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Iceland's Economic and Financial Crisis: Causes, Consequences and Implications

Rok Spruk[§]

Abstract

Iceland experienced a significant financial meltdown and subsequent economic downturn after the 2008/2009 financial crisis struck the country. It had been the worst crisis ever experienced by a small country from the late 20th century onwards. Since 1980s, Iceland's macroeconomic stability had been constantly deteriorated by the most volatile annual CPI and asset-price inflation dynamics in the OECD. More than a decade of robust growth dynamics left behind an internationally over-exposed banking sector which exceeded the size of country's GDP by nearly 10 times. The failure of Lehman Brothers and a global credit crunch, in turn, raised CDS rates on Icelandic banks which immediately declared insolvency after the global interbank lending froze. The paper provides a comprehensive analysis of the macroeconomic, banking and financial background of the crisis. It also provides a short-term analysis of Iceland's macroeconomic outlook. The main findings of the article conclude that the depth of financial crisis is attributed to the recent decade of unadjusted monetary policy which failed to prevent sharp appreciation of the krona and thus created sufficient conditions for significant asset-price inflation, high interest rate differential and the largest banking collapse in small and open economies. As the size of the banking sector was several times the country's GDP, Icelandic central bank failed to act as a lender of the last resort. The paper concludes that, to prevent future crises of similar proportions, it is impossible for a small country to have a large international banking sector, its own currency and an independent monetary policy.

Keywords: Iceland, Financial Crisis, Financial Macroeconomics, International Finance, Monetary Policy, Currency Crisis

JEL Classifications: E44, E52, E6, E62, F31, G01, G21,

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I. INTRODUCTION

While the economies of the world faced a gradual economic recovery from 2008/2009 recession, economists are doing a lot of research to discover the real causes that led to the financial crisis of 2008/2009. Iceland is one of the biggest victims of the financial crisis. Estimates have shown that the fiscal cost of the financial crisis stems from a drastic drop of economic activity to surging unemployment and inflation. The financial crisis in the North Atlantic island has received not only a lot of attention from economists and policymakers but also a lot of publicity from the media after the country's banking sector collapsed.

In the past Iceland has faced significant and painful macroeconomic crises. When oil shocks hit the world economy, the Icelandic economy was badly hurt. In 1980s, inflation was rampant and persistent. In 1983, for example, the inflation rate reached as high as 100 percent annually. Policymakers actually embraced a somewhat higher inflation to mitigate the effect of macroeconomic instability on unemployment. Until the 1980s, Iceland pursued a false prosperity based on government intervention and involvement in economic activity. At the end of 1980s, Iceland began implementing economic reforms. Throughout the 1990s, the government trimmed personal and corporate tax rates, privatized state-owned companies, liberalized product and labor markets, deregulated the financial sector and reformed the pension system. The outcome of bold free-market reforms led to a decade of higher economic growth, lower inflation and one of the lowest rates of unemployment in the world. In early 2000s, the Icelandic economy had been showing signs of overheating. After the economy experienced a mild recession in 2002, the central bank of Iceland repeatedly raised interest rates as the inflation rate repeatedly exceeded its target limits. For years, the interest rate stood at double-digit levels. In a small and open economy such as Iceland, a significant difference between domestic and world interest rates boosts the so-called carry trading against uncovered interest parity. What happened is that investors were quite uncertain about the krona which had been one of the most unstable currencies in the world. As capital inflows came in, the krona appreciated remarkably. In such unusual circumstances, the banking sector took advantage of lower interest rates abroad and expanded its activities in Great Britain, the Nordic countries and the rest of the world. Thus, the three biggest banks drastically expanded their balance sheets enabled by the krona's uncovered interest parity. In turn, the assets of Kaupthing, Glitnir and Landsbanki exceeded the size of Iceland's economy by more than ten

times. The capital inflows, which led to the krona's massive appreciation, became a part of the local money supply as Icelandic firms and households borrowed in high-yielding foreign currencies. When Bear Stearns was bailed out and when Lehman Brothers went bankrupt, the financial crisis quickly spread around the world. For Icelandic banks, the painful scenario began after investors demanded a withdrawal of krona-denominated funds and securities from Icelandic banks and the stock market. In the aftermath, the krona strongly depreciated. Immediately, Iceland's banking giants defaulted and were therefore insolvent. Rating agencies such as Moody, Fitch and S&P downgraded their outlook on sovereign debt. The outlook on krona was disastrous as the Icelandic currency received a BBB-midterm outlook. In addition, Icelandic government bonds were recently graded just one notch above junk-bond level. At the time of default, the gross external liabilities of the banking giants extended to 900 percent of Iceland's GDP. Thus, the central bank could not act as a lender of the last resort as many central banks around the world were able to. The size of the banking sector was also far beyond the fiscal capacity of Iceland's government. If interest rates were negative, then the inflation rate would climb close to three-digit levels. Thus, the three biggest banks failed and the financial crisis pushed Iceland into the deepest recession since World War II. The IMF extended Iceland an emergency loan to stabilize the banking sector and to pursue macroeconomic recovery. The financial crisis also induced a political crisis, street riots and protests.

The main cause of the financial crisis in Iceland is a misguided monetary policy which inflated the business cycle, leading to excess demand for liquid funds whereas the foreign currency became a part of the domestic money supply. The macroeconomic future of Iceland is uncertain. While it became clear that the country's banking sector grew too fast in response to monetary policy failures, it is still not clear whether Iceland should join the European Monetary Union. This paper brings a comprehensive insight into the unanswered dilemmas about Icelandic financial crisis and the country's macroeconomic recovery. In Chapter 1, I review the Icelandic turnover from a period of false prosperity into a period of a decade-long high economic growth. Many authors and commentators have coined the term Icelandic model as a set of bold macroeconomic and structural reforms which boosted economic growth, standard of living and reduced unemployment. In Part II, I discuss the emergence of financial and economic crisis with comprehensive information about the dynamics of the main macroeconomic variables such as the interest rate, the inflation rate, foreign indebtedness and exchange rate. In Part III, I briefly analyze and summarize the main causes that led to the financial crisis in Iceland, largely focusing on the

metamorphosis of the banking sector and its unusually remarkable performance prior to the financial crisis. Part IV constitutes a central part of this paper. In this chapter, I discuss whether Iceland is an optimum currency area, hence, is it feasible for Iceland to enter the EMU, adopt the Euro and give up the krona as a legal tender. I discuss this issue from the perspectives of labor market, wages and prices, financial stability, interest rate dynamics, stock market, debt, fiscal and monetary policy. In Part V, I present some perspectives on the length of the economic recovery in Iceland. The summary and the main findings are presented in the conclusion.

II. ICELANDIC ECONOMIC MODEL: FROM CRISIS TO PROSPERITY

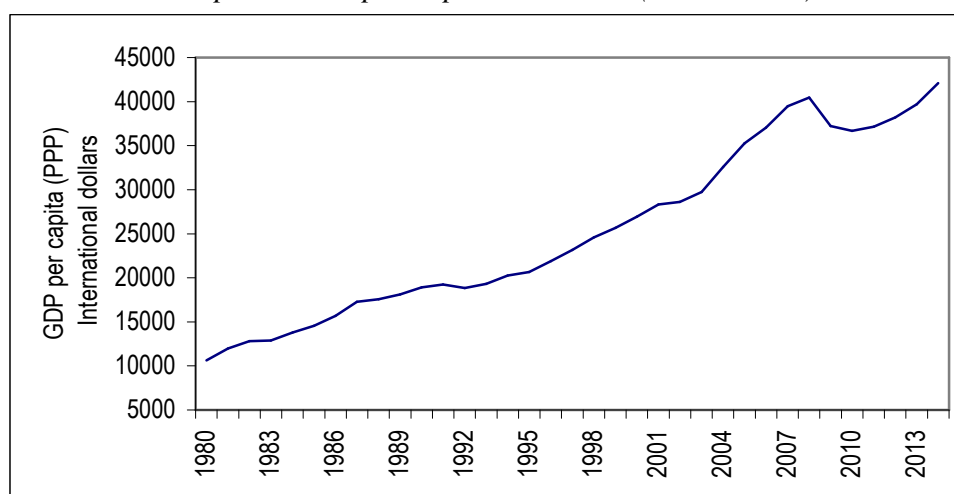
“Privatization, strong fiscal management and responsible leadership on the part of labor unions and employers have played a major part in the successful restructuring of the Icelandic economy. But many other factors have been important as well. The Central Bank was granted full independence and the Icelandic currency was floated in the market. Such a framework makes the economy more disciplined and solid.”

David Oddsson, former prime minister of Iceland

At the end of 1980s, after decades of Keynesian economic policy, the economy of Iceland was faced with rampant inflation, high unemployment and staggering economic growth. In 1983, after a series of unsuccessful fiscal policy attempts to cure the persistence of high inflation, the inflation rate reached as high as over 80 percent annually, all while monetary policy remained in status quo. As a result of deteriorating conditions in the dynamics of economic growth which followed after the process of disinflation began, between 1990 and 1995, GDP grew by 0.3 percent on average. After the end of the World War II, Iceland repeatedly experienced significant volatility of inflation which resulted from repeated increases in aggregate spending which created excessive purchasing power and led to inflation. The central bank boosted monetary aggregates and repeatedly reduced interest rate to stabilize the business cycle and boost an otherwise volatile economic growth. The inability of the central bank to pursue stabilization policies was due to three main reasons: (1) high inflation tarnished prospects of economic growth while the central bank believed that the expansion of the monetary base didn't have any impact on real economic growth, (2) a negative real interest rate on general deposits meant that Icelandic banks could lend for investment and grant consumption loans only if the central bank speeded up credit facilities which, again, o inflationary pressures. (3) Fiscal policymakers believed that increasing government spending would boost aggregate demand and, further, economic growth. In reality, increasing government spending led to the spiral of

wages and prices since labor unions demanded further wage increases in the situation in which real purchasing power was tarnished. Nonetheless, as wages grew too fast compared to the productivity performance, the cycle of inflationary persistence continued. The inflationary dynamics was a result of demand-side and supply-side features. A turbulent macroeconomic environment meant not only extraordinary high inflation but also staggering economic growth and a volatile exchange rate. It is no surprise that the Icelandic krona is one of the least stable and most fluctuating currencies in the world. In 1991, when the new government under the leadership of David Oddsson was formed, there was a significant change in economic policy-making.

Graph 1: GDP per capita in Iceland (1980 - 2014)



Source: IMF, World Economic Outlook (2009)

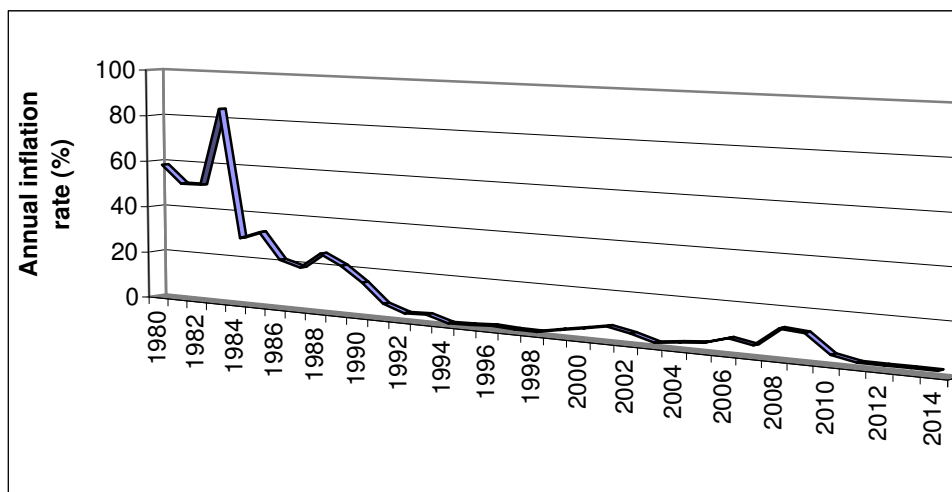
The main reforms, implemented between 1991 and 2004 were:

- Reduction in government spending
- Lower tax rates on labor and capital
- Privatization of state-owned enterprises
- Liberalization of the labor and product markets
- Further economic integration with the World
- Pension reform
- Deregulation of the financial market
- Reform of the public sector.

While government spending as a share of the GDP actually increased from 43.6 percent of the GDP in 1992 to 44.1 percent in 2004, major reforms

have been implemented and the Icelandic economy experienced an renaissance - a decade of robust economic growth, stable inflation and high employment. In 2002, when Iceland experienced a mild recession, mostly due to external imbalances, GDP contracted by about 1 percent. When oil shocks emerged in 1973, Icelandic economy was trapped into the effects of negative supply shocks - high and persistent inflation and a surge in government spending. While government spending in the share of the GDP was moderate compared to the dysfunctional economies of Western Europe of the time, deep budget deficits prevailed between 1983 and 1995. In 1994, the budget deficit hit 4.7 percent of GDP. Even though government spending was not actually reduced, budget deficits were eliminated and thus there was less domestic crowding-out; a situation in which government spending displaces private investment which results in higher domestic interest rate and less favorable economic growth prospects. As a result of economic reforms, GDP grew by 3.8 percent on average between 1995 and 2003. While real productivity plummeted between 1990 and 1995 by 0.3 percent per annum on average, it grew 3.8 percent between 1995 and 2003. The main cause of the surge in labor productivity was a reduction in personal and corporate income tax rates. Aggregate tax burden as share of the GDP is lower than in other Nordic countries. Throughout the 1990s, Iceland has been steadily reducing the corporate income tax rate.

Graph 2: Annual inflation rate (in %) 1980 - 2014

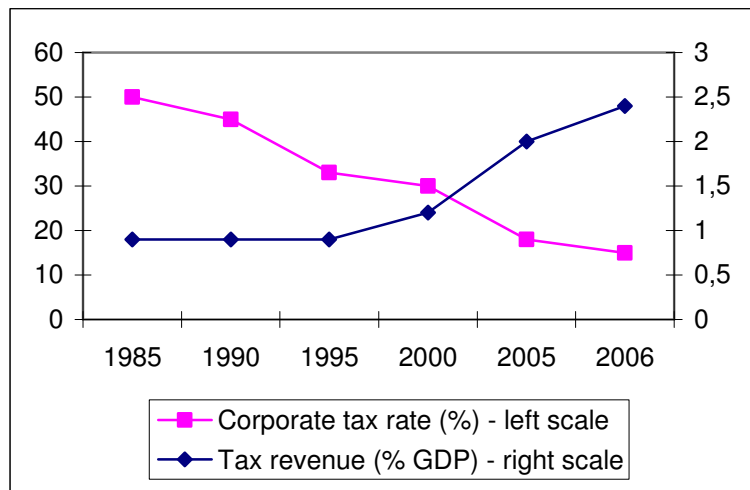


Source: IMF, World Economic Outlook (2009)

The rate was slashed from 45 percent in 1991 to 18 percent in 2001. In 2007, Iceland implemented a 22.75 flat tax rate on personal income. Together with the local tax rate on personal income, the combined flat tax rate is 36 percent. Lower tax rates on labor and capital boosted productivity and gross capital formation which induced high economic growth

throughout 1990s. There is well-known empirical evidence that lower marginal tax rates on labor supply and productive behavior lead not only to higher after-tax income and return on investment but also to higher tax revenue - the relationship known as the Laffer curve. During the period of prosperity and robust economic growth, there was double evidence of the Laffer curve effect. Following a major reduction in the taxation of labor, average household income increased by more than 17 percent. In terms of corporate tax, the rate was reduced to 18 percent in 2002 after a sky-high 52 percent in 1985. While high corporate tax burden collected only a tiny fraction of the revenue basis - 0.9 percent of GDP in 1985 - lower corporate tax not only increased real disposable household income but also raised tax revenue from 0.9 percent in 1985 to 1.5 percent in 2003. In 2008, Iceland further reduced the corporate income tax rate to 15 percent.

Graph 3: Corporate Tax Revenue and Corporate Income Tax



Source: Ministry of Finance (2009)

The fiscal policy has a powerful impact on economic growth since lower tax burden removes barriers to trade, entrepreneurship and wealth creation. However, economic policy has not made the tax burden permanently low. In fact, it moved from 26.2 percent of GDP in 1965 to 40 percent of GDP in 2007. Throughout the 1990s, Iceland's economic policymakers reduced tax burden and restricted government spending to prompt economic activity and propel the economy towards prosperity. The response of the private sector to pro-growth fiscal policy was immense. In the second half of the 1990s, real productivity grew significantly alongside the restructuring of the economy and the growth of the standard of living. Before the 1990s, Icelandic economy had been overwhelmed with the burden of state ownership of economic activities.

Throughout 1990s, the government launched privatization to remove the inherent distortions of state ownership. Faced with rioting inflation and discretionary monetary and fiscal policy, state-owned enterprises were unprofitable and business management and planning were far from optimal. Between 1998 and 2002, the value of privatized net assets was 1.568 million ISK or 17 percent of GDP. Privatizing inefficient state-owned companies caused Schumpeterian creative destruction as the restructuring of the backlash economy emerged and new investment opportunities flourished. Before the free-market reforms were launched, the dynamics of Iceland's small-size financial system was impaired by restrictive regulation of the credit market. In addition to overregulated credit market, double-digit inflation eroded savings, reduced demand for real deposits, overexposed the commercial banks to the risk of default and pushed real interest rates negative. Meanwhile, the Icelandic krona further depreciated and boiled the risk of inflationary persistence. The comprehensive restructuring and privatization of the financial sector and monetary stabilization induced financial innovation as well as stock market performance. In addition to sound financial and monetary framework, general government debt was markedly reduced. Gross government debt shrank from 58.8 percent of GDP in 1995 to 27 percent in 2005. There was also a marked reduction in foreign debt, since the latter is an important indicator given the high interest rate differential between Iceland and the rest of the world. While in 1996, foreign debt represented 28.1 percent of the government's gross debt, it was reduced to 7.7 percent of the gross government debt in 2006. In 2007/2008 United Nations' *Human Development Index*, Iceland occupied the 1st place. It also had the third longest life expectancy at birth in the World and its GDP per capita (PPP-adjusted) was the 5th highest in the world. Iceland is also known for one of the most stable and sustainable retirement systems in the world. While the challenges of an ageing population are a significant macroeconomic concern, the outlook is favorable compared to other advanced countries given Iceland's high birth rate, high long-term productivity prospects and asset-backed structure of the pension fund which is a key factor in demographic transition when a growing share of population is retiring while, at the same time, labor supply is diminishing. To mitigate the macroeconomic risk of staggering economic growth, high inflation and diminishing productivity performance, a larger size of net pension assets is needed alongside higher retirement age and flexible pension system.

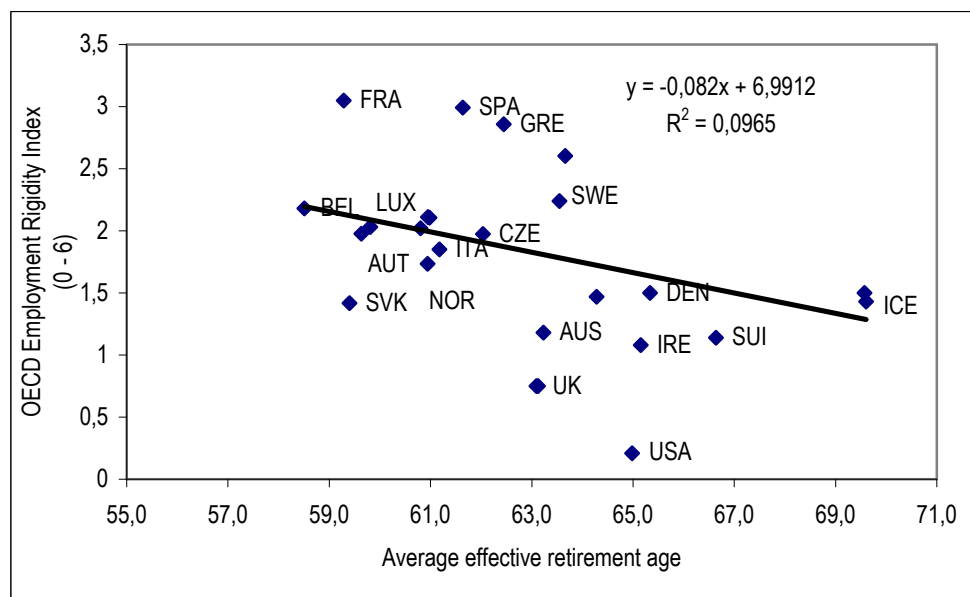
Table 1: Pension Fund Net Assets in OECD Countries in 2007

Country	Asset size (% of the GDP)	Country	Asset growth (2001 - 2007) in percentage points
Netherlands	138.05	Iceland	50
Iceland	133.69	Netherlands	34.44
Switzerland	119.18	Switzerland	16.72
Finland	71.45	Finland	21.57
Germany	4.11	Italy	1.02
Italy	3.27	Germany	0.67

Source: OECD Statistics (2009), author's own calculation

Iceland's favorable demographic characteristics enabled the reform of the pension system which was based on prompting the working age and minimizing the incentives of early retirement. The pension system was split up into three pillars. The first pillar is tax-financed and guarantees a minimum pension. The second pillar is an occupational pension fund which is fully-funded, privately managed and based on a mandatory contribution. The third pillar is a voluntary one with individual savings accounts. During the period of robust economic growth, Iceland also liberalized the labor market, although it remains pretty rigid. There is a tight connection between labor market efficiency and sustainability of the pension system. The graph below shows the relationship between the average effective retirement age and rigidity of employment in OECD countries between 2002 and 2007. As expected, countries with lower effective retirement age, on average, tend to face more rigid labor market. A liberalized and deregulated labor market boosts people to work longer hours and avoid early retirement. This aspect is particularly strong and important since in most OECD countries, net financial liabilities to the retiring and retired population are exceeding GDP several times. Nordic countries and Iceland in particular face less risk of extensive fiscal pressure on government spending to fund the pension system through taxes and budget outlays. Former chief economist at Kaupthing bank once famously noted that "Iceland is a European country with American labor market." Indeed, Icelanders have worked longer hours than the average annual working hours in Europe. The table below shows annual working hours in selected OECD countries. Not surprisingly, throughout the 1990s and early 2000s, productivity grew significantly. Nevertheless, in the long run, productivity is the main engine in the growth of standard of living. However, the 2008-2009 financial crisis has shackled the North Atlantic island and brought a painful recession with enormous politico-economic consequences.

Graph 4: Effective Retirement Age and Rigidity of Employment in OECD Countries between 2002 and 2007



Source: OECD Statistics (2009), author's own estimate

Table 2: Average Annual Hours worked in OECD Countries

Country	Average annual hours worked	Average daily hours worked
Korea	2265.6	9.44
Iceland	1822.1	7.59
Japan	1808	7.53
United States	1798	7.49
New Zealand	1750.7	7.29
Canada	1732.5	7.21
United Kingdom	1655	6.90
...		
Belgium	1461	6.09
France	1457	6.07
Germany	1338.7	5.58

Source: OECD Statistics (2009), author's own calculation

III. THE EMERGENCE OF FINANCIAL AND ECONOMIC CRISIS

“On most measures, the small Icelandic economy is one of the most overheated in the OECD. Unemployment stands at 1 percent, wage growth is above 7 percent, and inflation is running above 4 percent despite a strong ISK. The current account deficit is closing in on 20 percent of the GDP. The Icelandic central bank has been hiking rates substantially in order to cool the economy and rates are now above 10 percent. Based on the macro data alone, we think that the economy is heading for a recession in 2006-07. GDP could probably dip 5-10 percent in the next two years and inflation is likely to spike above 10 percent as the ISK depreciates markedly. However, on top of the macro boom, there has been a stunning expansion of debt, leverage and risk-taking that is almost without precedence anywhere in the world. External debt is now at 300 percent of the GDP while short-term external debt is just short of 55 percent of the GDP. This is 133 percent of Icelandic export revenues.”

Danske bank, Iceland: Geysir Crisis, 2006

At the end of 2008, Iceland experienced one of the most severe financial crises in the world since the end of World War II. The fiscal cost of the financial crisis is estimated at 65 percent of the GDP in euro terms, foreign obligations have risen to over 100 percent of GDP and the economy is expected to decline by 15 percent in krona terms. The banking system collapsed and the economy slipped into the deepest recession ever recorded in small and open economies in the last 20 years. The unemployment rate, which had been remarkably low in the recent decade, is expected to surpass 10 percent in the next two years. In this chapter, I analyze the macroeconomic causes and origins that led to the emergence of financial and economic crisis in Iceland.

Iceland is a small and open economy that gained tremendous benefits from international economic integration and free-market reforms implemented under the leadership of David Oddsson and Geir Haarde. However, the nature of the financial and economic crisis suggests that something has seriously gone wrong with the conduct of the monetary policy. One of the most important causes of the financial crisis was the misguided use of inflation targeting. In the late 20th century, Iceland experienced the most volatile inflation rates among advanced countries. Table 3 shows the inflationary dynamics in the OECD countries between 1980 and 2009. During that period, Iceland had the highest average inflation rate of all advanced OECD countries. The basic indicator of volatility in macroeconomic analysis is standard deviation which measures by how much the inflation rate has deviated from the average rate. Iceland also had

the highest standard deviation of inflation rate from 1980 to 2009. For instance, the standard deviation of inflation rate in Iceland during that period is 4.7 times the average standard deviation in OECD countries and 2.98 times the average standard deviation in Nordic countries.

Table 3: The Volatility of Inflation in OECD Countries (1980-2009)

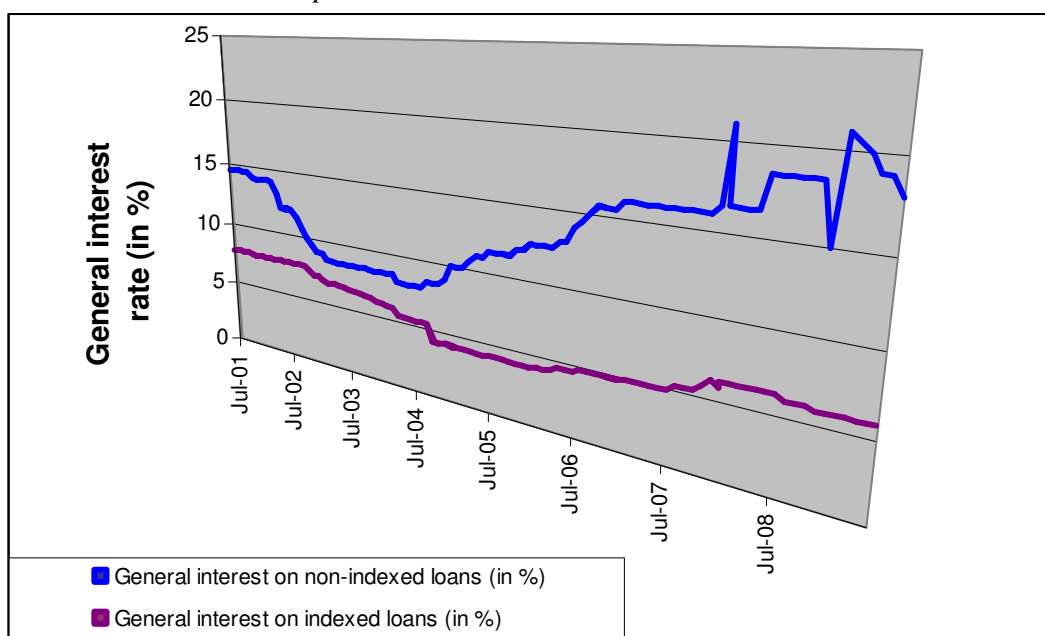
Country	Average Inflation Rate (in %)	Standard Deviation (in percentage points)
Iceland	16.51	20.45
Greece	11.24	7.96
Portugal	8.39	7.87
Italy	5.95	5.43
New Zealand	5.53	5.40
Ireland	4.90	5.09
Sweden	4.52	4.15
Spain	5.86	4.08
France	3.72	3.62
United Kingdom	4.02	3.53
Norway	4.27	3.43
Belgium	2.40	3.31
Finland	3.72	3.24
Australia	4.69	3.22
Luxembourg	3.45	3.19
Denmark	3.65	3.03
Canada	3.60	2.96
United States	3.69	2.92
Japan	1.17	1.90
Switzerland	2.18	1.88
Netherlands	2.46	1.79
Germany	2.31	1.64
Austria	2.60	1.61
OECD	4.79	4.34
Nordic countries	6.53	6.86

Source: IMF, World Economic Outlook (2009), author's own estimate

The cyclical behavior of Iceland's inflation dynamics is an important factor in explaining the recent financial and economic crisis. In the 20th century, the Icelandic economy had gone through a windy turmoil of unstable inflation. In 1974, the inflation rate reached 43 percent, mostly as a consequence of the 1973 oil shock. In 1983, the inflation rate moved above 80 percent annually and decreased to 30 percent in 1988. As the empirical estimates showed, Iceland's inflation rate has been above the average of the OECD. In taming the unpredictable and volatile inflation rate, the central banks in advanced countries used the framework of inflation targeting to

deliver low, predictable and stable inflation rates. After the central bank adopted the inflation targeting rule in 2001, the inflation rate has been constantly out of central bank's tolerance range. To mitigate the overheating of the economy and unpredictable inflation rate, the central bank kept the interest rates high, exceeding 15 percent. Graph 5 shows the dynamics of general interest rates on non-indexed and indexed loans. Since 2001, the Icelandic economy had been growing very fast after the mild recession. The average economic growth rate between 2003 and 2007 was 5.51 percent. The economy expanded most rapidly in 2004 and 2005 when it grew by 7.72 percent and 7.45 percent on the annual basis respectively. To mitigate the inflationary pressures, the central bank raised general interest rate.

Graph 5: General Interest Rates on Loans

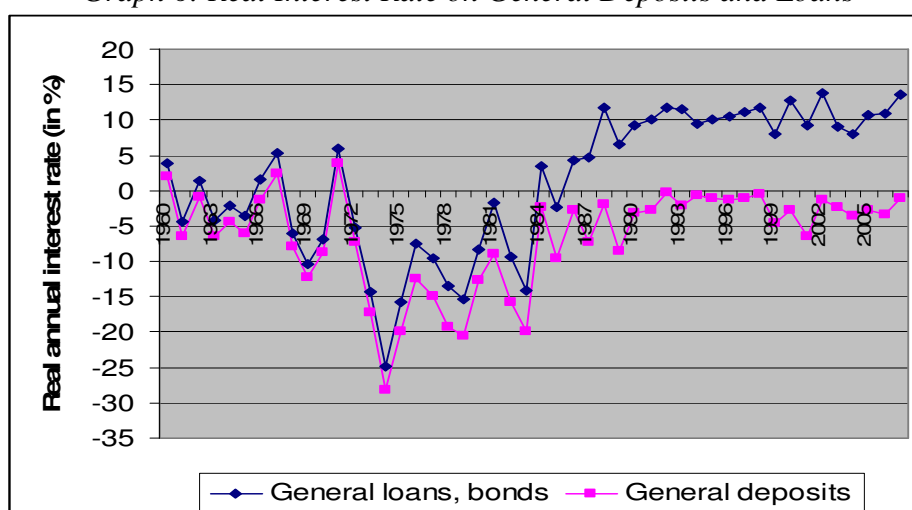


Source: Central Bank of Iceland (2009)

As the central bank failed to contain the inflation rate within target limits, high domestic interest rates encouraged domestic firms and households to borrow in foreign currency. In small and open economies, such as Iceland, high domestic interest rates boost currency speculation and carry trading against uncovered interest parity. A high interest rate differential between the home country and the world means that the domestic currency is exposed to speculation and may be over-appreciated. This is exactly what happened in Iceland. As foreign borrowing and the inflow of foreign currency grew significantly, the Icelandic krona appreciated rapidly. A combination of massive foreign currency inflow, currency appreciation and high domestic interest rates pumped the bubble of economic growth and inflationary pressures. Meanwhile, the real sector went through the

economic boom as many new sectors emerged ranging from software development, biotechnology and a growing financial sector. However, the foreign currency effectively became a part of the local money supply. Meanwhile, the krona has appreciated further and sent a signal of rapid over-appreciation. In such detrimental macroeconomic environment, the central bank should build up foreign reserves as an insurance against the possibility of rapid currency depreciation and a strongly negative mid-term macroeconomic outlook. In spite of great opportunities to build up foreign reserves, the central bank did not increase the size of foreign reserves that could prevent the depreciation of the local currency. When the financial crisis erupted in late 2008 and early 2009, rapid currency depreciation became inevitable. Massive foreign debt, created mostly by the financial sector, was 8 times the size of Iceland's GDP. The immense size of the foreign debt evolved as a consequence of the fact that Icelandic banks did not insure the borrowing and credit activity with depository basis. In fact, between 1990 and 2007, the average interest rate on general deposits was -2.27 percent. Graph 6 shows a time series of the real interest rate on general loans and deposits. In such circumstances, demand for real deposits is usually compensated by borrowing and foreign expansion. After the beginning of the financial crisis, Iceland's former three major commercial banks (Kaputhing, Glintir, Landisbanki) faced significant solvency and liquidity problems. In fact, the balance sheet of the country's banking sector represents 900 percent of the annual GDP. The fundamental insolvency issue of the Icelandic banking sector was that hold-to-maturity value of assets was insufficient to cover its obligations.

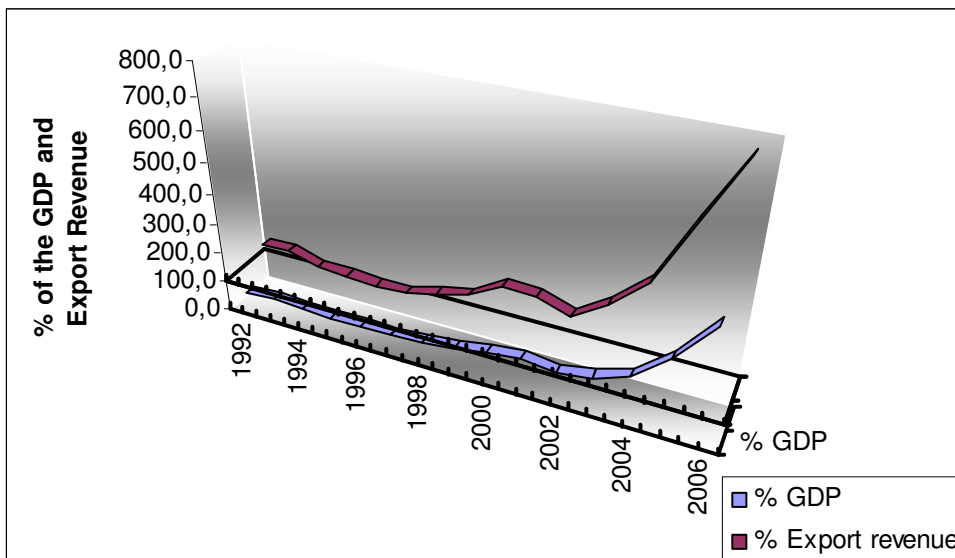
Graph 6: Real Interest Rate on General Deposits and Loans



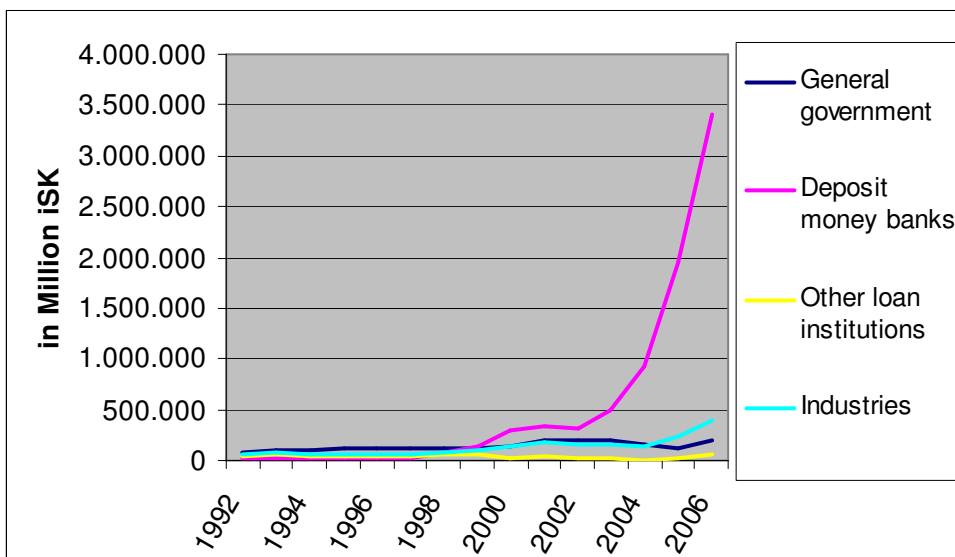
Source: Statistics Iceland (2009)

The main concerns for the instability of the Iceland's financial sector were extensive foreign currency funding, overdraft spreads of credit default swaps, high interest rate differential between Iceland and the rest of the world and an increasing stock of debt which emerged from increased financing of mortgages. After the banking sector exerted symptoms of insolvency and liquidity problems and as the krona depreciated further, major commercial banks were unable to obtain short-term funding. As a consequence of currency depreciation, inflation soared. In January 2009, the inflation rate was 18.6 percent. In the following months, it shrank to 17.6 percent and 15.2 percent respectively.

Graph 7: Foreign Debt relative to GDP and Export Revenue



Graph 8: Foreign Debt - Institutional Breakdown

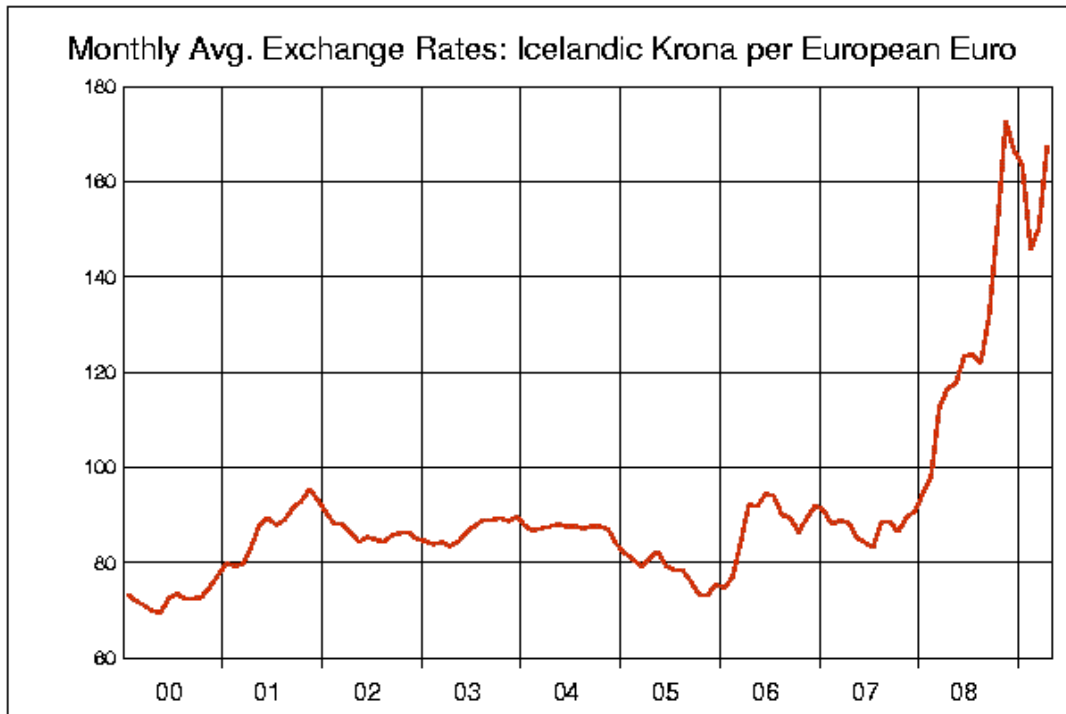


Source: Central Bank of Iceland (2009)

As a small and open economy, Iceland's extensive size of the banking sector compared to its GDP had been a sign of potential macroeconomic and financial deterioration. The relative size of the Icelandic banking system meant that the central bank could hardly be the lender of the last resort, given the lack of periodic increases in foreign reserves for stabilization purposes. As the oversized banking system poses a huge systemic risk, small and open economies such as Iceland face a trade-off between its own currency and membership in the monetary union. If the country opts for a single currency, the only remaining way to prevent the outbreak of the financial crisis, due to liquidity and solvency risk of the country's banking system, is to relocate foreign currency-based banking activities abroad to avoid the interest risk due to high interest rate differential between Iceland and the rest of the world. As central banks around the world continuously lowered the interest rate targets, the interest rate differential increased further as well as the differences in inflation rate between Iceland and the rest of the world. On the other hand, if the country joins the monetary union, its central bank is no longer the lender of the last resort. As the wide differential between interest rates disappeared, currency hedging would not emerge as extensively as it did during periods of appreciation of the krona. If Iceland joined the EMU, the financial crisis would not be as turbulent as it was mostly due to exogenous interest rate and adoption of Euro which is a global reserve currency that would hardly have any appreciable effect on krona. However, several academic studies showed that Iceland does not fulfill the criteria for optimum currency area. As the central bank maintained the highest interest rate in the developed world, the outbreak of the financial crisis also brought a significant supply-side shock to the private sector as the banking system collapsed and defaulted which erased the credit activity to finance investment. While a vast majority of advanced countries experienced a deflationary recession, Iceland faced a turbulent inflation that has exceeded 10 percent ever since the second half of 2008. Excessive inflation emerged as a consequence of central bank's effort to address the solvency problem of Icelandic banks with domestic currency while the krona depreciated significantly. The deterioration of krona's effective real exchange rate meant that the central bank could act as a lender of the last resort only to the extent of its foreign currency reserves and the ability to borrow at foreign exchange. As the krona lost two thirds of its value, the inflation accelerated significantly as a consequence of excess demand. If Iceland were a full-member of the EMU, none of its banks could fail due to illiquidity alone. However, if Iceland remained out of the Euroarea, then running an internationally active banking sector whose size exceeds the country's GDP several times and, at the same time, having its own currency would not be a viable option as a series of macroeconomic risks emerged including a greater probability of financial crisis, currency

over-appreciation due to excessive interest rate differential and greater volatility and instability of output and inflation.

Graph 9: Real Effective Exchange Rate ISK/EUR 2000 - 2009



Source: Pacific Exchange Rate Service (2009)

In the aftermath of the financial crisis, Iceland's macroeconomic deteriorated significantly. By January 2009, Moody downgraded the outlook on Icelandic government bond to Baa-negative in both foreign and local currency. In addition, Fitch negatively rated Iceland's sovereign debt to BBB- in the light of unstable public finance, depreciated currency outlook, unpredictable macroeconomic forecast and debt repayment default after the collapse of the banking sector. Meanwhile, at the IMF, Iceland asked for a 2.1 billion USD emergency plan to restore confidence in the banking system, stabilize the krona and achieve medium-term fiscal consolidation. In exchange for the emergency loan, the IMF immediately requested the launch of comprehensive macroeconomic policy aimed at reducing the interest rate, lifting capital controls, restructuring the collapsed banking sector, midterm fiscal consolidation and restructuring of the household debt. The new frontier of the macroeconomic policy and the severe recession that hit the economy in 2008 and 2009 is likely to have a significant impact on medium term economic growth, inflation, unemployment and current account deficit which reached -34.65 percent of the GDP in 2008. In 2009, the Icelandic economy is expected to decline by 10.6 percent. Meanwhile, it seems that the inflation rate peaked in January 2009 as it posted a decreasing cyclical trend at the

beginning of the second quarter of 2009. In the next chapter I discuss whether Iceland's membership in the EMU could mitigate potential macroeconomic instability in the future.

IV. WHAT CAUSED THE CRISIS?

There is a realm of causes that inflicted the financial crisis in Iceland. There is a widespread belief that the deregulation and privatization of the banking sector is the ultimate root of the country's financial crisis. The three largest commercial banks, Glintir, Landisbanki and Kaupthing, had total assets of more than \$168 billion USD, or 14 times Iceland's GDP. When total assets exceed a country's economy by several times, the central bank inevitably fails as the lender of the last resort, mostly because it is almost impossible to build up strong foreign reserves that enable the central bank to act as a lender of the last resort. The ultimate causes of Iceland's financial crisis ought to be searched in the failure of the central bank's mismatched regulation of the banking sector and its failure to forecast the possibility of the financial crisis in a series of policymaking failures among which the wrong use of inflation targeting is the headline failure. The expansion of banking activities abroad was a reasonable consequence of the high interest rate which did not stimulate domestic investment in krona-denominated loans. Instead the banking sector was seeking loans in foreign currency which brought a significant appreciation of the krona and, at the same time, increased the exposure of the banking sector to foreign shocks. In 2009, the Icelandic economy is expected to contract by 10.2 percent. The output contraction will also continue in 2010, by 0.2 percent. The question whether the central bank could have prevented the crisis needs a macroeconomic explanation. After the Icelandic economy shrank into the 2002 recession, there was a negative output gap and fiscal policymakers enacted further tax cuts to boost the economy's short-term growth potential. After the short-lived recession, the economy boomed. In 2004, the economic growth rate was 7.7 percent. The following year the economy expanded by 7.45 percent. Robust growth continued all the way to 2007, when output increased by 5.5 percent. In the meantime, the central bank raised the discount rate on overnight loans from 8.25 percent in 2004 to 15.25 percent in 2007. However, the share of domestic loans in the portfolio of major banks remained negligible. As the banking sector expanded internationally, there was a high probability of a growing external indebtedness that would vastly exceed the fiscal and reserve capacity of the Icelandic economy and its central bank. As banks expanded abroad to places such as the United Kingdom, Luxembourg and the Nordic countries, loans were not backed by either deposits or reserve currency. This means that, given high leverage of the banks' balance sheets, lending

operations were driven by debt. As soon as world credit markets froze in the light of failure of Lehman Brothers and the collapse of Bear Stearns, the Icelandic banks were unable to fuel their lending capacity and thus unable to fulfill its depository obligations. The data indicate that the Kaupthing, Landsbanki and Glitnir recorded unusually remarkable financial results at the end of 2007 after a compelling performance in previous years. Between 2003 and 2007, Kaupthing's borrowings increased by 700 percent while the P/E ratio steadily declined. Between 2003 and 2007, the P/E ratio decreased by 24.6 percent - from 12.2 to 9.2. In 2007, all three major banks witnessed a significant drop in RoE (return-on-equity). Landsbanki's RoE fell from 36.3 percent in 2006 to 27.1 percent in 2007 while Glitnir's after-tax RoE decreased from 39.4 percent in 2006 to 19.3 percent in 2007. After the financial crisis eventually erupted, the banking sector was unable to bear the depository obligations given significant borrowing arrangements which propelled the gross liabilities of all three major banks to 900 percent of Iceland's GDP while asset prices were falling and put an enormous pressure on already highly leveraged balance sheets. Consequently, bond rating agencies downgraded the outlook on the ability of three major lenders to repay bond obligations until the lenders defaulted. Meanwhile their debt grew enormously. The Economist nicely summarized the nature of Icelandic economic and financial crisis:

“The country’s three largest banks have expanded headlong abroad since two of them were privatised in 2003, amassing assets of about €125 billion (\$180 billion) by the end of 2007, compared with an economy of just €14.5 billion. Many of these assets were funded by lenders in fickle wholesale markets. In early 2006 less than 30 cents in every loan issued was backed by deposits. Iceland’s households also racked up debts amounting to 213% of disposable income. Britons and Americans owed just 169% and 140% of disposable income respectively—figures that make them seem almost sober by comparison.”

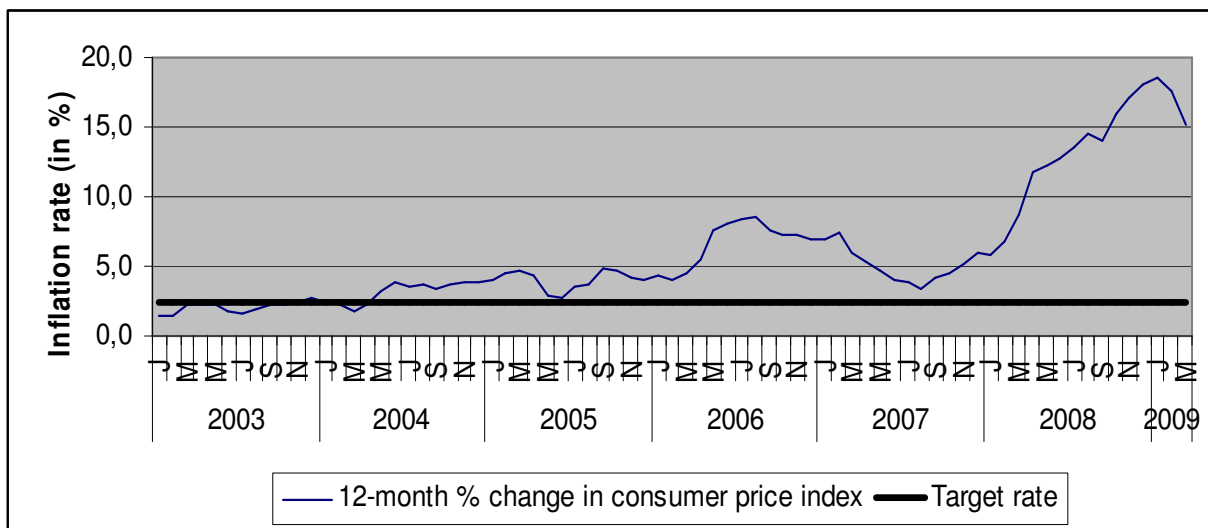
Source: The Economist, Kreppanomics, October 9, 2008

Prior to the outbreak of the financial crisis, Icelandic banks strongly increased after-tax return-on-equity (RoE). The offset of the RoE can also be attributed to a series of corporate income tax cuts which boosted after-tax corporate revenue. In 2004 and 2005, Landsbanki's RoE was 49.5 and 45.8 percent respectively. When the financial crisis emerged, the banking sector was immediately affected and as asset prices were falling, the key performance ratios dropped as rates, earnings and share prices contained real

information about the equity, liabilities and leverage of the Iceland's banking sector until the major banks defaulted respectively.

The financial crisis in Iceland is not a result of an immediate set of measures that caused the failure of highly leveraged banking sector but rather a consequence of a combination of global financial crisis and a series of mismatched macroeconomic policies that had not foreseen the real possibility of a financial and economic crisis. Iceland's central bank adopted inflation targeting in 2001 with a 2.5 percent target rate of inflation. In spite of the central bank's commitment to mitigate inflationary pressures, the inflation rate was constantly above the target rate. Graph 10 shows the monthly inflation dynamics in Iceland from 2003 onwards.

Graph 10: Inflation dynamics 2003-2009



Source: Central Bank of Iceland (2009)

Strong inflationary pressures, when interest rates were already high and economic growth robust, meant that the economic performance was overheated, as the real economic activity outperformed the potential economic activity. In normal circumstances, the central bank would raise the interest rates to prevent further inflationary pressures. However, the Icelandic banking sector denominated the majority of its lending and depository operations in foreign currency and, thus, raising the interest rate further would tend to push the real exchange rate towards rapid over-appreciation. In such a situation, as the crises accelerated, currency collapse would be inevitable. Following the development of the crisis, it seems that central bank assumed that major banks do not face liquidity and solvency problems and thus hadn't built up foreign reserves of a size that would enable the bank to act as a lender of the last resort. From a comprehensive point of view, the precise use of inflation targeting and restructuring of the banking sector to

minimize the pressure on financial stability could have mitigated the effects of the financial crisis at the cost of less robust economic growth which the Icelandic economy experienced in recent years. If inflation targeting had been used precisely, the central bank's interest rate policy could easily have been stabilized. Presumably, lower interest rate differential would probably not boost borrowing in foreign currencies while, at the same, leading Icelandic krona to appreciate above the predicted limits. When the krona significantly depreciated in the light of the financial crisis, the central bank was caught in a trap. It couldn't raise interest rates further and, at the same time, lowering interest rates would boost inflationary pressures at the times of high uncertainty. In the aftermath of the financial crisis, the main question is whether Iceland should join the EMU to secure itself against similar macroeconomic shocks. This topic is the subject of the next chapter.

V. IS ICELAND AN OPTIMUM CURRENCY AREA?

Immense consequences of Icelandic financial and economic crisis have raised the question whether Iceland should join the European Monetary Union by giving up the independence of monetary policy. In economic theory and analysis, the accession of a country to a currency union ultimately depends on the criteria of optimum currency area. In the following section, I analyze macroeconomic scenarios and discuss whether Iceland is an optimum currency area and is it therefore economically feasible for Iceland to adopt the single currency and enter the monetary union to mitigate the shocks that could prevent the wide fluctuations in economic growth and financial stability.

Wage and price flexibility

Wage and price flexibility represents the principal indicator in judging whether it is feasible for a country to join the monetary union. The conduct of the monetary policy demands a high degree of price and wage flexibility. If prices adjust quickly to changes in productivity and external factors, the central bank is less likely to cause any asymmetric shocks that could distort the job market, economic growth or financial markets. When nominal prices and wages within countries contemplating a single currency are flexible, the adjustment to economic shocks is less likely to cause persistent inflation or unemployment in either country. The Icelandic experience with price and wage rigidity is timid. Between 1950 and 1990, the main objectives of economic policy were maintaining full employment and guaranteeing profits to fisheries and policymakers therefore embraced higher inflation. Therefore when the fisheries sector expanded rapidly, wages and costs had risen and led

to sustained inflationary spikes. This issue had been crucial because worsening external conditions in state-owned fisheries sector were solved through currency devaluation which led to an increase in inflation. The empirical estimates of real wage flexibility in Iceland found that real wages responded quickly to shocks - a pattern known for a small and open economy. In fact, real wages increased in the wake of favorable macroeconomic shocks and declined in the wake of adverse shocks. A report by the Central Bank of Iceland from 1997 explored the dynamics of real wage adjustment. In dynamic terms, real wages dropped considerably when the rate of unemployment rose. One possible alternative to affect real wages is the exchange rate policy. In Iceland, exchange rate devaluations were often used to prompt the revenue of exporting firms in domestic currency. On the other hand, devaluation or aligned currency depreciation reduces costs by lowering real wages. If Iceland joined the EMU, it could no longer use exchange rate as a policy set to respond shocks. If Iceland were an optimal currency area economically eligible for the adoption of the Euro, one of the foremost goals of economic policy would be to foster nominal wage flexibility. If nominal wages are flexible, there is practically no space for exchange rate intervention that could create upward inflationary pressures assuming managed domestic currency depreciation. The adjustment of nominal wages to economic shocks is the essence of the rule of keeping nominal wage growth in line with productivity growth. If nominal wages are rigid, the fluctuation of economic activity and internal shocks create an inflexible labor market that hinders productivity growth and adds more pressure on labor costs which calls for more interventionist economic policy as trade unions feel reluctant to drop the monopoly rents enabled by regulated labor market. Therefore, keeping nominal wages and prices straight by stimulating labor market liberalization and deregulation is the essential pursuit of economic policy in creating an optimal currency area.

Mobility of Labor

Labor market mobility is one of the keys in creating an optimum currency area. If the labor market is immobile, firms often alter real factor prices while the economic policymakers pursue real exchange rate intervention. Since labor market liberalization tends to reduce disparities between labor markets in currency union such as the EMU, persistent regulation of the labor market reduces productivity and spurs asymmetric cost pressures and productivity distribution within the currency union. The country is eligible in the mobility of labor if it has a sound and deregulated labor market, sound productivity growth and flexible labor market structure. Iceland's labor market closely resembles the U.S and Canadian patterns, with limited regulation, strong

productivity performance, comparatively smaller hiring and firing costs and less institutional rigidity in the labor market itself. An academic study by Norwegian economists Steinar Holden and Fredrik Wulfsberg (2007) explored the rigidity of nominal wages in the OECD. The authors found that wage rigidity is more likely to occur if the density of trade union membership is high and when the employment protection legislation is in place. In case of a small and open economy, productivity shocks are crucial to long-run economic growth. According to 2008-2009 *Global Competitiveness Report* (WEF), Iceland's labor market is advantageous in terms hiring and firing costs while disadvantageous in terms of flexibility of wage determination. Persistent barriers in the labor market such as institutional rigidities, high non-wage salary cost and inflexible wage determination diminish the mobility of the labor market and increase unemployment. High minimum wage is an obvious cause for long-term unemployment and a detrimental obstacle to full-fledged mobility in the labor market. High union wages, which are usually above competitive market wages, likely cause unemployment in the non-unionized sector of the economy. As union wages exceed market wages, union members often feel reluctant to accept an alternative employment. Table 4 shows the indicators of labor market mobility in Iceland and OECD.

Table 4: Labor Market Mobility in OECD in 2007

Country	Productivity Growth in % (2000-2007)	Firing costs (weeks of wages)	Unemployment rate (in %)
Ireland	3.1	24	4.5
Iceland	3.0	13	1.0
Sweden	2.3	26	6.1
Finland	2.2	26	6.8
United States	2.0	0	4.6
United Kingdom	2.0	22	5.4
Australia	1.7	4	4.4
France	1.5	32	8.3
Norway	1.4	13	2.5
Germany	1.4	69	8.4
Switzerland	1.1	13	2.5
Denmark	0.7	0	2.7
Italy	0.0	11	6.1

Source: OECD, World Bank, IMF World Economic Outlook (2009)

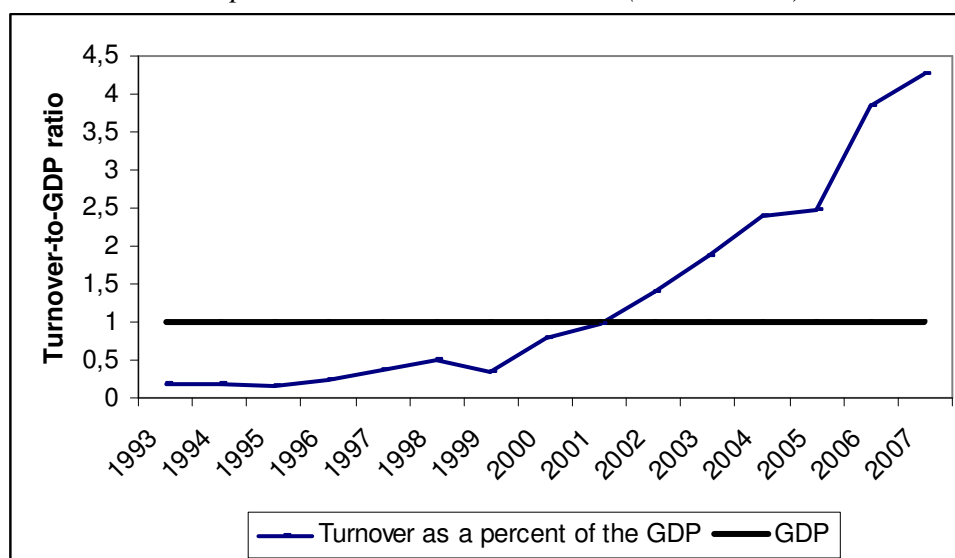
From a structural point of view, the Icelandic labor market resembles the U.S and Canadian ones. Prior to the emergence of the financial crisis, Iceland had the lowest unemployment rate in OECD. In 2007, the unemployment rate reached 1.0 percent of the total labor force. The official estimate of unemployment rate for 2009 is 9.7 percent. Between 2000 and 2007, Iceland had recorded the second highest growth rate of productivity in the OECD.

Only catching-up economies of Visegrad countries and Ireland recorded better productivity improvements than Iceland. While higher productivity growth in Czech Republic, Hungary, Slovak Republic and Poland is purely the result of the real convergence, Ireland and Iceland's comparative productivity performance was mostly attributed to spillovers from direct foreign investments, less institutional rigidity in the labor market and more flexible hiring and firing regulations. The financial crisis and the recession of 2008-2009 increased unemployment rate. The labor market will probably absorb most of the recessionary shock through lower or possibly zero productivity growth. In this respect, flexible adjustment of nominal wages to changes in economic growth, inflation and unemployment is essential to preserve and further boost mobility of the labor market. The flexibility of the labor market is an important comparison of similarities between labor markets of countries in the monetary union and country outside the monetary union. More similarities imply less asymmetric shocks that could hurt any country.

Financial Markets, Monetary Stability and Asymmetric Shocks

An important characteristic of the Icelandic financial market in the last ten years has been a rapid development following the deregulation and privatization of the banking sector. Concerning the financial crisis, many experts underlined the key role of the banking sector that contributed to the emergence of the financial crisis. The Icelandic banking sector was characterized by an outward-oriented strategy. Significant rises in real estate prices, driven by low mortgage rates, fuelled spending against unanticipated assets gains in the future. High level of liquidity in the international financial markets led to the surge of demand for Icelandic stocks and bonds. Strong capital inflows led to the surge in the Icelandic krona. Between 2000 and 2005, the Icelandic krona appreciated by 27 percent. The rise in general spending on high-risk investment propelled stock market performance. According to Credit Suisse, OMX ICEX15 rose by an incredible 500 percent between 2003 and 2008. Picture 12 shows time series of turnover on Icelandic stock market relative to GDP between 1993 and 2007.

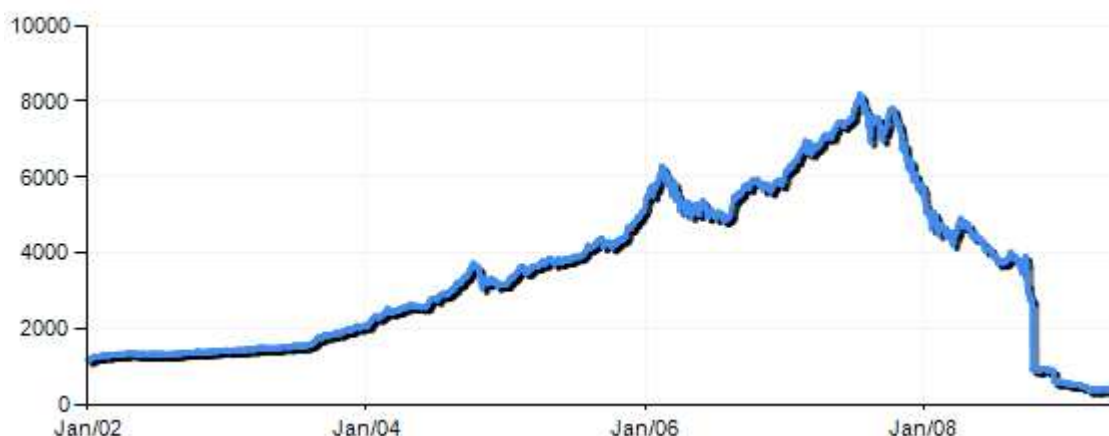
Graph 11: Stock Market Turnover (1993 - 2007)



Source: Statistics Iceland (2009)

High levels of liquidity in international financial markets and a surge in spending on investment led to a strong demand for Icelandic stocks and bonds which increased total stock market turnover significantly from 2002 onwards. Privatization of the banking sector in the 1990s and early 2000s led to significant improvements in access to credit markets. While the Icelandic krona performed weakly in the foreign exchange market, widespread foreign currency borrowing increased dramatically to support high domestic consumption. For instance, between 2002 and 2008, total consumption expenditure on durable and non-durable goods grew by 77.16 percent. Meanwhile, the central bank kept domestic interest rate high to contain demand-side inflationary pressures. Foreign borrowing in international capital markets with low interest rate triggered macroeconomic imbalances as household debt grew tremendously. Official estimates suggest that the indebtedness of Icelandic households amounted to 213 percent of disposable income. If the Icelandic krona had not appreciated, the share of debt in household disposable income would have increased further. Capital inflows from abroad, significant rise in investment expenditure and low national savings rate put additional internal pressure on inflation and balance of payments deficit.

Graph 12: The OMX Iceland 15 (2002-2008)

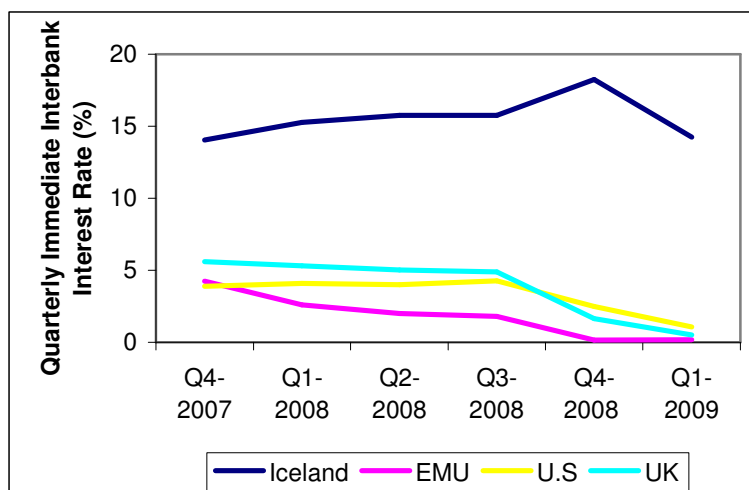


Source: Trading Economics (2009)

The deficit had to be financed by borrowing funds from international capital markets. The initial impulse raised the demand for Icelandic stocks and bonds. In turn, the three largest Icelandic banks borrowed heavily in international capital market and, consequently, their leverage grew significantly. As the balance of payments deficit reached 25 percent of GDP at the end of 2006, the central bank had to raise the interest rate from 10 percent to 15.5 percent to avoid the upward pressure on inflation. However, the real source of the imbalances came from bull-trended real estate market where mortgage lending rates remained virtually low and fixed for a longer period of time. As a result of extremely sensitive volatility of the Icelandic krona, carry trading against uncovered interest parity flourished. In fact, by the end of 2006, external liabilities of the Icelandic banking sector reached 517 percent of GDP while external assets amounted to 395 percent of GDP, compared to total assets of 800 percent of GDP. In 2006, when the Icelandic economy showed signs of overheating with an inflation rate reaching as much as 9 percent annually, the exchange rate appreciated by about 25 percent while equity prices fell by 25 percent which further inflated the return on equity. For example, in 2006 Kaupthing's RoE reached 42.4 percent. The volatility of the Icelandic currency has been a significant issue since currency volatility accentuated stock market volatility and thus, shares denominated in ISK were unattractive and this led to information asymmetry. Even though the banking sector was fully hedged against Icelandic krona, the interest rate spread between Iceland and the rest of the world further induced foreign borrowing and hence the external liabilities were further inflated and surpassing the size of the GDP several times. Consequently, bond rating agencies such as Moody, Fitch and S&P downgraded bond ratings of major Icelandic banks and thus foreign banks demanded significantly higher risk premium to extend loans to the banks. While the central bank raised the

policy rate, the economy had not contracted as expected but continued to grow as the aggregate demand further increased subject to extensive foreign borrowing and interest rate spread caused excess capacity in stock market that output activity could not pertain. Graph 13 displays the interbank interest rate differential between Iceland and its major trading partners. In addition, Table 4 shows the dynamics of quarterly interbank interest rate in Iceland, United States, EMU and the United Kingdom.

Graph 13: Monthly interest rate differential between Iceland and its major trading partners



Source: OECD (2009), author's own calculation

Table 5: Quarterly Immediate Interbank Interest Rates

	Q4-2007	Q1-2008	Q2-2008	Q3-2008	Q4-2008	Q1-2009
Iceland	14.04	15.26	15.75	15.75	18.25	14.25
United States	4.24	2.61	2.00	1.81	0.16	0.18
EMU	3.88	4.09	4.01	4.27	2.49	1.06
United Kingdom	5.60	5.31	5.03	4.89	1.65	0.52

Source: OECD (2009), Federal Reserve Bank of St. Louis (2009)

The gross government debt is estimated to reach 176.8 percent of the GDP by 2010 considering the downside scenario. Graph 14 depicts the gross government debt between 2007 and 2012 considering positive and downside scenario. The alarming state of Iceland's public finances has been recently analyzed by rating agencies. Table 6 shows the report on Iceland's sovereign credit by Moody. Government bond rating outlook remains bleak and negative in the light of massive government debt that resulted from the nationalization of the losses of the banking sector as well as from credit lines given by Nordic countries and emergency loan from the IMF. The question that is perhaps the most interesting is whether the adoption of Euro as a legal tender would be a sufficient shelter against possible banking and financial crises in the future. Could Iceland mitigate the macroeconomic imbalances if it were a fully-integrated member of the EMU? In forecasting the

macroeconomic scenario of the exit from the financial crisis, Fitch recently commented the Iceland's possibility of joining the EMU:

“Recent events have reopened the debate about the merits of joining the euro area: euro membership would have rendered Iceland’s external imbalances less dominant, eliminated currency risk and allowed Iceland’s fiscal policy strengths to better assert themselves... However, unilateral adoption of the euro would have little to commend it, since it would deny Iceland the advantages that the formal membership in the euro area brings. Thus, in the context of the current crisis, the Central Bank of Iceland would have been denied access to ECB reserves and ‘lender of the last resort’ support could have proved invaluable in Iceland’s case.”

Source: Fitch Ratings, *Iceland: A Difficult Road Ahead*, December 2008

Table 6: Iceland’s Sovereign Credit

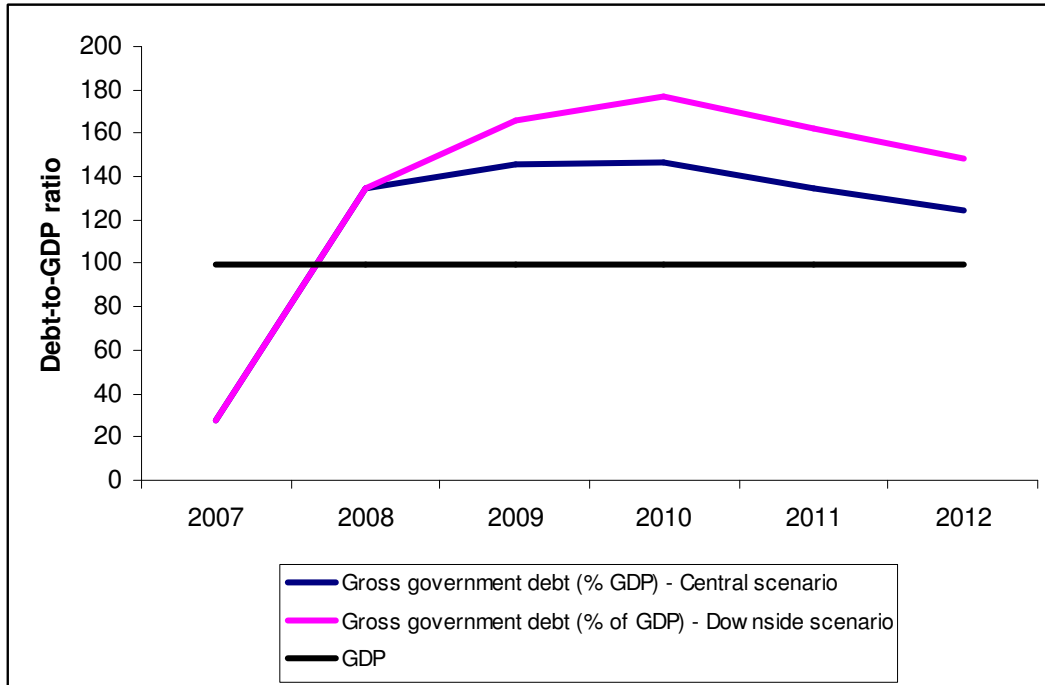
	Foreign currency	Local currency
Government bond rating	Baa1-negative	Baa1-negative
Country ceiling	A2-negative	Aaa
Bank deposit ceiling	Baa1-negative	A1

Source: Moody’s Investors Service, January 2009

Membership in the EMU is defined in the Maastricht treaty which effectively sets the macroeconomic criteria that a country must comply to enter to eurozone and acquire the euro as a legal tender. The criteria are divided into monetary and fiscal criteria. The monetary criteria involve the inflation rate and interest rate requirements while fiscal criteria involve public debt and budget deficit. First, the inflation rate must be no higher 1.5 percentage points above the average of three countries with the lowest rate of inflation. Second, long-term nominal interest rates are required to be no more than 2 percentage points higher than in the three countries with the lowest rate of inflation measured as harmonized index of consumer prices (HICP). Third, the ratio of government debt to GDP must not exceed 60 percent of GDP. And fourth, the ratio of budget deficit to GDP must not exceed 3 percent at the end of the preceding fiscal year. In Iceland, the macroeconomic imbalances have worsened the economic stability and the fiscal cost of financial crisis is pretty high. The short-term macroeconomic outlook looks bleak. The foremost requirement for the membership in the EMU is the membership in Exchange Rate Mechanism (ERM II) where the currency fluctuation is expected to be contained within a 2.25 percent limit. The experience has shown that the Icelandic krona is one of the most volatile currencies in both the OECD and in the world. Prior to the outbreak of the financial crisis, defending the krona via a managed floating exchange rate

could have triggered a series of macroeconomic shocks stemming from output fluctuation, the persistence of inflation and current account deficit. Table 7 evaluates whether Iceland is eligible for the EMU membership.

Graph 14: Gross Government Debt (2008-2012)



Source: Moody's Investor Service, January 2009

Table 4: Maastricht criteria and EMU membership in 2008

	Inflation rate (in %)	Interest rate (in %)	Public debt (% of the GDP)	Budget deficit/surplus (% of the GDP)	Fulfilment of criteria
Reference value	max. 3.2	max. 6.5	max. 60	max. -3	
Denmark	3.6	5.2	33.3	3.6	Mostly yes
Sweden	3.3	4.2	38.0	2.5	Mostly yes
Norway	3.4	2.0	50.0	18.8	Mostly yes
United Kingdom	3.6	0.5	52.0	-5.5	Mostly yes
Iceland	12.8	17.0	103	-14.3	No

Sources: Eurostat (2009)

In a macroeconomic perspective, Iceland fulfills neither the Maastricht criteria nor the optimum currency area criteria. The main obstacles to the objective of sound macroeconomic environment for the currency union were an extremely volatile floating currency, high interest rate, high inflation rate, huge government debt and deficit. The imprecise use of inflation targeting by the central bank also left the Icelandic krona vulnerable to external shocks. The reestablishment of macroeconomic stability in Iceland requires a thorough cooperation between fiscal and monetary policies. Iceland, once the

country with the healthiest public finances in the OECD, suddenly faced the second highest public debt to GDP ratio in the OECD, only after Japan. The medium-term macroeconomic stabilization in Iceland will be essential to the future of monetary policy in the country. In a hypothetical case, if Iceland joined the EMU, the central bank would have to defend the krona to contain it within the limit range and the fiscal policymakers would have to reduce the size of government deficit and public debt to meet the fiscal criteria for the membership in the EMU. The accession of Iceland to the EMU would indeed eliminate currency risks and reduce the external imbalances such as the worrying current account deficit that pose a serious threat to macroeconomic stability. However, it would be a serious illusion to believe that an immediate membership in the EMU would promptly restore the economic stability. The size of the public debt, which is a whooping worry to economic policymakers, is expected to diminish substantially and the macroeconomic forecasts predict the full recovery will take several years before fiscal health is restored and full monetary stability with low, predictable and stable inflation at the forefront is achieved. Small and open economies such as Iceland tend to absorb benefits from monetary integration faster than their bigger peers. However, the crucial stage of economic policy will be to tame the spiral of an uncertain and volatile inflation outlook and to trim the spending pressures in real estate market that led to the substantial overheating of the economy in the recent decade. The elimination of currency risk could substantially reduce asymmetric shocks on equity prices. One of the inflating factors of Icelandic financial crisis was the imprecise use of inflation targeting as the central bank failed to contain the inflation within the target range. In spite of a relatively high interest rate, the economy had not contracted as the foreign borrowing continually eased the domestic demand but at the expense of an oversized banking sector which the central bank could not bail out and therefore act as the lender of the last resort for. In the normal course of macroeconomic stabilization, it may take several years before Iceland will fulfill the Maastricht criteria alongside the stabilization of the Icelandic krona against external shocks.

The membership in the currency union requires mobile labor markets, flexible price adjustment, prudent fiscal policy and similar structure of financial markets. These criteria are essential in mitigating asymmetric shocks. In financial markets of small and open economies, a high interest rate spread induces carry trading against uncovered interest parity which expands the fluctuation of domestic currency that is nevertheless vulnerable to external shocks and macroeconomic imbalances.

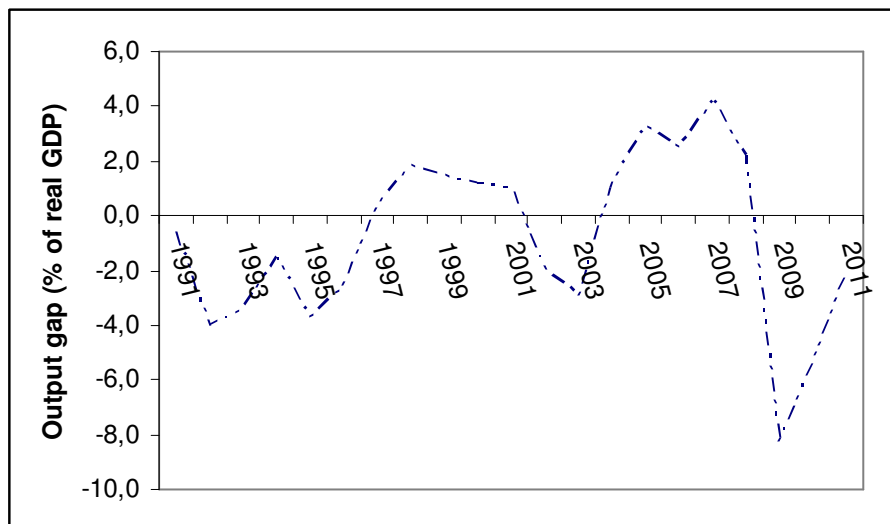
The empirical studies that examined whether it is feasible for Iceland join the EMU found that the country does not fulfill the criteria of optimum currency area. However, external shocks in the Icelandic economy were found to be asymmetric alongside the rigidity of nominal wages. Losing one's independent monetary policy can induce a substantial cost if the rigidity of nominal wages to external adjustments is persistent. The rigidity of nominal wages in one country and the relative flexibility of adjustment in nominal wages to external shocks in the other country spread asymmetric effects of a single monetary policy. In the first country, the recessionary output gap can thus incur upward inflation while in the second country the recessionary output gap and the adjustment of nominal wages to macroeconomic shocks do not overlap excess purchasing power that could produce inflation as is the case in the first country. Empirical evidence shows that a single currency area yields significant benefits to small and open economies. However, the lack of flexibility of market mechanisms and inflexible labor markets lead to significant costs of adopting the single currency.

VI. ICELAND'S ECONOMIC RECOVERY: OUTLOOK AND PERSPECTIVES

The financial and economic crisis led to negative economic growth, inflationary persistence, high unemployment rate and a deteriorating balance of payments. The main question faced by economists and policymakers is the outlook of Icelandic economic recovery. The macroeconomic outlook for 2009 is broadly in line with expectations following the aftermath of the crisis. The European Commission recently forecasted 11.6 percent decline in economic growth. In 2010, the Commission foresees a rebound of economic activity with 1.8 percent annual growth rate. The resurgence of economic activity requires a significant amount of flexibility in labor market and the real sector. The experience and empirical research have shown that the innovation is of significant importance in economic recovery. As picture 16 shows, the Icelandic economy experienced a robust positive output gap between 2003 and 2007 when the output grew above its potential. Consequently, the inflation rate slipped out of the central bank's target range and the economy began overheating. In spite of high interest rates, the economy had not contracted mostly because the banking sector was predominantly outward oriented as its activities were nearly ten times the Iceland's GDP. In the medium term between 2009 and 2011, the Icelandic economy is likely to experience a negative output gap. Instead of pumping more fiscal funds into the economy, the emphasis on innovation and technological progress is one the key drivers in bringing the economic growth to its potential. There has been much debate whether expansionary fiscal policy can close the output gap. Before the economic crisis occurred,

Iceland went through a period of unusually high growth rates when the economic activity went above its potential. Thus, the emergence of the crisis led to excess aggregate demand over aggregate supply and the result of monetary and fiscal expansion resulted in high inflation rate. Given rational expectations of firms and households, the continuance of an increased government spending could spread an excess purchasing power and result in nothing else but persistent inflation over the medium term. Another important measure of credibility of economic policy is consumer confidence. In the second quarter of 2007, Iceland's consumer confidence index reached an incredible 146.5. Two years later, it fell drastically to 27.2 alongside a 23.8 percent annual drop in private consumption. Increasing government spending as an attempt to boost overall demand is at the huge risk of inflationary persistence which is one of the keenest threats to macroeconomic stability.

Graph 15: Output gap in Iceland (1991-2011)



Source: Central Bank of Iceland, Economic indicators (2009)

The speed of economic recovery will depend on the ability of macroeconomic policymakers to contain inflationary pressures through restrictive government spending. As a consequence of the bailout loan arrangement at the IMF and foreign indebtedness, Iceland's public debt grew to historic highs. It is one of the harshest threats to economic growth in the long run. The financial crisis seriously affected the stock market. Before the crisis, equity market capitalization reached 120 percent of the GDP. After the crisis, following the collapse of the banking sector, it dropped to 20 percent of the GDP. In a long-term perspective, the size of Iceland's public debt is its central threat to a successful economic recovery. The ongoing challenge, however, is to reestablish financial stability, implement pro-growth reforms, remove barriers to flexibility and capital formation. At last, but not least, the

economic policymakers should focus on reversing government spending to promote growth, jobs and stable public finances.

Table 5: Macroeconomic Outlook (2009-2014)

	2009	2010	2011	2012	2013	2014
Economic growth (in %)	-6.79	-3.01	3.02	2.41	1.66	3.10
Unemployment rate (in %)	8.02	8.64	8.39	6.66	4.68	3.39
Inflation rate (in %)	12.07	5.95	3.55	2.51	2.50	2.50
Current account balance (% of the GDP)	-6.51	-0.91	2.149	-1.20	-0.66	-0.84
Fiscal balance (% of the GDP)	-7.35	-2.73	0.46	3.93	5.99	5.99

Source: IMF, World Economic Outlook (2010)

VII. CONCLUSION

The emergence of the financial and economic crisis left economists and policymakers wondering about its causes. A vast majority of them blamed free-market reforms. In the 1980s, Iceland experienced a rampant inflation alongside a turbulent macroeconomic environment. At the beginning of 1990s, the government of Iceland under the leadership of David Oddsson implemented a set of free-market reforms. State-owned companies were privatized. Financial markets were liberalized. The central bank was granted full independence in taming rampant inflation. In addition, the corporate tax rate was cut from 52 percent in 1985 to 15 percent in 2008. When the financial crisis eroded the stock market which led to the collapse of the banking sector, many economists, analysts and policymakers immediately blamed free-market reforms as the foremost origin of the crisis.

However, the empirical evidence and a macroeconomic analysis reverse this kind of thinking. The main origin of the financial and economic crisis that evolved in Iceland is a failure of monetary policy. In 2002, Iceland witnessed a mild recession that ended quickly. Ever since then, the central bank constantly failed to meet the inflation target. In response, it raised benchmark interest rate to double-digit levels. As a consequence of a stunning gap in interest rates, the Icelandic krona strongly appreciated. In such circumstances, high domestic interest rates discouraged the domestic banking sector from borrowing in domestic currency. With interest rates standing at double-digit levels, uncovered interest parity encouraged households, firms and banks to borrow in foreign currency.

Iceland's three major banks - Kaupthing, Glintir and Landsbanki were thus expanding their operations and activities abroad through low foreign interest rates. In the coming years, the assets and liabilities of these banks grew substantially, exceeding the size of the Icelandic economy by roughly ten

times. In annual reports, P/E ratios were unusually high given the significant amount of the leveraged operations. Hence, the foreign reserves of the central bank were far too small for the bank to be able to act as a lender of the last resort.

Following the bankruptcy of Lehman Brothers and the federal bailout of Bear Stearns, the first signals of the serious and deep financial crisis occurred. When the performance of OMX Iceland 15 stalled, Iceland's stock market turned into a bubble and when the krona headed towards depreciation, investors demanded the withdrawal of the deposits from Icelandic banks. With gross external liabilities exceeding 900 percent of Iceland's GDP, Kaupthing, Landsbanki and Glitnir were unable to meet those liabilities as the net worth of assets encountered a deep loss.

The macroeconomic effects of the financial crisis were significant. In GDP terms, Iceland was one of the biggest victims of the crisis. The economic growth decreased significantly, inflation peaked up and the unemployment rate grew from one of the lowest levels in the industrialized world to one of the highest. The stock market was virtually frozen and the government decided to impose capital controls. The IMF approved \$2.1 billion dollar emergency loan as an attempt to restore the banking system. Credit rating agencies such as Moody and Fitch downgraded Iceland sovereign debt. In a recent report, *Bloomberg* wrote about Iceland's concern about junk rating prospects given the fact that Fitch has rated Iceland BBB- which is only one notch above the junk status.

The Icelandic financial and economic crisis is a nice lesson about the consequences of a failed monetary policy. Empirical evidence and research suggest that a misguided monetary policy was the main cause of the crisis. It should not be neglected that the fiscal cost of the financial crisis is greater in small and open economies. Economists and policymakers should learn that policy failures cause more adverse effects than market failures.

Iceland's high public debt is the main obstacle to full economic recovery which shall be expected no sooner than in 2012. It would be mistaken to believe that Iceland could avoid the financial crisis since the latter was a worldwide phenomenon. However, if the central bank of Iceland had predicted the inevitable consequences of the unusually robust performance of the banking system caused by the central bank itself and led a prudent supervision, the crisis would certainly not have been as deep as it was.

VIII. LITERATURE

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