portfolio managers. Thus, credit flowing into Icelandic institutions slowed to a trickle. In fact, by early 2008, credit ratings of the banks fell to levels usually associated with imminent bankruptcy (Eggertsson & Herbertsson, 2009).

Experts continued to provide dire forecasts for Iceland's economy, yet the system managed to stay afloat for a bit longer due to shady practices conducted by the three banks and their New Viking Raiders. At this point, the Raiders had become dominant shareholders in all three of the major Icelandic banks. With limited global funding available, the Raiders began to

utilize bank resources for personal projects. For example, they replaced low-risk assets in the banks' money market funds with their own high risk assets (Eggertsson & Herbertsson, 2009). Additionally, they used the megabanks' resources to acquire other smaller banks and insurance agencies, whose resources they then proceeded to exploit. Finally, in what may be the most unethical practice yet mentioned, the Raiders manipulated the stock prices of their megabanks by lending themselves enormous sums of money in order to purchase additional shares in the banks which they were already primary shareholders. This practice artificially drove up stock value and helped to maintain the idea that the Icelandic banks remained in sound financial positions. Although the investigation is still pending, it seems that only 30 to 40 individuals were responsible for this unethical and highly illegal behavior.

The fatal blow to the Icelandic banking system and economy did not come until September 2008 with the collapse of Lehman Brothers. During the housing frenzy in the US, Lehman had been one of the largest subprime loan purchasers and providers of credit default swaps. Now, however, the investing institution was having significant difficulty moving the mortgage-backed securities which had been so popular less than a year ago. Across the globe, banks and other investors finally were realizing that their AAA mortgage-backed derivatives were actually disguised junk asset pools. In trying to rid its balance sheet of some of the toxic assets, Lehman took a devastating $100 million loss at 95 cents on the dollar (McDonald & Robinson 2009). Other institutions were quick to take note of this desperate Lehman move and many followed suit: ridding their balance sheets of the now dreaded mortgage-backed derivatives.

Fear spread across Wall Street like a plague. Now that banks were aware that these CDOs carried inherently more risk, LIBOR rates – the rate at which banks lend to each other – spiked. All Lending institutions began to fear bank-to-bank loan default and grew extremely cautious with lending practices. In other words, the short-term loan market, also known as the commercial paper market, contracted and loans became increasingly harder to obtain. For many large blue

chip companies such as Morgan Stanley, Goldman Sachs, and General Motors, this presented a major problem. For various working capital reasons, these massive companies borrow huge short-term sums, offering generous interest rates and solid collateral in return. In many cases, these loans are paid back with other short-term loans. In doing this, technically an institution can keep a massive loan rolling for months at a time; in Wall Street terms, this is known as a positive carry trade. However, when availability of short-term credit suddenly dries up, institutions suddenly become stuck with massive loans which they are incapable of paying off without liquidating other assets at a potential loss. This short-term credit shortage only worsened in June 2008, when it became apparent that 25 percent of Countrywide's subprime loans were delinquent. At the time, Countrywide was the largest subprime lender in the US, financing about 200,000 loans a month. Fear and negative speculation spread across the banking industry, causing the three-month LIBOR to jump 0.6 percent – the largest increase since 1998 (McDonald & Robinson 2009). By early July, the commercial paper market had all but evaporated. Banks no longer trusted each other and access to cheap, fast money was nearly impossible to obtain.

With the deterioration of the short-term borrowing market coupled with the undesirability of mortgage-backed securities, Lehman predictably faced serious problems. More than 50 percent of its assets were purchased utilizing the positive carry trade. As Lehman began to falter and show signs of weakness, negative speculation effectively ceased the flow of short-term lending into the bank. Soon thereafter, this guesswork became self-fulfilling: Lehman Brothers defaulted and then collapsed in September 2008 (Zingales 2008). To the surprise of many, no US government bailout or private sector safety net surfaced for the failed bank. Banks grew even more conservative, constantly reassessing risk.

Much like Lehman Brothers, the three major Icelandic banks - Kaupthing, Landsbanki, and Glitnir – were highly levered and reliant on short-term lending. In mere days after the Lehman collapse, international financial institutions virtually stopped dealing with Iceland's

banks and everything Icelandic, closing existing credit lines and cancelling previous purchase agreements (Eggertsson & Herbertsson, 2009). Soon thereafter, Glitnir could not meet debt obligations, stock price plummeted, and the bank was taken over by Iceland's financial administration. Proving the interconnectedness of Iceland's financial environment, Kaupthing and Landsbanki suffered similar fates within four days of Glitnir's collapse. Unlike many US banks and insurance agencies which had grown too big to fail, Iceland's banks had literally grown too big to save. The three banks – Kaupthing, Landsbanki, and Glitnir – controlled 87 percent of the nation's financial assets (Onaran 2012). Iceland's government was forced to push through an emergency law giving the government authority to seize the banks, restructure them, and guarantee domestic deposits (Onaran 2012). The collapse of Iceland's financial institutions marks one of the largest failures of a national economic system in modern history.

3.7 Iceland's Financial Fate

By late 2008, it became quite apparent that Iceland's economic problems could not be solved domestically. After all, the levered positions coupled with the risky investment practices had enabled the balance sheets of Iceland's three largest banks to grow in value to over ten times the nation's GDP. As previously mentioned all credit and lending to Iceland slowed throughout 2008 and then eventually ceased with the collapse of Lehman in September. In several countries, Icelandic bank assets were frozen entirely. Making matters worse, the once cherished Krona, decreased in average value by almost half over the first eight months of 2008. Specifically against the Euro, the Krona fell 60 percent. See Appendix A. Because the majority of Iceland's debt was foreign, both individual and corporate wealth were severed as the Krona continued to lose purchasing power, spiraling down in value. Foreign denominated debt that might have once cost 1 million Krona in 2007 now cost 2 million Krona in 2008. With the rapidly depreciating currency,

international banks refused to handle international transfers which involved the Krona. British banks went as far as to use anti-terrorist legislation to avoid Krona transactions. All forms of international business in Iceland came to a standstill. Importers of Iceland's products, for example, found great difficulty remitting payments to the sellers. On top of these other major macroeconomic problems, inflation soared to 19 percent, and unemployment skyrocketed to 8 percent (Onaran 2012). All in, Iceland's economy contracted about 10 percent as the country entered a recession. From an external point of view, a bleak economic future existed for the small island nation.

Internally, widespread panic swept the country. Despite a government guarantee on all domestic deposits, Icelanders feared a complete and total financial meltdown and rushed to the banks and ATMs to withdraw their savings. A bank run of this scale, relative to population, had not occurred since the Great Depression. Much like the rest of the world, the people of Iceland clearly wanted nothing to do with their failed banks. Albeit many difficulties, the government kept the zombie banks afloat for two weeks before announcing the creation of new banks – Arion Banki, Islandsbanki, and NBI. In structuring these new banks, the Icelandic government focused primarily on domestic needs. The balance sheets of the failed banks were first split between domestic and foreign. Next, the new banks assumed all domestic assets and liabilities, while all foreign balance sheet items remained a part of the old banks, to later be liquidated. In doing this, the Icelandic government managed to keep the national debt to about 85 percent of GDP (Onaran 2012). With this new banking structure along with serious asset write-downs, Iceland enabled economic recovery to begin. The new banks quickly became profitable causing the currency to recover some of its lost value. Additionally, inflation fell to 3 percent (Onaran 2012). By mid-2011, Iceland's capital markets again were seen as viable investments by international banks.

While the new banking system coupled with new loans from the IMF and other European countries prevented complete failure of the Icelandic economy, foreign investors were left to fight

over the remaining assets of the old banks. Investors often received mere fractions of what they were rightfully due. To compensate foreign losses, partial ownership of Arion and Islandsbanki is held by creditors of the old banks. These same creditors hold promissory notes that increase in value as NBI grows and becomes more profitable. Once reestablished, creditors no doubt will sell these new banks in attempts to recover lost profits from the crisis years. Although Iceland started its journey to economic recovery, much must be done before the country can return to prosperity. Recovering from a financial collapse of such large scale certainly presents many obstacles that will no doubt be quite difficult to overcome.

Chapter 4

Iceland's Financial Future

4.1 Lessons from the Past

Although Iceland suffered catastrophic financial failure in September 2008, the country, though on the verge, did not fully collapse. Economic recovery has since begun. To succeed in the future and return to former economic levels and financial stability, the small island nation must learn from its past mistakes.

First of all, future banks must recognize that while leverage can significantly increase returns it can also lead to equally greater losses, as leverage magnifies both gains and losses. If levered investments are unsuccessful, the interest expense and credit default risk incurred by the banks deteriorate shareholder value. To prevent such a collapse from happening again in Iceland, the government should implement a maximum allowable leverage ratio for banks. By limiting leverage, the government limits potential downside risk. Financing through foreign debt provides even more risk. On top of all the previously mentioned risks associated with high leverage, foreign debt also carries interest rate risk: loss in value that will occur if the purchasing power of the home currency falls relative to the foreign currency. A great number of uncontrollable, external forces drive exchange rates. If a bank chooses to use foreign debt to finance operations, it should do its best to hedge against interest rate risk. To prevent banks from taking on too much foreign debt, the Icelandic government could cap the allowable amount, limit the amount to a percentage of the investment, or force the bank to maintain a certain ratio of hedged to unhedged foreign debt.

Additionally, leverage can allow institutions to grow exponentially in size. Banks must be cautious that they do not outgrow their lenders of last resort – their respective governments. If a bank grows too big for its government to bailout, it becomes too big to save and, therefore, infinitely more risky. In the future banks must be more cautious when using debt financing. Equity financing often provides a better solution, as equity holders do not hold claim to any sort of repayment. Those purchasing equity hope for returns in the form of increasing stock price or non-mandatory dividends. Due to the past troubles caused by high leverage ratios and excess foreign debt, future Icelandic bankers should consider other financing options or at least be more cognizant of the risks associated with high levels of debt, both foreign and domestic.

As well as limiting total debt financing, future Icelandic banks should cut their reliance on short-term debt. Such debt can be incredibly fickle and highly speculative. Speculation in and of itself can become a self-fulfilling prophecy. If for instance, Bank A believes that Bank B will soon suffer a major loss, Bank A may be reluctant to provide Bank B with a short-term loan. Other Banks C, D, and E may take note of this and also refuse to provide Bank B with a loan. Even if Bank B actually does not suffer any major loss, speculation by the other banks prevented it from receiving a short-term loan. Now, unable to secure the loan, Bank B cannot to pay off liabilities it has been rolling over through the use of short-term debt and collapses. In this case, negative speculation caused Bank B to fail. Such was the story for many of the banks that collapsed during the 2008 financial crisis including Lehman Brothers, Glitnir, Kaupthing, and Landsbanki. The inability to secure needed short-term credit can be truly detrimental, especially when the necessary short-term sums are great.

A final lesson which Iceland should draw from its past is that economic bubbles are frequent occurrences. Recognizing a bubble before it bursts, can reap major profits. This recognition may not always be easy, as knowing exactly when to exit a market can be a delicate, unpredictable science; however, certain measures can be taken to limit the downside of being

caught in a bubble. First of all, investors should not overexpose themselves to any one market segment or specific type of asset. When the US housing bubble burst, it is no surprise that the overexposed Fannie Mae and Freddie Mac – the primary purchasers of US housing assets – were the first to collapse. As well as avoiding over exposure, it is important to maintain a firmly hedged position. While Icelandic banks did not hold a great deal of mortgage-backed derivatives on their books, they did borrow from many banks that did hold such assets. Perhaps, Glitnir, Kaupthing, and Landsbanki should have sought out a better mix of global lenders. In the future, Iceland should be more aware of economic bubbles and their potential impact on the global financial community. After all, several economists have concluded that bubbles are a regular part of economies and can occur as frequently as every ten years. As the world becomes more financially interconnected, such economic bubbles will generate only larger global impacts.

4.2 Solutions Moving Forward

Moving forward, there are several feasible solutions which could speed up the country's economic recovery as well as prevent such a massive economic collapse from reoccurring. First of all, there must be increased regulation, transparency, and accountability within Iceland's financial sector. Regulation must be formal and stem directly from the government. In less than 20 years, Iceland grew from financial obscurity into a major international player. Unfortunately, its governmental agencies failed to keep up with the rapid growth. Greed and corruption prevailed throughout the system. Just as the Securities & Exchange Commission monitors US markets, Iceland must create an improved government agency to regulate its markets. The lies, fraud, and stock price manipulation of the mid-2000s simply cannot happen again in the future. These unethical practices deteriorate shareholder value and develop a loss of trust between the Icelandic

people and their economic institutions. For markets to function efficiently, illegal and unethical behavior must be eliminated by effective regulation and oversight.

In addition to establishing a better regulatory system, Iceland should encourage the creation of more banks controlling smaller percentages of the nation's wealth. At the time of the crisis, a mere three banks controlled nearly 90 percent of the nation's financial assets. In the US, 10 banks controlled about this same percentage. The introduction of more banks solves several pressing issues. With reduced balance sheets, the new banks will be more likely to remain smaller than the Icelandic government. If there were to be another financial crisis in the future, the government could act as lender of last resort. Several institutions in every global economy should be considered too big or too important to fail. It is essential that their respective governments at least retain the financial capacity to provide a bailout if deemed absolutely necessary. The US government, for instance, bailed out numerous companies during the 2008 financial crisis including: Bear Stearns, Fannie Mae, Freddie Mac, AIG, GM, and Citigroup. Additionally, if the government does allow a future bank to fail, its reduced size will lessen the impact on its shareholders and clients as well as the macro environment. The US allowed Lehman Brothers to fail; while the impact was great, it did not bring the US economy to a shuddering halt. With balance sheets more than ten times the size of the country's GDP, Iceland had no other option but to let its banks default when threatened during the crisis. Future Icelandic banks must not be allowed to grow to magnitudes greater than the government itself.

On top of allowing the government to act as lender of last resort, a greater number of banks will increase competition, in turn, providing customers with better value. All banks provide similar services to clients. To differentiate itself from the competition, a forward looking bank will improve the customer experience. After all, the easiest way to generate increased revenue is through the maintenance of existing customers. Satisfied customers are more likely to remain loyal and utilize the bank for future financial requirements. In addition to better fulfilling

customer needs, more competition within Iceland's banking industry will limit fraud and other illegal behavior. Competing banks will be more likely to notice abnormal growth and report unusual highly skeptical practices. The added competition, coupled with improved government regulation, raise the risks of cheating the system. Although Glitnir, Kaupthing, and Landsbanki technically operated as competitors during the time of the crisis, extensive cross-ties existed amongst the banks causing the Icelandic banking structure to resemble more of an oligopoly than a perfectly competitive environment. Historically, such systems with limited competition enable fraud and other illegal activity to flourish. Without a doubt, increased competition improves banking services offered to the Icelandic people and limits the threat of illegal activity through collusion within the banking system.

As well as introducing an increased number of banks to the financial scene, the Icelandic government should limit the capacity of these banks by separating domestic depositories from international investment banks. During the time of the crisis Glitnir, Kaupthing, and Landsbanki served both roles. Because all three were so highly levered using predominantly foreign debt, these banks introduced excess risk, specifically exchange rate risk, to client portfolios. Many individuals holding accounts with the banks anticipated limited risk and average returns. Those saving for retirement certainly did not expect their funds to play any part in the costly, high risk, international projects favored by the young, irresponsible Icelandic portfolio managers. In separating depositories from investment banks, the Icelandic government protects the financial interests of its people. Those who wish to be involved with high volatility, high reward potential of investment banks may choose to do so, while those seeking safety and more modest returns do not have to worry that their chosen savings institution runs the risk of massive default. A wide variety of investment options offering differing levels of volatility and return should no doubt exist for the Icelandic people.

Chapter 5

Conclusion

The financial crisis of 2008 greatly disturbed global markets and impacted major national economies. Although the crisis first began in the United States, it quickly spread throughout every continent, reaching countries as remote as Iceland. After careful analysis, it seems apparent that the economic catastrophe can be rooted first to the US real estate boom beginning in the early 2000s. During this time frame, the US government heavily encouraged homeownership through the offering of low interest rates and flexible financing options. As housing prices spiked and the real estate market grew at unprecedented levels, more and more Americans took out oversized mortgages to purchase houses. Many Americans stretched their resources thin by taking out massive loans and providing little down payment. With growth expected to continue at such a rapid pace, these American's felt that such investments would be low risk, high reward transactions.

By the mid-2000s, many banks started to offer complex adjustable-rate mortgages to poorly qualified, subprime borrowers. Wanting to rid themselves of such mortgages, these banks proceeded to pool these subprime loans together to form various collateralized-debt obligations. Due to their newness and complexity, ratings agencies misunderstood the actual risks associated with such assets. In mistake, these mortgage-backed derivatives were considered high investment grade. With such a rating and assurance of quality, investment institutions across the world purchased these mortgage-backed assets in great quantity without really understanding the value of the underlying assets.

This process continued through much of 2007 until suddenly the immensely overvalued US housing market began to deteriorate in value; the housing bubble finally burst. Americans across the country faced mortgages that exceeded the market value of their homes. Default and bankruptcy spread swiftly across the real estate market. Some of the largest subprime lenders saw more than a quarter of their loans default. The once cherished US housing assets became poisonous investments to hold. Few understood the real risks or actual value associated with the now toxic assets. Banks across the globe rid their balance sheets of these derivatives, taking major losses.

By late 2008, those who held great amounts of mortgage-backed derivatives, including Fannie Mae, Freddie Mac, and Lehman Brothers, went bankrupt. Following these failures of major US investment institutions, banks grew extremely risk averse. Libor rates jumped and banks became very untrusting of one another. Unsure who held the toxic US housing assets, banks were unwilling to provide short-term loans to one another. Often essential for major corporations' day-to-day operations, the lack of available short-term funding created further global economic issues. The once thriving global economy now faced pressing issues brought about initially by an overvalued US housing market.

During this same time period in the early 2000s, Iceland's economy emerged from a shroud of financial insignificance. Prior to the last quarter of the twentieth century, banks in Iceland were state owned, formal securities markets were nonexistent, and real interest rates were negative. The tiny island nation's economy focused primarily on state sponsored fisheries and farms. However, following a wave of deregulation the country emerged and began to play a part in the major global markets.

With the recent modernization of the Icelandic economy three banks dominated Icelandic financial markets: Glitnir, Kaupthing, and Landsbanki. After capturing the Icelandic market, the three quickly spread throughout much of Europe and the rest of the world. Notorious for risky

and aggressive acquisitions, the investment managers of the Icelandic banks acquired a substantial collection of businesses, real estate, and other assets across the globe. Those in control of the banks came to be known as the New Viking Raiders. In order to finance all of these purchases, the New Viking Raiders used predominantly foreign denominated debt. Because the Icelandic Krona was so strong and interest rates remained so high, a surplus of global funding existed in Iceland. Taking advantage of this cheap financing, the banks became highly levered – reaching leverage ratios upwards of thirty to one. The banks became heavily reliant on short-term credit. In many cases, massive short-term loans were kept rolling forward for months at a time.

Suddenly, however, events in Iceland turned for the worse. In 2008, the US housing bubble burst and several major banks collapsed. Unsure, who held toxic US housing assets, banks became extremely risk intolerant and began to fear interbank lending. The short-term credit market virtually disappeared over the course of a week. Now, unable to meet debt obligations and keep short-term loans rolling forward, Icelandic banks found themselves in a perilous position. Just days after Lehman's end all three Icelandic banks collapsed as well. Combined, Glitnir, Kaupthing, and Landsbanki controlled nearly 90 percent of Icelandic financial assets and possessed balance sheets totaling in value close to 10 times the country's GDP. When Iceland's banking system collapsed, so did the country's economy. This thesis argues that several distinct and timely factors contributed to this failure of a national economy:

a) The US government encouraged homeownership through low interest rates and cheap financing.
b) US banks offered mortgages to subprime borrowers. The banks then pooled these mortgages together to create mortgage-backed derivatives, which were then sold to investors across the globe.

c) Misunderstanding the riskiness and quality of these assets due to their complexity, ratings agencies mistakenly ranked these derivatives as investment grade.

d) US housing assets became incredibly overvalued creating an economic bubble. Once the bubble burst, many Americans defaulted on their loans causing the mortgage-backed derivatives to drop significantly in value.

e) Deregulation of the Icelandic financial sector allowed three banks to manipulate and possess nearly 90 percent of the nation's financial assets.

f) High interest rates in Iceland created an artificially high exchange rate for the Icelandic Krona and brought a massive supply of cheap, foreign credit into the country.

g) The young, inexperienced portfolio managers at the Icelandic banks practiced highly risky investing activities, used significant levels of leverage, and relied heavily on short-term credit.

h) The collapse of Lehman Brothers caused global lending institutions to become extremely risk averse, effectively eliminating the short-term credit market.

i) The Icelandic banks outgrew the country of Iceland and became too big to save. The country could not afford to bailout the banks due to their sheer size.

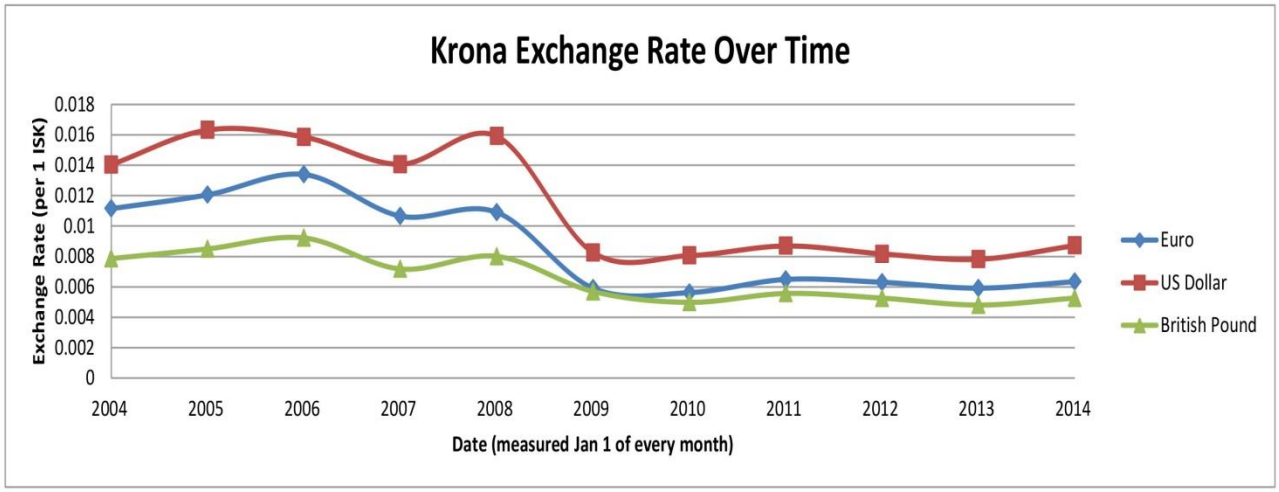
With time, the Icelandic economy and banking system will recover. However, the country must learn from past mistakes moving forward. Namely, the nation must not allow its banks to become so highly levered, reliant on foreign debt, and dependent on short-term loans. Additionally, future banks must not assume such high levels of risk, particularly exchange rate risk. New Icelandic banks must remain smaller in size and greater in number. Lastly, the government must institute the appropriate amount of regulation so to eliminate fraud and other

illegal activity from its financial markets. In following these steps, Iceland will again maintain the status of a global financial powerhouse.

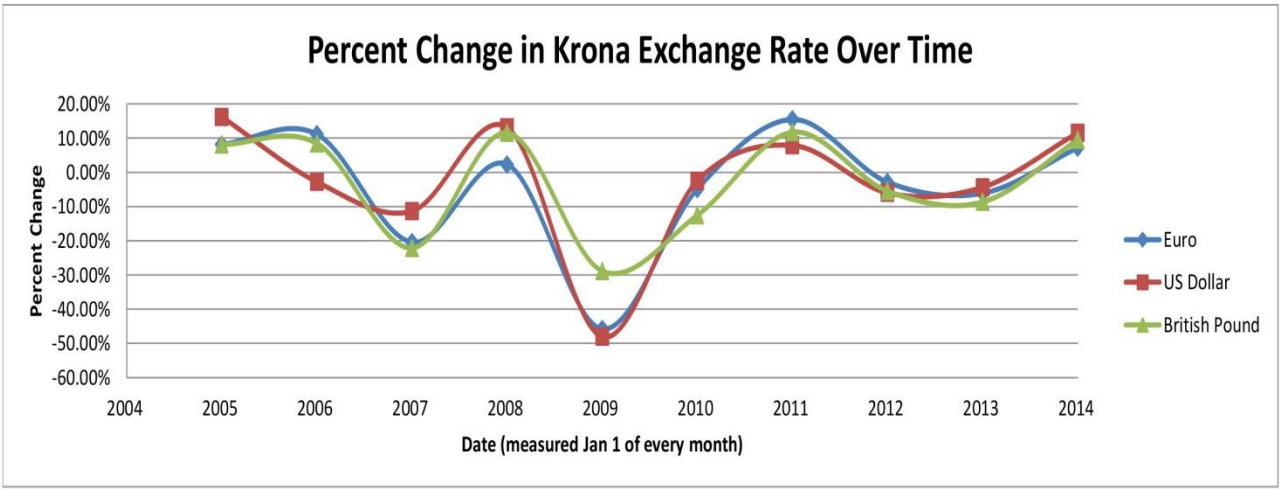
Appendix A

Krona Exchange Rate Information (X-Rates)

Krona Exchange Rate Over Time (per 1 ISK)											
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Euro	0.011146	0.012054	0.013393	0.010656	0.010903	0.005911	0.005622	0.006491	0.006303	0.005918	0.006343
US Dollar	0.014039	0.016316	0.015859	0.014063	0.015908	0.008260	0.008058	0.008692	0.008169	0.007814	0.008718
British Pound	0.007862	0.008500	0.009218	0.007178	0.008009	0.005698	0.004984	0.005568	0.005262	0.004806	0.005264

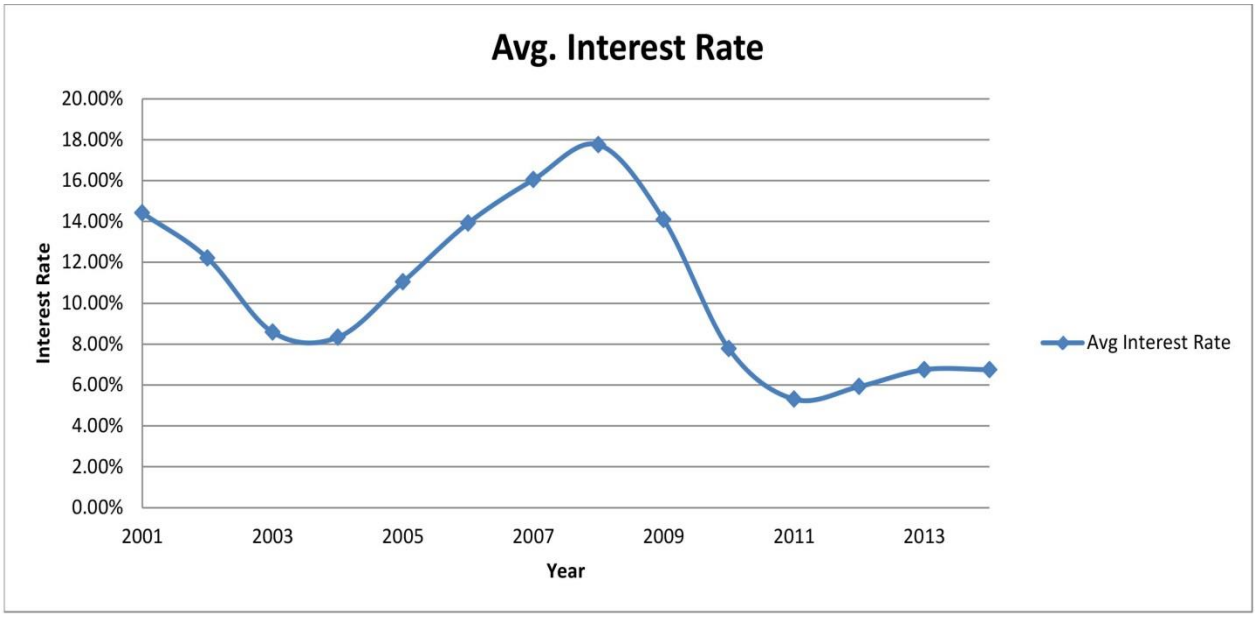


Percent Change in Krona Exchange Rate Over Time										
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Euro	8.15%	11.11%	-20.44%	2.32%	-45.79%	-4.89%	15.46%	-2.90%	-6.11%	7.18%
US Dollar	16.22%	-2.80%	-11.32%	13.12%	-48.08%	-2.45%	7.87%	-6.02%	-4.35%	11.57%
British Pound	8.11%	8.45%	-22.13%	11.58%	-28.86%	-12.53%	11.72%	-5.50%	-8.67%	9.53%



Appendix B

Iceland Interest Rate Information (Sedlabanki Islands)



	General interest
	on non-indexed loans
Mar-14	6.75%
Feb-14	6.75%
Jan-14	6.75%
Dec-13	6.75%
Nov-13	6.75%
Oct-13	6.75%
Sep-13	6.75%
Aug-13	6.75%
Jul-13	6.75%
Jun-13	6.75%
May-13	6.75%
Apr-13	6.75%
Mar-13	6.75%
Feb-13	6.75%
Jan-13	6.75%

Year	Avg. Interest Rate
2014	6.75%
2013	6.75%
2012	5.92%
2011	5.31%
2010	7.78%
2009	14.08%
2008	17.75%
2007	16.04%
2006	13.92%
2005	11.04%
2004	8.33%
2003	8.58%
2002	12.21%
2001	14.42%

Dec-12	6.40%
Nov-12	6.40%
Oct-12	6.40%
Sep-12	6.40%
Aug-12	6.40%
Jul-12	6.15%
Jun-12	5.65%
May-12	5.65%
Apr-12	5.40%
Mar-12	5.40%
Feb-12	5.40%
Jan-12	5.40%
Dec-11	5.25%
Nov-11	5.40%
Oct-11	5.25%
Sep-11	5.25%
Aug-11	5.25%
Jul-11	5.25%
Jun-11	5.25%
May-11	5.25%
Apr-11	5.25%
Mar-11	5.25%
Feb-11	5.50%
Jan-11	5.55%
Dec-10	5.75%
Nov-10	6.30%
Oct-10	6.75%
Sep-10	7.75%
Aug-10	7.75%
Jul-10	8.25%
Jun-10	8.25%
May-10	8.50%
Apr-10	8.50%
Mar-10	8.50%
Feb-10	8.50%
Jan-10	8.50%
Dec-09	9.00%
Nov-09	10.50%
Oct-09	10.50%
Sep-09	10.50%

Aug-09	10.50%
Jul-09	10.50%
Jun-09	10.50%
May-09	18.00%
Apr-09	19.00%
Mar-09	19.00%
Feb-09	20.00%
Jan-09	21.00%
Dec-08	21.00%
Nov-08	15.00%
Oct-08	18.50%
Sep-08	18.50%
Aug-08	18.50%
Jul-08	18.50%
Jun-08	18.50%
May-08	18.50%
Apr-08	16.50%
Mar-08	16.50%
Feb-08	16.50%
Jan-08	16.50%
Dec-07	16.50%
Nov-07	16.00%
Oct-07	16.00%
Sep-07	16.00%
Aug-07	16.00%
Jul-07	16.00%
Jun-07	16.00%
May-07	16.00%
Apr-07	16.00%
Mar-07	16.00%
Feb-07	16.00%
Jan-07	16.00%
Dec-06	15.50%
Nov-06	15.50%
Oct-06	15.50%
Sep-06	15.00%
Aug-06	14.50%
Jul-06	14.00%
Jun-06	14.00%
May-06	13.00%

Apr-06	12.50%
Mar-06	12.50%
Feb-06	12.50%
Jan-06	12.50%
Dec-05	12.00%
Nov-05	12.00%
Oct-05	11.50%
Sep-05	11.50%
Aug-05	11.50%
Jul-05	11.50%
Jun-05	11.00%
May-05	11.00%
Apr-05	10.50%
Mar-05	10.00%
Feb-05	10.00%
Jan-05	10.00%
Dec-04	9.00%
Nov-04	8.50%
Oct-04	8.50%
Sep-04	8.50%
Aug-04	8.00%
Jul-04	8.00%
Jun-04	8.00%
May-04	8.00%
Apr-04	8.00%
Mar-04	8.50%
Feb-04	8.50%
Jan-04	8.50%
Dec-03	8.50%
Nov-03	8.50%
Oct-03	8.50%
Sep-03	8.50%
Aug-03	8.50%
Jul-03	8.50%
Jun-03	8.50%
May-03	8.50%
Apr-03	8.50%
Mar-03	8.50%
Feb-03	9.00%
Jan-03	9.00%

Dec-02	9.50%
Nov-02	10.00%
Oct-02	10.50%
Sep-02	11.50%
Aug-02	12.00%
Jul-02	12.00%
Jun-02	12.00%
May-02	13.00%
Apr-02	14.00%
Mar-02	14.00%
Feb-02	14.00%
Jan-02	14.00%
Dec-01	14.00%
Nov-01	14.50%
Oct-01	14.50%
Sep-01	14.50%
Aug-01	14.50%
Jul-01	14.50%

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ACADEMIC VITA

Ryan Altus

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Media, PA 19063 State College, PA 16801

Education

The Pennsylvania State University, Smeal College of Business — University Park, PA
The Schreyer Honors College — Expected Graduation: May 2014
Anglo American University — Prague, Czech Republic (Spring 2013 Semester)
Bachelor of Science in Finance
Minor in International Studies
Penncrest High School — Media, PA (Graduation: June 2010)

Professional Experience

PricewaterhouseCoopers — Philadelphia, PA
Assurance – Transaction Services – Valuation – Associate — May 2013 – Aug. 2013

- Valued intangible assets for financial reporting purposes
- Completed valuations using DCF, market multiples, and guideline public transactions approaches
- Audited valuations and impairment tests conducted by independent third party valuation teams
- Ran shadow WACC calculations to gain comfort with valuations conducted by third party valuation teams
- Wrote programs summarizing completed valuation projects
- Quality controlled projects performed by team members

IMC Construction — Malvern, PA
Accounting Department Intern — May 2012 – Aug. 2012 and May 2011 – Aug. 2011

- Managed accounts payable through use of Timberline and Timberscan software
- Entered and coded invoices and expense reports into database
- Collected necessary supporting documents and approved invoices
- Cut checks and sent payments for approved invoices
- Created database for subcontractor contact information

Rice McVaney Communications (Microsoft Contractor) — University Park, PA
Windows U Crew Student Representative — Aug. 2011 – May 2012

- Demonstrated Windows 7 software, Samsung Series 9 Laptop, Microsoft Office Software, and Native Instruments DJ equipment to 40 students per week
- Collected and entered market research surveys into database
- Assisted with special on campus Microsoft corporate events

ImpactRx — Mt. Laurel, NJ
Accounting Department Intern — June 2009 – Aug. 2009

- Managed database regarding payroll information
- Created models to calculate executive bonuses
- Developed presentations to be shown at monthly department meetings

Leadership

Acacia Fraternity
Attended the 51st Biennial Acacia Conclave and Leadership Academy — Aug. 2012
Junior Dean — Nov. 2011 – Present

- Served as social chair – third highest ranking officer on Acacia's executive board
- Organized and managed all social functions
- Managed $60,000 social budget
- Head representative and contact for Acacia within Greek community

Rush Chairman

Aug. 2011 – May 2012

- Recruited 45 new members through two rush periods
- Managed $3,000 rush budget
- Organized and managed all rush events
- Recognized by Acacia International as best at membership recruitment out of 34 chapters

Homecoming Chairman

Aug. 2011 – Oct. 2011

- Designed and created homecoming float
- Managed participation and involvement in homecoming parade

Assistant Thon Chairman and Dancer

Aug. 2010 – Present

- Raised $195,897 in 2013 for pediatric cancer (4^{th} highest within Greek community)