UNDERSTANDING FINANCIAL CRISES: IDENTIFYING THE DIFFERENCES
BETWEEN THE FINANCIAL CRISES OF 1984 AND 2007

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ABSTRACT

The financial crisis of 2007 will pose many questions for researchers for many years to come. This study compares the financial crisis of 2007 with the financial crisis of 1984 to identify if there are any similarities or differences between the two, which may shed some light as to why the 2007 crisis occurred. This analysis measures how nominal interest rates, consumer credit outstanding, aggregate reserves of depository institutions, and GDP per capita influence median house price. The results show that the 1984 crisis and the 2007 crisis had many similarities as to what caused the crises but differed in why the crises occurred. Predictions and suggestions about the 2007 crisis are made after the analysis.
INTRODUCTION

The financial crisis of 2007 was the most costly and damaging financial crisis since the Great Depression of 1929. Global output, trade, and consumer prices all dropped in response to the collapse of many U.S. investment banks (Cecchetti et al. 2009). U.S. banks’ profits declined 85% in the fourth quarter of 2007 (Laeven and Valencia 2008). The depth and severity of the crisis was a shock to everyone. Financial strain was felt all around the world.

The intensity of this crisis sparked many researcher’s interest, who then tried to answer the question “How did this happen?” Many researchers have compared the current financial crisis to other major financial crises that have occurred around the world. For instance, Cecchetti, Kohler, and Upper (2008) compared 40 crises in 35 countries to determine if there was a difference in depth, length, and output loses. As well, Reinhart and Rogoff (2008b) compared this crisis to international crises that have occurred since 1800 to identify the differences between the 2007 crisis and the past crises. Other researchers, such as Rose and Spiegel (2009), have tried to identify if there are any early warning signs that can better detect a financial crisis that will soon occur. For example, Rose and Spiegel (2009) used a model that tried to link “indicators” and “causes” of 107 different country crises to see if these indicators were significantly relevant.

The majority of research done on the 2007 crisis was comparing that crisis cross-culturally to crises that have happened in the past 200 years. However, there has been little research done to identify the differences between this current crisis and past financial crises that occurred after 1980 and in just the United States. With this study, I will explore how the 2007 crisis is similar or different to the recent financial crisis in the U.S. I have chosen to focus on comparing the 2007 financial crisis with the 1984 financial crisis.
While there have been other crises in history within the United States, I compare the 1984 crisis, also called the Savings and Loan crisis, with the 2007 crisis for three reasons. First, the Savings and Loan (S&L) crisis was the only major financial crisis that occurred within the past three decades. The S&L crisis allows this analysis to have a more ‘modern’ comparison than, for example, comparing the 2007 crisis to the Great Depression of the 1920’s. The S&L crisis occurred in a very similar financial/social/technological time to the 2007 crisis. Second, the S&L crisis and the 2007 crisis both occurred in the United States. Comparing two crises that happened within one border will give the study more specific findings than generalizing results when comparing the 2007 crisis with a past crisis in another country. Limiting this study will eliminate cross-cultural differences in many aspects of the economy, such as Gross Domestic Product (GDP), national income, population, political structure, and government debt. Third, the S&L crisis is most similar to the 2007 crisis than any other crisis that has occurred in the United States. In both the 1984 and the 2007 crisis, the financial institutions at the time were not able to repay their contracts, which led to the banking capital being exhausted. During both crises, the real estate prices dropped and interest rates were at historical levels (high in 1984 crisis and low in 2007 crisis). Many of the financial institutions were forced to close or merge, and the government paid for most of the losses. In order to accurately compare crises, they must have similar crisis characteristics and must match the same crisis definition, which in this case they do. The S&L crisis is the best option for this study so relevant differences between the two can be identified.

In 1984, the United States experienced its most costly financial crisis since the Great Depression (Curry and Shibut 2002). The government deregulated the banking industry, interest rates were at a record high, and house prices were rising. Half of the Savings and Loan institutions failed in 1989 because of defaulted loans, giving the crisis the title of the Savings and
Loan Crisis. In 2007, the U.S. experienced a similar financial crisis. Commercial banks were growing in strength and size, interest rates were historically low, and house prices increased dramatically. Many consumers began defaulting on their loans, which eventually lead to the downfall of many commercial banks and investment institutions.

At the time that this thesis was being written, the 2007 financial crisis still had an impact on the United States’ economy. With this thesis, I will add more insight as to how this crisis occurred, what measures the government can take to prevent another crisis of this magnitude, and comment on how long it will take for the U.S. economy to recover.

In the analysis of this thesis, I will compare how nominal interest rates, aggregate reserves of depository institutions, consumer credit outstanding, and GDP per capita relate to median house price by doing a descriptive statistical analysis of each variable, four multiple regression models, and a Chow test for structural change following the 1984 crisis. I have chosen to focus on median house price as the dependent variable because both crises experienced a housing bubble. Both the 1984 crisis and the 2007 involved consumers defaulting on mortgages. Median house price will be seen as a symptom of the financial crises since the change in house price is a result of the crisis occurring. By using median house price as the dependent variable, I will be able to identify what variables had an impact on the house prices. This could also help explain what variables had the most influence on each crisis. I will then compare the results of each crisis to see how they were similar or different.

BACKGROUND AND LITERATURE REVIEW

Definition of Financial Crisis

Defining a financial crisis is vital while studying crises in order to eliminate any variation associated with an event termed a “financial crisis.” Laeven and Valencia (2008) provide a very detailed definition, which states that a financial crisis is one in which “a country’s corporate and
financial sectors experience a large number of defaults and financial institutions and corporations face great difficulties repaying contracts on time. As a result, non-performing loans increase sharply and all or most of the aggregate banking system capital is exhausted. This situation may be accompanied by depressed asset prices (such as equity and real estate prices) on the heels of run-ups before the crisis, sharp increases in real interest rates, and a slowdown or reversal in capital flows. In some cases, the crisis is triggered by depositor runs on banks, though in most cases it is a general realization that systemically important financial institutions are in distress” (page 5).

Another definition that is less complete is given by Reinhart and Rogoff (2008a) who define a financial crisis as “one of two types of events: (i) bank runs that lead to closure, merger or takeover by the public sector of one or more financial institutions, (ii) in the absence of runs, closure, merger, takeover or large-scale government assistance of an important financial institution (or group of institutions) that marks the start of a string of similar outcomes for other financial institutions” (page 58). In this study, I define a financial crisis as an economic phenomenon in which financial institutions are not able to pay their contracts on time, leading to the majority of the banking capital being exhausted causing a drop in real estate prices and a drop in interest rates. Bank runs occur which lead to the closure or merger of these financial institutions, and large-scale government assistance occurs. This definition provides objective measures that will be the foundation for the quantitative analysis in this thesis.

**U.S. Financial Crises in the Past 100 Years**

Since 1900, the United States has experienced two major financial crises that occurred before the two crises included in this analysis: the Panic of 1907 and the Great Depression of 1929. The first crisis of the 1900’s began in the summer of 1907 when numerous businesses and brokerages went bankrupt. A few months later, the Knickerbocker Trust, which was the third
largest trust in New York City, collapsed due to a bank run caused by a failed bid on the United Copper Company. After the downfall of the Knickerbocker Trust, public distrust in banks spread throughout the nation and the panic began. The public panic caused a massive run on the banks. In response to the crisis, the government created the Federal Reserve System in 1913 (Odell and Weidenmier 2002).

A few years following the Panic of 1907, the stock market boomed in the 1920’s. Fearing that the stock market would crash, the Federal Reserve raised interest rates to make it more difficult to borrow money for stock speculation. On October 29, 1929, the stock market crashed and the Great Depression began. American business was brought to a halt and many businesses were forced to close (Romer 1990). Unemployment reached a record 24.9% and the Gross National Product fell 31% in three years. In 1933, Franklin Delano Roosevelt and Congress passed the “New Deal,” which featured many different monetary and fiscal policies (Velde 2009). The United State’s economy slowly began to heal, taking up to twelve more years to fully recover (DeLong 1998).

Fifty years later, in 1984, the United States experienced a financial crisis when half of the Savings and Loan institutions failed. This crisis was referred to as the Savings and Loan Crisis because of the financial sector that it affected. In the early 1980s, the government deregulated Savings and Loan institutions, allowing them to give loans for commercial property and commercial banks to give loans to consumers. At the same time, the government raised the interest rates to give the S&Ls a competitive advantage against commercial banks. In order to compete with the commercial banks, the S&Ls began taking riskier investments, which eventually led to the S&Ls downfall (Warf 1996). As consumers defaulted on their mortgages, the S&Ls began to fall with them. The banks suffered unprecedented losses as this turned out to be the largest financial crisis after the Great Depression and before the 2007 crisis.
In 2007, the United States experienced a financial crisis similar to that of the 1984 crisis. The government, during this time, was trying to increase the number of homeowners in America by lowering interest rates to attract new homeowners. The commercial banks were pleased to give out these mortgages, sometimes to consumers who could not pay for it, since the demand by investment banks for mortgage-backed-securities was skyrocketing (Laeven and Valencia 2008). After some time, the consumers were unable to pay their mortgages and commercial banks began to collapse. Housing prices dropped and many commercial banks went bankrupt. The 2007 crisis turned into a recession, and the U.S. economy suffered much greater losses than that of the 1984 crisis.

**Financial Crisis of 1984**

The Savings and Loan crisis was the worst financial crises to occur in the United States after the Great Depression and before the new millennium (Curry and Shibut 2002). Curry and Shibut analyze the total cost of the S&L crisis by adding the total Federal Savings and Loan Insurance Corporation (FSLIC)’s cost and the total Resolution Trust Corporation (RTC)’s cost (2002). The FSLIC was the federal insurer for the S&Ls, also known as thrifts, and aided insolvent thrifts from 1986 to 1989. In 1989, Congress enacted the Financial Institutions Reform, Recovery, and Enforcement Act, which abolished the FSLIC and transferred the accounts to the RTC. The RTC was then responsible for resolving all insolvent thrifts from 1989 to 1995. Curry and Shibut calculated that the estimated total cost for the FSLIC failures was $63.0 billion and the total cost for the RTC was $82.7 billion. The total estimated cost of the S&L crisis was $145.7 billion, with $123.8 billion, or 91% of the total, paid for by the U.S. taxpayers and only $29.1 billion, or 19%, paid for by the thrift industry (Curry and Shibut 2002).

Dotsey and Kuprianov argue that the strict limitations on the investment powers of the savings and loan industry were what caused the S&L crisis to occur (1990). Dotsey and
Kuprianov believe that regulatory structure was a major influence on the outcome of the crisis. Many insolvent thrift institutions at the time were encouraged to take deposits from customers and to continue high-risk activities. Dotsey and Kuprianov suggest that a reform of the federal insurance system is needed and that it includes changing “incentives to discourage depositors from funding insolvent institutions together with a system of judicial oversight of bank and thrift failure resolutions proceedings similar to legal bankruptcy proceedings established to deal with financially troubled firms” (Dotsey and Kuprianov 1990, page 4).

Looking at a more economic view of what occurred during the S&L crisis, Warf and Cox (1996) explain what the geographical spatial structure of the S&L crisis was and provide an econometric analysis of the crisis (1996). Warf and Cox find that the greatest number of thrift failures took place in what they called the “West South Central.” The states in that category include Louisiana, Texas, Oklahoma, Montana, Idaho, Utah, Nevada, Colorado, New Mexico, and Arizona, with 412 S&L failures out of a country total of 974. Warf and Cox then used a TOBIT regression analysis to determine what was statistically significant to the S&L crisis, with the dependent variable as the annual rate of thrift failures. They found that the thrift failures were directly related to the decline in residential mortgage delinquency rates. It was also found that S&L failures were sensitive to the LQ (local quotient in two regions of the U.S.) of agriculture, the LQ of mining, the LQ of construction, the LQ of services, and the federal funds nominal interest rate (Warf and Cox 1996).

Financial Crisis of 2007

Laeven and Valencia (2008) compare the 2007 financial crisis with global crises around the world from 1970 to 2007. They begin their article by explaining the initial conditions, the containment, and the resolution of the 2007 crisis. Following the 2001 recession in the U.S., the Federal Reserve Bank lowered interest rates from 9.5% in January 2001 to 4.75% in January
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2002, which increased the demand for residential property investment (Laeven and Valencia 2008). This subsequently increased the average house price from $207,000 in 2000 to $305,900 in 2006 (U.S. Census Bureau 2010). However, financial institutions also added to this housing bubble issue. Banks were following a lending model termed the “originate-and-distribute,” which allowed banks to make “loans primarily to sell them on to other financial institutions who in turn would pool them to issue asset-backed securities” (Laeven and Valencia 2008). There was a mispricing of the risk associated with these loans that were linked to securities, which created the belief that an arbitrage opportunity existed and demand for this type of transaction increased. Around the middle of 2006, the financial crisis was showing its first signs with the decline of house prices. In 2007, HSBC reported a loss of $10 billion in its U.S. mortgage lending unit, and New Century Financial went bankrupt. When Countrywide Financial began to have liquidity problems they experienced a depositor bank run. The Federal Reserve Bank stepped in and helped Countrywide’s liquidity problem. The Fed came up with the Term Securities Lending facility in 2008, which was designed to help institutions with illiquid assets. As well, in 2008, Bear Sterns collapsed after their losses initiated a bank run. The government was then forced to intervene by securing Bear Sterns’ liabilities in order for JP Morgan Chase to purchase the investment bank. The creditors of Bear Sterns were protected from this action. However, many shareholders lost a large amount of money. Lehman Brothers and Merrill Lynch also failed, with Lehman Brothers filing for Chapter 11 bankruptcy and Merrill Lynch being sold to Bank of America. To conclude their research, Laeven and Valencia (2008) suggest that speedy resolution of banking crises seems to work the best.

Cecchetti, Kohler, and Upper (2009) study the length, depth, and output cost of the 2007 crisis in comparison to past financial crises since 1980. In their first section, they determine and discuss the different channels of crisis transmission. In the monetary transmission channel, they
described how the 2007 crisis was affected by cost of funding, credit availability, risk aversion, and household wealth. The cost of funding for private credit has been increasing since 2007 while the federal policy rates are falling. Since the crisis began, the available credit has also declined with many banks tightening their lending standards. Risk aversion has been increasing because of the cost and availability of credit. The falling house prices have resulted in U.S. household wealth dropping 25%, and have led individuals to hold more liquid financial assets (Cecchetti et al. 2009).

In Rose and Spiegel’s (2009) working paper, the researchers use a Multiple Indicator Multiple Cause (MIMIC) model to try and link the indicators of a financial crisis with the potential causes of the 2007 crisis. The determinants of a crisis that they include in their research are size and income, financial policies (both national and international), financial conditions, asset price appreciation (real estate values), international imbalances, macroeconomic policies, institutional factors, and geography. The results of their analysis were very striking, as the majority of the potential causes were not statistically significant to the crisis. They did find that “countries that experienced a large run-up in the stock market were more likely to be hit by the 2008 crisis. Countries with larger current account deficits and fewer reserves were also more vulnerable. The researchers came to the conclusion that the majority of these variables are relevant to the severity of the 2007 crisis (Rose and Spiegel 2009).

Murphy (2008) provides possible solutions to the 2007 crisis besides the multiple Federal Reserve bailouts. Murphy describes the events that took place before and during the crisis that he believed to be the source of the problem. He explains that the mispricing of the credit default swaps were at the heart of the crisis. He also pointed out that there was a major liquidity problem with all the major loan institutions. Murphy then suggests that the depository institutions of failed corporate holdings should be nationalized while letting all other failed
institutions go bankrupt. As well, he makes suggestions for the real estate market, consumer loans, and liquidity issues. The real estate market could be aided by implementing a refinancing plan called the shared appreciation mortgages, which would allow mortgagors to refinance and reduce their payments in return for the lending institution to receive a portion of the appreciated value on their homes. The consumer loan problem could be alleviated by a renegotiation of both the loan terms and what is being financed (e.g. a house or a car). One suggestion to help the liquidity problem is to have the Securities and Exchange Commission enforce the law that requires the delivery of borrowed shares from short sellers. Murphy provides a few cheaper suggestions to help the government rebuild the U.S. financial sector (Murphy 2008).

Reinhart and Rogoff (2009) have determined some similarities between post World War II crises. They analyzed the aftermath of every financial crisis after WWII and put particular emphasis on “the big five,” which includes the crises in Spain, 1977, Norway, 1987, Finland, 1991, Sweden, 1991, and Japan, 1992. Reinhart and Rogoff found that the aftermath of these crises were similar in three ways. First, real housing equity prices declined significantly and lasted for a long time. Second, unemployment and output greatly declined during the aftermath of the crises. Third, there is an “explosion” of government debt during the crisis. Reinhart and Rogoff have shown that although the 2007 crisis is very different from past crises, there are still some similarities that must be noted (Reinhart and Rogoff 2009).

Ely (2009) takes on a different approach by arguing that public policy is to blame for the 2007 crisis. Ely first mentions that the laws regarding taxation of personal and corporate income (which “promote overspending and undersaving”) of the Internal Revenue Code are some of the major causes of the crisis. He also argues that arbitrage in the shifting of assets may have underestimated the costs, and fair-value accounting reduced the equity capital and caused institutions to be insolvent. He then mentioned that the government deposit insurance was
mispriced, and government-sponsored enterprises, such as Fannie Mae and Freddie Mac, followed an unsound business model. He finalized by arguing that home ownership was over-promoted, and the monetary policy caused an increase in the housing bubble. Ely identifies these public policy issues in order to help the current government make smart decisions about the new policy that will be implemented (Ely 2009).

**COMPARE AND CONTRAST**

The Savings and Loan crisis and the 2007 crisis share many similarities in the causes of each crisis but also differ in many ways. Both crises experienced a housing bubble. However, different factors influenced the housing price rise for both events. In 1980, the housing bubble was caused by the deregulation of S&L institutions, the rise of interest rates, and the rise of deposit insurance by the FSLIC (Warf 1996). The high interest rates helped to maintain house prices, as it caused only a slight dip in prices. When the federal government deregulated the S&L market, the institutions were allowed to do business with any client in the United States, rather than being restricted to doing business with clients within 100 miles of their location. Around the same time, the government increased the real interest rates, and the FSLIC increased the depositor insurance from $40,000 to $100,000 (Warf 1996). Both of these attracted new depositors, as it allowed them to engage in a risk-free investment. With these three government changes in place, the supply of capital increased, which in turn increased real estate development. The housing bubble in the first decade of the new century was caused by low interest rates of subprime mortgage lenders. The very low interest rates caused house prices to rise dramatically, which allowed for house prices to fall much more than seen in the 1984 crisis. The low interest rates also attracted clients who were interested in purchasing a home. As a result, the demand for loans and houses increased, therefore increasing the prices of the homes.
The S&L crisis and the 2007 crisis were the result of failing investment institutions. There are many different reasons as to why these institutions failed for each of the crises. The S&L companies failed mainly because of the government changes to interest rates and regulation (Warf 1996). The government increased interest rates before they deregulated the S&L market, which would allow the S&Ls to negotiate a variable-rate investment with their current fixed-rate investors. This caused many of the investors to withdraw their fixed-rate deposit and search for a higher yielding investment. As the S&Ls began to lose money, they were forced to invest in high-risk, high interest junk bonds (Warf 1996). Many of these risky investments failed, which caused about half of the S&L industry to fail. In 2007, the institutions failed primarily because there was too much demand for mortgage loans and securities. Investment institutions at the time were using the “originate-and-distribute” method, which allowed the primary lender of the loan to sell the mortgage to another investment company who would then pool the loans together to issue asset-backed securities (Laeven and Valencia 2008). This would also transfer the risk to the ultimate holder of the loan. At the time, there was a misprice in interest rates, which led investment firms to believe that there was an arbitrage opportunity. The demand for loans skyrocketed as investment firms demanded more along with private mortgagors. Many investment firms then engaged in riskier transactions to keep up with the high demand of loans. As the house prices began to fall, the investment firms fell with it. Some of the largest financial institutions in the United States, such as Bear Sterns and Merrill Lynch, went bankrupt.

There were also some other similarities between the two crises. The government, in both crises, bailed out the institutions. During the S&L crisis, taxpayers paid 81% of the total cost of the crisis (Curry and Shibut 2002). In the 2007 crisis, the Federal Reserve Bank lowered the discount rate and accepted repurchase agreements (Laeven and Valencia 2008). Another
similarity between the crises is that each institution failure was due to liquidity issues. As well, both crises experienced a bank run in at least one institution.

One major difference between the two events was that in the 2007 crisis there was a major spillover effect (Laeven and Valencia 2008). Investment banks from around the world purchased the mortgages from the U.S. banks, and once the U.S. banks failed, the international banks suffered major losses. The 1984 crisis was contained within the United States because investment banks, at the time, did not purchase the mortgage-backed securities. Table I is included to summarize and visualize the similarities and differences between these two crises.

One of the primary purposes of this study is to identify how these two crises compare and contrast, and from that be able to better understand what happened during the 2007 crisis. Within the methodology section of this paper, I will provide more insight into the unknowns such as how the 2007 crisis happened, why it happened, why the 2007 crisis was so much larger in magnitude, and other similarities and differences the 2007 crisis shared with the 1984 crisis. Prior to conducting this analysis, I made some assumptions regarding these unknowns. I believe that the 2007 crisis occurred mostly due to a mixture of government deregulation and bad business decisions, which focused on increasing homeownership and expanding the banking market. I speculate that the crisis occurred because the government put too much emphasis on increasing the percentage of homeowners while ignoring the effect that this may have on consumers and banks. I also believe that the 2007 crisis had a greater impact because the lower interest rates allowed for the house prices to skyrocket, which caused greater losses when the housing bubble burst. As well, the spillover effect caused by international investment firm purchasing mortgage backed securities created losses around the world. Lastly, I think that there are more similarities than differences between the 1984 crisis and the 2007 crisis. For instance,
the underlying causes of the crises seem to be similar; the governmental deregulation allowed for non-ideal mortgagors to be given loans. Although many of the minor details differ between the crises, they share many similarities that are important to identify and analyze. Understanding how the two crises relate to one another is the key to understanding how this crisis will be resolved and how this will affect our future. In the next section of this study, I will analyze statistically how the 1984 crisis and the 2007 crisis are similar and different.

**METHODOLOGY**

**Design**

For this study, I will compare the 1984 crisis to the 2007 crisis by providing a descriptive statistical analysis of the variables followed by multiple regression analyses and a Chow test to determine if a structural change in the housing sector occurred following the S&L crisis. The independent variables that I chose to use are nominal interest rate, aggregate reserves of depository institutions, consumer credit outstanding, GDP per capita, and GDP per capita squared, with the dependent variable being median house price. I chose these variables based upon the findings from previous empirical studies and economic theory.

All of the data collected was from January of 1963 to October of 2009, and all of the data are monthly. The GDP was originally quarterly data, however I used linear smoothing so as to match GDP with the other monthly data. The descriptive statistics will show a graphical representation of the variables used within this time period. It will also include a highlight of some of the major fluctuations with each variable. GDP per capita squared is used in order to determine if the relationship between GDP per capita and median house price is linear or nonlinear. The regression analysis will include four different analyses with follow the equation:

\[ y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \epsilon, \]
where $\beta$ equals the coefficient of the independent variables, $X$ is representative of the independent variables ($X_1$ is nominal interest rates, $X_2$ is consumer credit outstanding, $X_3$ is aggregate reserves of depository institutions, $X_4$ is GDP per capita, and $X_5$ is GDP per capita squared), and $e$ is the random error term (which will not be mentioned in this study). The first regression will include an analysis of the entire data set from 1963 to 2009, the second analysis will include the years 1963 to 1985, the third will include 1986 to 2009, and the final analysis will include 1963 to 2001. The middle two regression analyses divide up the years to the times of the crisis, while the first analysis is to get a general idea of the trend of each variable within the forty years, and the last analysis is used to identify any variables that are of a particular relevance to the 2007 crisis. The last regression will be compared to the third regression to determine if the 2007 crisis had a major effect on one or more of the variables. The data from the years 1963 to 2001 will represent the trend of the variables up until the onset of the 2007 crisis. The 2001 date was used since that is when the housing bubble related to the 2007 crisis started. If the 2007 crisis skewed the results because of how large of an impact it had, I will be able to identify these changes with the fourth regression. The Chow test is used to determine if there is a structural change between two periods within one set of data (Gujarati 1995). This could possibly identify that the parameters of the median house price function has changed. These three tests give visual and statistical insight into what happened during the 1984 and the 2007 crisis.

RESULTS

Descriptive Statistics

**Nominal Interest Rates.** The nominal interest rates are the interest rates not adjusted for inflation. The nominal interest rates have been a great indicator of many economic outcomes within the United States.
As shown in the graph, the nominal interest rate has shown much volatility between the years 1963 and 2009. The highest point that the nominal interest rates have reached was 15.32% in September of 1981 and the lowest was 2.42% in December of 2008 (Board of Governors of the Federal Reserve System 2010). However, despite the major fluctuations, the nominal interest rate in this graph began at 3.83% in January of 1963 and ended at 3.39% in October of 2009. The majority of the rates in this graph lie between 4% and 8%, therefore pointing out interesting phenomena when the rates rise above 8% and drop below 4%. Nominal interest rates prove to be an important indicator of economic outcomes.

Looking specifically at the highest period of the inflation rates, from January of 1979 to December of 1989, the rate reached its peak at 15.32% in September of 1981, then took a steep drop to 10.38% in May 1983. The rates then dropped once more to 7.08% in January 1987. The rise in interest rates can be attributable to the Depository Institutions Deregulation and Monetary Control Act, which allowed depository institutions to charge any interest rate that they chose (Warf and Cox 1996). The drop in 1983 reflects the first signs of the crisis. By 1986, a little less than half of the depository institutions became insolvent (Curry and Shibut 2002). This could be reflected in the decline of the interest rates from 1986 and on.

The interest rates have been in a slow decline since the later part of the 1980’s. Particularly, the rates have been dropping from 5.1% in June of 2007. From November to December of 2008, there was a sharp drop from 3.53% to 2.42%. This was the lowest that interest rates had been since the 1950’s. This could have resulted because the last few months of 2008 were the lowest points of the 2007 crisis.
Aggregate Reserves of Depository Institutions. Total aggregate reserves of depository institutions include reserves held by the institutions to meet the required reserve amount specified by the Federal Reserve. Total reserves equal the sum of borrowed and non-borrowed reserves. The amounts shown above reflect the total of borrowed reserves. Borrowed reserves equal the “sum of credit extended through the Federal Reserve’s regular discount window programs and credit extended through certain Federal Reserve liquidity facilities” (St. Louis Fed 2010). The majority of these borrowed reserves come from a term auction facility (Board of Governors of the Federal Reserve 2010d), which is a program designed by the Federal Reserve in 2007 to help increase the liquidity of depository institutions (Investopedia 2010). The aggregate reserves increased from $46,258,000,000 in August 2008 to $1,056,405,000,000 in October 2009 (Board of Governors of the Federal Reserve System 2010a). The sharp increase in reserves in 2008 is directly related to this program being put in place in response to the 2007 financial crisis. Therefore, the aggregate reserves are only significant to this recent crisis.

Consumer Credit Outstanding. Consumer credit outstanding represents the total amount of debt that all consumers have combined in the United States. There has been an increasing trend over time. The steeper increase began at $872,021,820,000 in January of 1994 and ended at $2,581,975,050,000 in July of 2008 (Board of Governors of the Federal Reserve System 2010b). This could be attributable to more consumers taking out loans or credit cards becoming more popular. However, there was a decline in the outstanding credit going from $2,581,975,050,000 in July 2008 to $2,479,800,610,000 in October 2009. This drop could be caused by consumers being able to pay off their debt, or banks not being able to offer more credit.
to the consumer. Cecchetti, Kohler and Upper (2009) also mentioned that available credit is declining because banks are tightening their lending standards.

[Insert Figure VI about here.]

**GDP per Capita.** Gross Domestic Product is a great indicator of how healthy a country’s economy is during a particular time period. The GDP can be defined as the “total market value of all final goods and services produced in a country in a given year, equal to the total consumer, investment and government spending, plus the value of exports, minus the value of imports” (Investorwords 2010, page 1). The GDP per capita is calculated by dividing the GDP by the population of that year. The GDP per capita has been increasing since January 1963 until August 2008. The GDP per capita dropped from $47,841.59 per person in July 2008 to $46,317.04 per person in April 2009 (U.S. Census Bureau 2000, 2010b; U.S. Department of Commerce 2010). Since then, the GDP per capita has continued to increase. The decline in the GDP per capita reflects the strain on the U.S. economy. Therefore, the cause of the decline can be caused by the decline in consumer and investment spending.

[Insert Figure VII about here.]

Although the GDP growth was not included in my regression analysis, I included it in my descriptive statistics analysis to provide more information about the two financial crises. The data in this graph is recorded quarterly, rather than monthly. Focusing on the two time periods of the crisis, there are some interesting fluctuations that should be mentioned. In 1981, there was a huge spike in growth, followed by two years of decline. In 1983, the growth rate was actually negative. Between 1984 and 1989, there was a relatively stable period. However, in 1989 the growth rate dropped then hit a low in 1991. The 2007 crisis followed a very similar pattern. From 2001 to 2003, there was a major drop in growth rate. Following 2003 and until 2006, there was a short but stable period. Beginning in 2007, there was a major decline in growth, which
dropped below a -.01% growth rate in 2009. These two crises have many similarities in their fluctuations. Both experienced a slight decline in growth a few years before the crisis, had a relatively stable period during the actual years of the crisis then encountered a sharp decline a year or two after the initial crisis year. This is a very significant similarity between the 1984 crisis and the 2007 crisis.

[Insert Figure VIII about here.]

**Median House Price.** The median house price has risen significantly in the past 40 years. The median house price was $17,200 in January 1963 and ended at $215,100 in October 2009 (U.S. Census Bureau 2010a). The median house price reached its highest point in March 2007 at $262,600. The 1984 crisis and the 2007 crisis were a result of housing bubbles, therefore house prices could be affected by all of the previous variables.

[Insert Figure IX about here.]

There was not a huge house price drop during the 1980’s, however, there were a few smaller bubbles worth mentioning. Between 1984 and 1986, the major years of the crisis, the median house price was gradually rising. During the last few years of the crisis, however, there was a spike in house price, going from $95,200 in February 1987 to $109,000 in June 1987. This was followed by a small decline in July 1987 when the price reached $105,000. In January 1988, there was another increase in price, reaching $119,000, but then fell once more to $110,000 in November 1988. The changes in prices could be due to a number of creditors becoming insolvent, or because of the number of consumers defaulting on the mortgages. The 1984 crisis was affected the most between 1987 and 1989 when many of the savings and loan institutions became insolvent. Since then, the median house price has been steadily increasing up until the 2007 crisis.

[Insert Figure X about here.]
The 2007 crisis created the most dramatic drop in house prices between 1963 and 2009. The house prices reached an all time high in March of 2007 at $262,200, which was just around the time that the financial crisis began. Since that month, the house prices have been gradually falling, the lowest amount being $205,100 in March 2009. The drop in prices could have been caused by the consumers defaulting on their loans, or by the commercial banks starting to close because of insolvency issues. The two crises are similar in that they both experience house price drops, however the timing of the drops were different. The 1984 crisis had the house price drop during the later years of the crisis, while the house prices dropped during the critical years of the 2007 crisis.

Regression Results

Regression 1 Results. The first regression includes all of the data, ranging from January 1963 to October 2009. Table II gives the regression results for this data set. There is a total of 561 observations in the complete data set.

Nominal interest rates, consumer credit outstanding, aggregate reserves of depository institutions, GDP per capita, and GDP per capita squared were all statistically significant (p<.05) for this regression equation. Since GDP per capita squared was significant, there is a nonlinear relationship between GDP per capita and median house price. All of the variables were positively related to median house prices except for aggregate reserves. This could be due to the fact that up until 2008, the reserves were increasing by a very slight amount since 1963. It should also be noted that the nominal interest rates have a positive coefficient, which means that as interest rates rise, median house prices rise as well. The sign of the coefficient between nominal interest rates and median house prices will be noteworthy throughout the regression analysis.
Regression 2 Results. The second regression includes the data for the years 1963 to 1985. Table III gives the regression results for this set. There are a total of 275 observations in this set.

[Insert Table III about here.]

All five of the independent variables were statistically significant. In this data set, the consumer credit outstanding, GDP per capita, and GDP per capita squared were the three variables that had a positive relationship to median house prices. Both the nominal interest rates and aggregate reserves had negative coefficients. The negative sign for the interest rates reflects the expected result; as interest rates increase, median house prices decrease. This negative relationship is expected to occur since the consumer would not be willing to pay for a high priced house with a high interest on the mortgage. The aggregate reserves could be experiencing a negative relationship with median house prices because of a slight decrease in reserves.

Regression 3 Results. The third regression includes the data for the years 1986 to 2009. Table IV gives the results for this regression. There are a total of 285 observations in this data set.

[Insert Table IV about here.]

In this data set, all the variables were significant except for GDP per capita. All of the variables, except for aggregate reserves, were positively related to median house prices. Two interesting outcomes resulted: as interest rates increased median house prices increased, and aggregate reserves remained to obtain a negative coefficient. The positive interest rate coefficient does not follow what is expected of the relationship, which is noteworthy. This could be due to the fact that interest rates were at a historical low while house prices were continually rising, causing the house prices to increase at a very low base. Real interest rates were, however, found to have a negative coefficient to median house prices. In a regression analysis done prior
to this final analysis, real interest rates were used and all had negative coefficients. The real interest rate variable was not used in this study because it was not statistically significant in two of the regression analyses. As well, aggregate reserves have a negative relationship with median house price because as aggregate reserves increase, median house price decrease. This could most likely due to the steep increase in reserves as house prices were dropping.

 Regression 4 Results. The fourth regression includes the data for the years 1963 to 2001. Table V gives the results for this regression. There are a total of 467 observations in this data set.

[Insert Table V about here.]

All of the variables, except for aggregate reserves, in this data set were statistically significant. Consumer credit outstanding and GDP per capita were positively related to house price, while nominal interest rates and GDP per capita squared had a negative coefficient. The negative coefficient for nominal interest rates indicates that sometime after 2001, the nominal interest rate’s relationship with house prices changed; as nominal interest rates fell, median house prices fell with it, indicating a direct relationship between nominal interest rates and house prices. Since aggregate reserves are not statistically significant, this could imply that the 2007 jump in reserves dominated the whole data set.

Chow Test Results

By using the Chow test, I wanted to determine if there was a structural change after the 1984 crisis, since most of the changes in the variables occurred after this crisis. For this test, I created three regression analyses; the first included all the data, the second included the data from 1963 to 1984, and the third included the years 1988 to 2009. I then used the equation,

\[
F = \frac{S_5/k}{S_4/(n_1 + n_2 - 2k)}
\]
to solve for F. I found the sum of squares for the residual (S) of each regression, as well as the number of observations (n) and the number of parameters (k). The summary of calculations can be found on Table VI.

[Insert Table VI about here.]

I calculated F to be 51.07, and the F critical value for degrees of freedom (5,504) is 2.2320, which means that F is statistically significant. This provides evidence that a structural change in the parameters did occur between the two periods (1963-1984 versus 1988-2009).

In order to better understand each variable, the statistical analysis was used to give a visual representation of the variables. The regression analysis aided in identifying how each of the independent variables related to the dependent variable. The Chow test then proved that there was indeed a structural change to the median house price regression model.

**DISCUSSION**

Throughout this exploration of the similarities and differences of the two crises, more commonalities have been discovered with the analysis. The interest rates, aggregate reserves, consumer credit outstanding, and GDP per capita all proved to be major differences for the crises. Median house price did however share some small similarities. The interest rates in this data set rose to its highest point during the 1984 crisis and fell to its lowest during the 2007 crisis. The change in nominal interest rates in both crises was caused by government deregulation. Before the 1984 crisis, the government raised the interest rates to give the S&Ls a competitive advantage once the market was deregulated (Warf 1996). Before the 2007 crisis, the government lowered the interest rates to attract more consumers to the housing market. Aggregate reserves were very low during the 1984 crisis, while they were at the highest during the 2007 crisis. The government during the 1984 crisis did not implement the facilities program, so the aggregate reserves remained at a relatively constant increase until 2007. Once the
program was initiated due to the 2007 crisis, aggregate reserves skyrocketed. This program was most likely used to avoid the same catastrophe seen in the 1984 crisis. The facilities program was designed to give assistance to banks who were performing decently, but who needed help during the crisis (St. Louis Fed 2010). Consumer credit outstanding was also low during the 1984 crisis and very high during the 2007 crisis. This could be due to the increasing popularity of credit cards and the rising number of U.S. consumers owning homes. Consumers who were issued mortgages may have had to spend the majority of their income on the mortgage payments, therefore decreasing the amount of money the consumer had to spend on other items. The consumers would then use credit cards for all other spending purposes. As the number of consumers owning home increased, the amount of credit those consumers used increased.

During the 1984 crisis, the GDP per capita was slowly increasing. However, the GDP per capita decreased during the 2007 crisis. This could have been a reflection of the impact that this crisis had on the economy. One of the major similarities in this analysis was the median house price. The 1984 crisis did experience a housing bubble, but it was very small in magnitude. The house prices did not experience a dramatic rise, most likely because of the extremely high interest rates (as shown in the analysis results for the interest rates). There was also just a small dip in the house prices for a very short period of time. The 2007 crisis did, however, encounter a very steep increase in housing prices and a large drop that lasted for multiple years. The increase in house prices could be due to the decrease in nominal interest rates, which follows an inverse relationship that interest rates had with house prices during the 1984 crisis. The analysis illustrated the differences between the two crises, but also found that some of the major factors of each crisis shared some similarities.

While reviewing the literature and the analysis, these two crises had very important commonalities between them. One significant factor that seemed to have great influence over
both crises was government regulation. The government transformed the successful banking industry in the 1980’s when they deregulated that market to create a single banking market. During that same time, the government increased the depositor insurance by $60,000. The combination of these two acts caused the S&L crisis, and eventually led to the 2007 crisis. The commercial banks gained business in the banking market when the deregulation acts passed, which allowed them to give home loans to consumers for private mortgages. The banks gave home loans to many of the consumers who could not pay for them, eventually leading to the downfall of these huge commercial banks. I believe that the change in government regulation was one of the primary reasons as to why both of these crises occurred. The highly regulated banking industry solved the problems from the Great Depression and worked extremely well until the government changed the market. Once the new deregulation was in place, two major financial crises have taken place. In order to avoid another major crisis, the government must regulate the banking industry as it once did in the past.

One other similarity between the two was that the savings and loan institutions, during the 1984 crisis, and the commercial banks, during the 2007 crisis, were pressured to give loans to consumers who could not afford the loans in the long run. The S&Ls were pressured into obtaining riskier investments in order to compete with the commercial banks as they were starting to lose a lot of their money. The commercial banks in the 2007 crisis were pressured from the government to give home loans to those consumers who could not pay for them. The government wanted to increase the number of Americans who owned homes, therefore lowering the interest rates so owning a home might be easier for those consumers. In both crises, the major losses came from the consumers who defaulted on their home mortgages. The riskier investments proved to be fatal for both the 1984 and the 2007 crisis.
The 2007 crisis was one of the worst financial crises that this country has ever seen. However, there seem to be some major similarities between the 1984 crisis and the 2007 crisis, which could help explain why the 2007 occurred and how long it will take to recover. Reviewing all the information that I have collected for this thesis, I predict that the United States will fully recover from the 2007 crisis between 2015 and 2017. It took six years, until 1990, for the 1984 crisis to recover. The 2007 crisis was much greater in magnitude and also created a spill-over effect so other countries were affected. The 2007 crisis also experienced a recession because the GDP growth rate dropped three quarters in a row (as shown in the GDP growth graph). It should take a minimum of eight years to recover, possibly a few years longer. In order to avoid another crisis of this size, I propose that the government regulate the banking industry as it had in the past. A division between private and commercial mortgages is necessary. As well, the government should cease its efforts in trying to raise the percent of American homeowners. I also predict that the U.S. government will raise the interest rates within the next few years to help lower the house prices. I believe that the rise in interest rates will have an effect on the house prices, probably decreasing the rate of growth of the prices for the next five to ten years. Much of the recovery and stability of the 2007 financial crisis lies in the hands of the government and should be acted upon quickly. The 1984 crisis and the 2007 crisis occurred within a twenty year period. Therefore, the next crisis is just around the corner if the government does not step in and take action immediately.

**Limitations and Future Research**

As with any study, there are many limitations to the research that I conducted. One of the major limitations to the research was the data that I collected. I only had access to years 1963 to 2009. It may have benefited the research to have data between 1950 and 1963, but it would have given the analysis an even better perspective of what is happening in the 2007 crisis if the data
for the end of 2009 and beginning of 2010 was available. Another limitation was the type of variables that I used. Many of the variables that I could have used were related to international statistics, but I chose to focus primarily on the United States for this study. An additional limitation was that at the time of writing this thesis, there was not a great deal of research published about the 2007 crisis. For that reason, I had to design my own analysis, chose my own variables, and rely on little data to support my topic. One other limitation that I encountered in this thesis was the time constraint. I had originally wanted to do a cross-cultural analysis of how the 2007 crisis affected different countries, but I did not have the time to gather all the data from numerous countries. The last limitation to this study was that I did not include minor crises in my research. Although small in size compared to the 1984 and 2007 crisis, the smaller crises could have some similarities with these two crises and might have been able provide more insight as to what will happen with the 2007 crisis.

I have many suggestions for future research that might be conducted for the same topic. The first is to use the same type of analysis, but include more variables. For example, one might include variables such as stock market indexes, U.S. dollar exchange rate, national debt, interest rates, bank assets and liabilities, money stock measures, and U.S. international transactions. Some other smaller financial crises could be added to see if those smaller crises have any similarities or differences with the two crises in this analysis. Another idea is to conduct a cross-cultural time series analysis of the 2007 crisis to investigate how this crisis affected other countries. An additional study would be to compare the 2007 crisis with other major financial crises around the world to see how the 2007 crisis differs or relates to other crises. One final suggestion is to replicate this study after the 2007 crisis has ended, possibly doing the study in 2020, to identify what were the similarities or dissimilarities during the ending periods of the 1984 crisis and the 2007 crisis.
REFERENCES


Understanding Financial Crises


## Understanding Financial Crises

### TABLE I
SUMMARY OF COMPARE AND CONTRAST

<table>
<thead>
<tr>
<th>1984 Crisis</th>
<th>2007 Crisis</th>
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<tr>
<td><strong>Housing Bubble</strong></td>
<td><strong>Housing Bubble</strong></td>
</tr>
<tr>
<td>- Caused by deregulation, high interest rates, and increased depositor insurance</td>
<td>- Caused by high demand of mortgages, low interest rates, and mortgage backed securities</td>
</tr>
<tr>
<td><strong>Crisis caused by failing investment banks</strong></td>
<td><strong>Crisis caused by failing investment banks</strong></td>
</tr>
<tr>
<td>- S&amp;Ls failed because they could not compete with commercial banks due to the deregulatory acts</td>
<td>- Banks failed because they issued to many loans to meet the demands for mortgages</td>
</tr>
<tr>
<td><strong>Government bailed out S&amp;Ls</strong></td>
<td><strong>Government bailed out commercial banks</strong></td>
</tr>
<tr>
<td><strong>Institution failures due to liquidity issues</strong></td>
<td><strong>Institution failures due to liquidity issues</strong></td>
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<td><strong>Bank runs</strong></td>
<td><strong>Bank runs</strong></td>
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*Spill-over effect*

### TABLE II
SUMMARY OF REGRESSION 1 RESULTS
1963-2009

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$R^2 = .989$

n= 561
### TABLE III
**SUMMARY OF REGRESSION 2 RESULTS**

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$R^2 = .995$

$n = 275$

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### TABLE IV
**SUMMARY OF REGRESSION 3 RESULTS**

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$R^2 = .967$

$n = 285$
### TABLE V
**SUMMARY OF REGRESSION 4 RESULTS**

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$$R^2 = .994$$

$n= 467$

### TABLE VI
**SUMMARY OF CHOW TEST RESULTS**

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FIGURE I
NOMINAL INTEREST RATES 1963-2009

FIGURE II
NOMINAL INTEREST RATES 1979-1990

FIGURE III
NOMINAL INTEREST RATES 2005-2009
FIGURE IV
AGGREGATE RESERVES OF DEPOSITORY INSTITUTIONS 1963-2009

FIGURE V
CONSUMER CREDIT OUTSTANDING 1963-2009

FIGURE VI
GDP PER CAPITA 1963-2009
FIGURE X
MEDIAN HOUSE PRICE 2000-2009

$300,000
$250,000
$200,000
$150,000
$100,000
$50,000
$0

Jan-00 Aug-00 Mar-01 Oct-01 May-02 Dec-02 Jul-03 Feb-04 Sep-04 Apr-05 Nov-05 Jun-06 Jan-07 Aug-07 Mar-08 Oct-08 May-09