From Wall Street to Norrmalmstorg
The Subprime crisis in a Kindleberger framework
and how it affected Swedish banks
Abstract

This thesis examines the Subprime crisis in a Kindleberger framework, as well as how it affected the major banks in Sweden. The thesis ties different events to the framework of Kindleberger and follows the stages he sees in a financial crisis, from the origination of the crisis due to speculation to suggested structural changes in the financial market. The stages are determined by usage of several different methods such as indices, literature and interviews. The effects upon Swedish banks are followed through the crisis with banking officials commenting on important events. Conclusions drawn are that the Kindleberger model is applicable to the subprime crisis in terms of components and not always chronologically. Swedish banks have regarding the magnitude of the crisis fared well. The problems causing the crisis are primarily related to Moral hazard problems, regulators and rating institution.
“There is another way you can tell you’re a Republican. You have faith in free enterprise, faith in the resourcefulness of the American people ...and faith in the U.S. economy. To those critics who are so pessimistic about our economy I say: Don’t be economic girlie men!”

-Arnold Schwarzenegger, Governor of California.

In a speech at the Republican National Convention Tuesday, August 31 2004, Madison Square Garden, New York City, New York. California was one of the states to be hit hardest by the Subprime crisis.
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The Subprime crisis in a Kindleberger framework and how it affected Swedish banks
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1. Introduction

The Subprime crisis was early on compared to the depression that struck the United States in the 30s and spread to the rest of the world leading up to the Second World War. There are obvious similarities, both were originated in the United States and spread through the world. Even thou the crisis were originated in the United States Swedish media has written extensively about it and how the Swedish banks have been affected. Sweden and especially Swedish banks are not new to the phenomenon of financial crises; in the beginning of the 90s a financial crisis swept Sweden of its feet and brought the banks to their knees. Irresponsible lending led to huge losses and all but one of the largest banks had to seek government help.

This thesis attempts to explain the origination and spread of the Subprime crisis and how it affected Swedish banks. All in the framework of Charles P. Kindleberger, a well known economic historian whose theories on financial crises has attracted more interest since the eruption of the Subprime crisis.

1.1 Background

Financial crisis

The world of finance has seen many crises troughs out the decades. Every crisis is unique but they also have similarities. Big financial crises are nothing new, quite the contrary. The Dutch tulip bulb crises in 1636 and the South Sea bubble in 1720 are the two earliest among ten big financial bubbles that the world has seen. (Kindleberger, 2005, p. 9) The most well known crisis is probably the crisis that occurred in the late 1920s after a stock price bubble giving way to the thirties depression. Recent crises that have affected Sweden are the banking crisis in the 1990s and the IT-bubble of 2000. The banking crisis in the 90s hit hard against Swedish banks but was in comparison to the Subprime crisis domestically originated. (Larsson 2008)

Build up of a crisis, understanding subprime and homeownership in the United States

In the United States homeownership has for a long time been supported on a federal level by tax cuts and guarantee programs that guarantee the lender against default of the borrower. In the aftermath of the great depression government programs were created to support troubled homeowners that risked losing their homes and hard pressed lending institutions that needed liquidity. It has been an explicit goal of the George W. Bush administration to continue on this path and promote home ownership. For reasons both ideological and pragmatic the pre-
ferred means to achieve this has been through less government intervention in the mortgage market and less regulation. By keeping regulations on mortgage lenders low more people were given the opportunity to lend enough money to buy a home. At the same time the government were able to save money by not having to guarantee the loans against default. The aggressive lending policies of many private lenders gave the government a smaller role in guaranteeing against default of borrowers. But they still increased the rate of homeownership in the United States. (Jaffe & Quigley, 2008 p. 30)

In order to understand how the subprime market evolved it is good to know a bit about how the US market for mortgages work. In the US it is not just banks that originate mortgages, other major originators are so-called non-depositories. They convert the loans they originate into bonds and sell the bonds and their future cash flows to investors; this procedure is also an option for banks not wanting to keep originated loans on their balance. Out on the field finding borrowers are mortgage brokers that perform underwriting and earn commission on the number of loans originated. The brokers offer loans from private companies as well as from the government and earn provision on each loan he/she underwrites. When a broker comes into contact with potential borrowers he/she evaluate his/her credit rating according to a credit score. This is usually done with a so-called FICO Score that takes into account salary, delayed payments, debts and other relevant variables. If the FICO score is high, that means the borrower has a good credit rating, the broker can underwrite a loan that conforms to standards set by the two GSEs (Governmentally Sponsored Enterprises), Fannie May (originally The Federal National Mortgage Association) and Freddie Mac (originally The Federal Home Loan Mortgage Corp.). (Zandi, 2008, p. 31) If the loan is conforming Freddie or Fannie will securitize the loans and convert them to high rated bonds and sell them to investors. (Zandi, 2008, p. 21)

If on the other hand the borrower does not receive a high rating the option is a non-prime loan. There are basically tree types of Non Prime Loans: “Subprime” loans, that are loans to borrowers whose FICO score is too low to qualify for a conforming loan, “Alt. A” loan, that requires a somewhat higher score than a subprime loan but still not conforming. The third type so-called “Jumbo” loans that are loans made to a prime borrowers but the loan is bigger than advisable. (Zandi, 2008, p. 30) Freddie and Fannie were banned from securitizing these types of loans due to the high risk inherent in them. Private actors didn’t view the risk similarly and were not afraid to securitize these loans and investors were equally eager to buy the bonds issued. (Zandi, 2008, p. 42)
Something to hold in mind is that US Mortgage lenders could originate loans that were to a large extent guaranteed against default by the government if some minimum standards were met. The government insures loans through the Federal Housing Administration and the Veterans Administration that have requirements on down payment, income and various other aspects relating to the loan. Even though the government’s role has decreased it is still large in the Mortgage industry; over 40% of all the loans outstanding have some sort of government backing. (Zandi, 2008, p. 30) These loans are also securitized but through the governmentally controlled Ginny Mae. (Zandi, 2008, p. 41)

This is in comparison to Sweden a rather different system where most mortgages are issued by banks and kept on the balance sheet. The United States had before the Savings and Loan crisis in the beginning of the 90s a system more like the Swedish one. Institutions called S&Ls that held deposits and issued fixed rate loans were big in the mortgage market. In the crisis most of them disappeared due to lack of deposits, this gave way to securitization that don’t require any deposits, or just limited ones. (Zandi, 2008, p. 42)

Most subprime loans were so-called adjustable rate mortgages (ARM), this allowed the borrower to pay only a limited amount in the beginning of the loan period (interest only or some other amount) and after this period the loan was reset and the rate prevailing was often LIBOR plus a specified percentage. Since amortization began at the same time this increased the monthly payments substantially. A common type of ARM loan is the so-called 2/28 loan, this loan is fixed at a quiet low payment requirement for the first two years followed by full payment for the rest of the 28 years. (Felsenheimer & Gisdakis, 2008, p. 75)

In 2006 over half of the subprime loans issued were stated income loans which roughly means that no credit evaluation at all had been performed and it was up to the borrower to state the own income, many borrowers chose not to be fully honest here. The teaser rate that came with the ARM loan combined with the usage of stated income as credit evaluation tool allowed for loans to borrowers that would not be able to pay the amortizations and hardly even the most generous interest rates. (Zandi, 2008, p. 40)

**The four big banks in Sweden**

Four major banks dominate the banking sector in Sweden. The banks are Swedbank, Nordea, Handelsbanken and SEB. SEB was founded in 1856 and was the first private bank in Sweden. SEB are active on the Swedish market as well as in the Nordic countries, Baltic countries and
Germany. (SEB 2009) Handelsbanken was founded in 1871 in Stockholm and is active in the Nordic countries and in the United Kingdom. (Handelsbanken 2009) Swedbank got its current name in 2006 but the history of the organisation goes back to 1920 when a mutual savings bank a “Sparbank” was founded in Göteborg. Swedbank today is a result of many fusions of smaller banks through the years. Swedbank is mainly active on the Swedish and Baltic markets. (Swedbank 2009) Nordea has been active under the name Nordea since 2001. Nordea is also a bank that have evolved to what it is today as a result of many mergers and acquisitions. Nordea include banks that were saved from 90s crisis and the Swedish government is still the largest shareholder. The bank is active in the Nordic and the East-European countries. (Nordea 2009)

1.2 Research question
What is the cause of the Subprime crisis that has led to a financial shock all over the world? How were the effects of the crisis spread outside of the US housing market? How well does the framework developed by Charles P. Kindleberger explain the crisis? How has Swedish banks been affected by the crisis?

1.3 Purpose
The purpose of this study is to explain how the Subprime crisis was originated, how it was spread and how it affected Swedish banks. This will be done using Charles P. Kindleberger’s theory on financial crises. The press coverage has been extensive and comparison to the stock market crash that caused the 30s depression has not been uncommon. The Subprime crisis has lead to a renewed interest in Kindleberger’s theories, which makes it interesting to analyze the crisis within his framework. In Sweden domestic banks and their exposure to the crisis is a topic that has received extensive coverage in domestic media; this thesis will attempt to explain how much exposure the banks really have and how big the effects have been so far.
2. Theory

The foundation of the theory in this thesis is to be found in Manias, Panics and Crashes by Charles P. Kindleberger where he presents a model of financial crises. This model depicts a financial crisis as scheme of events taking place in a determined order. The model is primarily used in the subject of economic history but by researching the effects the crisis had on the four Swedish banks, it is adapted to suit the subject of business. The model is followed through the crisis and events concerning both the major crisis events globally and the effect they had upon the Swedish banking sector are researched.

Kindleberger sees financial crises as a series of events that in a given order goes from displacement and then all the way to establishing a lender of last resort and structural changes in the financial market after a crisis has been ridden out more or less painfully. The reason for choosing Kindleberger’s model as theory for this thesis has several reasons. Foremost since it is a well-established model for explaining financial crises. For example it can be mentioned that on the cover of the fifth and latest edition of Manias, Panics and Crashes published in 2005, Nobel laureate Paul A. Samuelson is quoted “Sometime in the next five years you may kick yourself for not reading and re-reading Kindleberger’s Manias, Panics, and Crashes.” Further it is not a model that only looks at the development within a single country or sector; instead the stages are expandable to other markets as well as previously unaffected nations that took little part in causing the crisis.

The adaptation of this theory into the field of business is performed by identifying each of the steps in this crisis through the Extended Kindleberger model (See Figure 1). Then research the implications upon the four major Swedish banks. The implications will be measured by a number of indicators discussed in the Methods part.

Displacement

The events that lead up to a crisis starts with a displacement. An outside shock occurs that lead to the notion that the opportunities for profit in at least one important sector in the economy has increased. (Kindleberger, 2005, p. 25) The outside shock varies from time to time but can for example be financial liberalization. (Kindleberger, 2005, p. 26) The shock must be large to be able to have any significant affect on the economic outlook. (Kindleberger, 2005, p. 54) When there is a notion that there is an opportunity for a profit the demand for a good
goes up. The increase in demand leads to an increase in price of the good and an opportunity to speculate.

**Expansion of credit**

When investors put money in a market they believe is going to generate profit, more capital is often needed. Bank lending is increasing but the prices in real estate and securities are increasing as well and at a rapid rate, this leading to a decline in the ratio of debt to capital or debt to equity. Lenders become more optimistic and reduce the down payments and the minimum margin requirements. (Kindleberger, 2005, p. 29) Banks may also increase their loans to various groups of borrowers because they don’t want to lose market share to other lenders. (Kindleberger, 2005, p. 29) The expansion of credit fuels the flames and gives more power to the speculation. (Kindleberger, 2005, p. 64)

**Speculation, euphoria, mania and bubble**

When prices increase in an important sector of the economy speculation begins. Instead of buying commodities for their use, they are bought for expected capital gains from the increase in price. Securities are bought for resale instead of the investment income. (Kindleberger, 2005, p. 28) “The first taste is for high interest, but that taste soon becomes secondary. There is a second appetite for large gains to be made by selling the principal.” (Kindleberger, 2005, p. 44) During the last century real estate or stocks has been the object most speculated in. (Kindleberger, 2005, p. 58) As firms and households witness how others profit on speculative behaviour, they too get involved in the speculation not wanting to miss the profit opportunity. (Kindleberger, 2005, p. 29) Euphoria might evolve and can be described by phrases such as “investors living in a fool’s paradise”. (Kindleberger, 2005, p. 40) The speculation gets more and more extensive. Authorities may see that something out of the ordinary is about to happen but tend to think: “this time is different”. (Kindleberger, 2005, p. 27) It seems so easy to make money that rational behaviour of the group fades away and the whole thing evolves to a mania or a bubble. The word mania is emphasizing the irrationality of the speculation and the word bubble foreshadows its burst. Economists use the term bubble in order to describe rises in price that can’t be explained by the fundamentals. (Kindleberger, 2005, p. 29) In his book Kindleberger describes a bubble as “an upward price movement over an extended period of fifteen to forty months that then implodes”. (Kindleberger, 2005, p. 29) The investors that own the commodity are called insiders, and the ones that want to buy them are called outsiders. (Kindleberger, 2005, p. 31) “The insiders destabilize by driving the price up and up and
then sell at or near the top to the outsiders. The losses of the outsiders necessarily are equal to the gains of the insiders.” (Kindleberger, 2005, p. 45) When a deal takes place an insider and an outsider must agree on a price. (Kindleberger, 2005, p. 31) During the euphoria the amount of outsiders that tries to get in drives the price up.

**Financial distress**

After a while more and more insiders want to get out and fewer outsiders want to get in. The price will eventually start to decline. When the price begins declining even more investors want to sell, this will lead to an even sharper decline. (Kindleberger, 2005, p. 31) Investors want to be more liquid so they shift their holdings to currency instead of stocks or real estate. (Kindleberger, 2005, p. 32) Investors that are highly leveraged may go bankrupt when the assets that they borrowed money to buy begin to lose value. (Kindleberger, 2005, p. 32) The failure of the investors means that the banks come up against loan losses and failures. (Kindleberger, 2005, p. 110) Banks become more and more cautious in their lending with the commodity or security as collateral. Financial distress is evolving. Distress is not an easy thing to measure. Some measurements that is proposed are “The values of certain variables diverged significantly from average values; some of these variables include the gold reserve ratios of a central bank, the ratio of debt to capital of a large number of firms or individuals, the losses of banks in relation to their capital, the ratio of external debt service payments to export earnings of a country, and the price-earnings ratios for stocks and the rental ratio for real estate.” (Kindleberger, 2005, p. 95) A panic is likely to come and a crash may follow. (Kindleberger 2005, p. 90) The real panic start to evolve when all investors want out, before the price has declined to far. In stock markets the panic is likely to come when big-money insider speculators or institutional investors such as mutual funds, pension funds, and insurance companies, perhaps following similar models of program trading starts to sell. (Kindleberger, 2005, p. 109) This panic can remain and feed on itself until the price is so low that investors thinks that it might be time to buy or when an lender of last resort gives the confidence back to the market. (Kindleberger, 2005, p. 32) Kindleberger states that: “The period of financial distress may last weeks, months, even years, or it may be concentrated into a few days.” (Kindleberger, 2005, p. 91)
Lender of last resort

A Central bank of the Federal Reserve acts as the lender of last resort and tries to convince the investors “that money will be made available in the amounts needed to meet the demand for cash and that hence security prices will no longer decline because of a shortage of liquidity”. (Kindleberger, 2005, p. 32) Just the knowledge that there is money available might bring back the confidence and reduce the demand for liquidity. (Kindleberger, 2005, p. 32) Some argue that there is a risk that the existence of a lender of last resort encourages speculation. Other sees it as very important to deal with the liquidity shortage to stop the panic and bring markets back into order. (Kindleberger, 2005, p. 32)

International propagation

The euphoria spreads around the world by different channels; the arbitrage between countries ensures that the price for identical commodities becomes almost the same. It is also spread by the change in demand for imports from the rest of the world. (Kindleberger, 2005, p. 30) Capital flow is also a link. Movements of money link the security and asset markets from one market to another. (Kindleberger, 2005, p. 126) The increase in export from other countries also makes their currency more valuable on the foreign exchange market. Kindleberger notes that: “An economic boom in one country almost always attracts money from abroad”. (Kindleberger, 2005, p. 127) Another connection is psychological. Investor euphoria or pessimism spreads fast around the world. (Kindleberger, 2005, p. 30) The changes in the stock markets come faster than arbitrage, income changes, capital flows, or money movements. (Kindleberger, 2005, p. 31)

The Element of Fraud

Kindleberger states that the implosion of an asset price bubble always leads to the discovery of fraud and swindles. He also states that the supply of corruption increases in a procyclical way. Some of the fraudulent behaviour is illegal but some is on the borderline between what’s legal and not. (Kindleberger, 2005, p. 165) The swindles can be on many levels. The directors swindle the stockholders, the senior management swindles the directors, the security underwriters swindle both the owners of the firms that they are bringing to the public and the stockholders, borrowers swindle their bank lenders, and one group of employees may swindle another. (Kindleberger, 2005, p. 187) Frauds rise in booms, individuals see other get rich and want a piece of it. This is something that swindlers can use. (Kindleberger, 2005, p. 188)
Expansion of the Kindleberger Model

The Kindleberger framework of a financial crisis contains relatively clearly defined stages used to describe a financial crisis. Mats Larsson and Hans Sjögren (1997) have created an extension of this model in a paper describing the aftermath of the Swedish banking crisis in the beginning of the 90s. The “Extended Kindleberger Model” or “Development Model of a Financial Crisis” has instead of five stages nine distinct stages leading up to two final stages that depict the outcome or “solution” of the crisis. This expansion of the Kindleberger model was largely fashioned in order to explain the Swedish banking crisis in a Kindleberger framework but we have chosen to depict it in this section since it has at first glance a fairly good fit with the Subprime crisis and makes it easier to identify which stages and events/components can be found in a financial crisis than the less clearly defined stages proposed in Manias, Panics and Crashes. We share the belief of Kindleberger that no two crises are fully alike; however they share a number of components and a general outline.
3. Method

This section will explain the research design and data collection for this thesis.

When deciding upon the Kindleberger model as framework for this thesis it followed that no one type of sources or data gathering method would be sufficient to measure what stage of the model that best describes the phase of the crisis. Therefore different methods are combined and important events are accentuated and tied to stages in the model, examples are company bankruptcies or major changes in interbank lending rates to best explain the crisis within the framework. To begin with we aim to supply a rigid background on the crisis, employing literature in the form of factual books. History and build-up of the mortgage market is also to a large extent gathered from these sources. The process of finding relevant literature has been performed through searching in the library network Libris and at various On-line book retailers (the latter is used since not all literature is yet available in the libraries due to the contemporaneity of the topic covered in this thesis).

Datastream is used to retrieve and process the relevant price data (time series of stock prices for the four major Swedish banks) for comparison amongst themselves for the same period and the changes in price at the time of specific crisis related events. The choice to include changes in stock prices as a measurement on the impact of the crisis on Swedish banks is made since they show the confidence of investors in the future profitability of the companies and how news domestic as well as international affect the investors behaviour. It is therefore of interest to view the effects of the crisis on the day-to-day pricing of stocks as well as over the period of the crisis and the time preceding the crisis.

In order to get the inside knowledge held by staff at the four major banks in Sweden interviews is performed with people in the adequate positions of the respective banks. It is our belief that the this thesis will benefit greatly by gaining the perspective of the insiders, the banking officials that has taken part in making the decisions leading up to today’s situation. The choice of interviewees was based upon our wish to speak with officials possessing a large overall knowledge of the banks current standing and decision-making process. Therefore we contacted Investor relations departments of all four of the major Swedish banks and were allowed interviews with Investor relations manager Mikael Hallåker of Handelsbanken and Laurence Westerlund Vice president, group communications and Investor Relations at SEB.
That Swedbank and Nordea chose not to partake in interviews leads to that their view of the crisis is not covered in the thesis; we nevertheless present other views on their standing.

Reports on the stability of the Swedish banking sector and the four big banks in particular released by the Swedish control authority for financial markets and finance related companies, Finansinspektionen is of importance since it provides data on the stability and risk level of the respective banks and the overall banking system of Sweden.

All data gathered will be put in the Development model and ordered according to the stage of the model. In each state global events as well as local events regarding the Swedish banks will be presented with the global events impact upon the banks highlighted. The beginning of the crisis will mostly cover events concentrated to the US housing market that in later stages spreads over the Atlantic to cause real effects upon stock prices, credit losses and lack of liquidity and trust.

To get the academic point of view academic papers are researched, a number of them published by the Federal Reserve. Too further add to this we have interviewed one of the creators of the extended Kindleberger Model, Professor Mats Larsson of Uppsala University. He has conducted research upon earlier financial crises and teaches this topic at the faculty of economic history.

In order to determine in what stage the crisis is in at a given moment news articles describing major events in the crisis will be used as sources for information. We will also study the general crisis related news flow in Swedish as well as foreign press. This goes back to Kindleberger, when describing a financial crisis he looks at independent events to determine when a crisis moves from one stage to the next.

On the issue of source criticism it can for example be argued that the interviewed Investor Relations Managers will be somewhat partial in favour of the own employer, we are aware of this and assume that the reader of this thesis keep a critical eye. Nevertheless we believe that the information given by the interviewees are correct but possibly somewhat coloured. The same goes for articles and books written by people that have played an active part in the crisis, for example the Federal Reserve.

We will also examine some indices that can be used as indicators to determine different stages in the crisis; they are not the ones suggested by Kindleberger but instead more relevant to this crisis and more “modern”. The indices are:
CBOE Volatility Index® (VIX®) (new). CBOE Volatility Index is an index developed by Robert E. Whaley and issued by the Chicago Board Options Exchange 1993. In 2003 the index was updated and is known as the new VIX. (Introduction to VIX Futures and Options, 2008) The VIX index measures the expectation of the market regarding 30-day volatility. It is often referred to as the "investor fear gauge" or “the fear index”. The reason for this is that volatility often is a sign of financial turmoil. Volatility is measured in percent. (Frequently Asked Questions about the New VIX, 2008)

The TED-spread is the difference between the interest rate on three-month Treasury bills and three-month LIBOR. LIBOR is the rate banks charge on loans to each other. The TED spread indicates a lack of trust on the financial markets. (Krugman, 2008) The TED-spread can also be calculated for other markets. For Sweden the STIBOR is used instead of the LIBOR.

STIBOR is the Stockholm Interbank Offered Rate. STIBOR Fixing is the average rate of all the different rates except the highest and lowest that are issued during a day. (STIBOR Fixing, 2008)

S&P/Case-Shiller Home price indices are an index created by Case and Shiller that measures regional home prices.
4. Results

4.1 The object of speculation, real estate in the United States

The object of speculation in the Subprime crisis is real estate in the United States. An increase in real house prices of 85% took place in the United States between 1997 and ending with a peak in 2006. (Shiller, 2008, p. 32) There is little evidence to suggest that such appreciation of house prices could be motivated by things as rapid growth in the economy, big demographical changes or other factors that drive house prices such as increased building costs.

Not only existing houses was on speculation, a building boom was initiated by the increase in house prices. In the beginning of the 90s a structural change in the US home construction industry took off. Smaller companies that seldom reached outside state boarders had in earlier times dominated this sector and the construction knowledge was focused on housing for the conditions prevalent in the own state. This changed during the 90s, housing companies went public and with that came new possibilities for major loans that enabled mergers beyond state borders as well as rapid expansion in terms of homes constructed. (Zandi, 2008, p. 134) These now public companies focused their efforts on the most lucrative markets such as Phoenix, Orlando, and Las Vegas where they accounted for most of the building during the boom. The construction of new homes was made without accounting for a possible downturn in the market and the homebuilders were eager to take control of developable land to construct more. (Zandi, 2008, p. 136)

The strong increase in prices was made possible by several factors; in the beginning the price was driven by growth of and speculation in companies in the IT-sector of the economy that helped boost overall economic growth. This ended in the dot COM crash of 2000-2001 where stock markets went from euphoria to panic selling. Following the crisis the FED in an attempt to prevent the upcoming threat of deflation and keep the economy on its feet lowered interest rates to levels not experienced in decades. (Zandi, 2008, p. 69)

But it was not just the low interest rates or increased construction of new homes (construction can be expected to lead to the contrary) that helped drive the prices of homes upward. The key component was that people not previously allowed to take out mortgages were allowed into the market. Large groups of people in the United States were according to credit valuation tools (FICO score etc.) not allowed to lend to a house simply because they were not likely to be able to repay the loan, subprime loans had been around for some time but originators had
previously been careful with this type of high risk loans, this was about to change and the market was about to grow fast.

The largest subprime loan originators that emerged were a mix of non-depository mortgage lenders like Countrywide and New Century Financials and major banks like HSBC and CitiGroup. (Ashcraft & Schuermann, 2008, p. 4) These companies didn’t just issue loans themselves; primarily they bought loans from independent mortgage brokers that did the underwriting on their own. The originators were not much for keeping the subprime mortgages on their balances; instead they packed pools of loans into bonds (or had someone else do it), so called Residential Mortgage Backed Securities (or short RMBS or just MBS). The company buying and converting the pools of Loans into MBS is called issuer or arranger, the arranger is responsible for performing due diligence on the originator controlling several aspects of the company and how the origination process has been conducted. The arranger does after performing a due diligence create a bankruptcy-remote trust that purchase the loans, pays the credit rating institutes to rate the loans and underwrites the issuance of bonds by the trust to investors. As long as the due diligence is accurately performed the originator is obligated to repurchase loan were the own underwriting procedures not have been met. The arranger earns what premium investors pay on the bonds above par value as well as the fees they can charge to investors. (Ashcraft & Schuermann, 2008, p. 5)

The trust is created in order to protect the investor if the originator or arranger should fail. And it also works the other way protecting the originator and arranger from losses on the mortgage loans. (Ashcraft & Schuermann, 2008, p. 5) The trust employs a servicer that handles the contact with borrowers, receive the mortgage interest payments and pass them on as well as make sure that the borrowers pay tax and insurance on the house. (Ashcraft & Schuermann, 2008, p. 7) The Servicer also handles delinquencies and foreclosures so it plays a major part when trouble emerge, servicer skill is estimated to affect losses realized with up to 10 percent plus or minus, this may pose a problem when the originator, arranger and servicer is the same company (often a large non-depository) and fails. (Ashcraft & Schuermann, 2008, p. 8)

A topic to be mentioned is the build up of a MBS; it consists of several “slices” or “tranches”. Most (around 80%) of it is made up by AAA rated debt (senior tranche), prime debt, the rest is made up of less highly rated debt (mezzanine tranches with ratings such as AA and B) going down to the slice considered so risky that raters wont even rate them (equity tranche).
In general the AAA rated parts were bought by the issuing banks themselves or by investors that want safe returns and little risk for example other banks, the holders of these tranches get paid first, before the holders of the other tranches. The other tranches offer higher returns if all goes well, if all does not go well (a lot of borrowers default) they receive payment in rating order and could possibly lose the entire investment. (Zandi, 2008, p. 115) Buying up the mezzanine tranches were insurance companies and asset managers whereas the equity tranche were to a large extent bought by hedge funds that were willing to take high risks in order to earn high returns. (Zandi, 2008, p. 116)

But the regular MBS was not the only instrument that emerged from securitization. The most well known were the collateralized debt obligation (CDO). It is comparable to a mutual fund comprised of bonds, the idea was to hold investment grade bonds from companies of different sectors and thereby offer safe returns and good diversification. But as interest rates fell and corporate bonds became less attractive the asset backed security collateralized debt obligation (ABS CDO) were created. These new CDOs were comprised of securitized mortgages and the risk/return ratio of a CDO could be changed after issuance, something that increased their popularity and made the investment banks that issued and managed them earn even more money. (Zandi, 2008, p. 117)

Figure 2 shows the S&P/Case-Shiller Home price indices for a number of areas that experienced very strong price increases. As can been seen from the graph the rise in prices was strong and quick indicating a bubble.

4.2 The liquidity abundance
There is no doubt that liquidity was easily found during the build-up of the housing bubble in the United States. Billions had floated into emerging economies that now had large dollar earnings (oil sold by Russia and manufacturing goods sold by China) to invest abroad; investing them at home would have fuelled already high inflation and overvalued national stock markets. (Zandi, 2008, p. 81) Globally, interest rates were slashed in the aftermath of the dot com crash. US interest rates went first and after came the rest of the world, global average real interest rates were as low as 1.5 in 2003. (Zandi, 2008, p.88)
The United States was running a major trade deficit with the gap between imports and exports widening to unparalleled levels. US dollars was floating out of the country into China, Russia, Japan and Europe to pay for imports, and why not, the dollar was strong and the American will to consume seemed limitless. The dollars paid out to the Chinese went to a large extent into US Treasury bonds whereas more experienced and risk willing European and Japanese investors in Frankfurt, London and Tokyo chose instruments such as Mortgage backed securities, credit card debt and other higher yielding investments. After a while the Chinese jumped on the train as well believing that high rated products always gave at least the money back, and most subprime MBS and CDO tranches received high ratings. (Zandi, 2008, p. 86) Foreign ownership of American mortgages grew so much that at the peak of the boom almost one in three mortgages had foreign owners. Figure 3 shows the increase in financial globalization from 1980 to 2007 measured by foreign assets as a % of US GDP and US assets as a % of rest of the world GDP.
An indicator of how cheap money was is the yield spread between junk bonds and safe treasuries. The spread grew thin; starting in 2003 the compensation investors required to accept the much higher risk inherent in junk bonds was no more than 2-4 percent. This compared to just 2002 were investors wanted a full 6-10 percent to compensate for the extra risk. (Zandi, 2008, p. 93) This is a clear indication of how optimistic and risk willing investors were during this period, the future seemed bright and old bubbles like the dot com were already forgotten by most.

4.3 Euphoria in the mortgage market
If the term euphoria is suitable to describe the conditions prevalent in the mortgage market during the lending boom lasting from 2004 to fall 2007 can be discussed. In either case massive amounts of loans considered too risky just a few years previous to these events were issued at a daily basis and some investment banks not previously concerned with these activities went so far as to set up new divisions just to buy loans directly from mortgage brokers instead of going through established originators such as New Century Financials and Countrywide. (Zandi, 2008, p. 43)
The number of subprime loans issued saw no limits, going from 1.1 million in 2003 to 1.9 million in 2005. The slightly less risky Alt-A originations rose even more between the respective years, from 304,000 to 1.1 million. The market share of nonprime loans surged as well going from 10 percent of mortgage originations in 2003 to a full 32 percent in 2005, more than three times as large as before the euphoria began. (Mayer et al. 2008, p. 3)

The requirements for lending became ever laxer and the stated income loan (that went under aliases such as NINJA loans that is short for “No income, no job or assets”) grew in popularity. Anecdotal evidence suggests that lenders even encouraged borrowers to lie in their statements in order to get a loan approved. (Felsenheimer & Gisdakis, 2008 p. 74) The earlier mentioned 2/28 ARM loans that offered a teaser rate for the first two years was big in the subprime sector, the idea was to get the loan refinanced (with a better loan) or sell the house with a profit before the higher rate came into play after two years. (Mayer et al. 2008, p. 5)

Before the euphoria took hold asking for down payment equal to a certain amount of the value of the object borrowed to were standard procedure when issuing mortgages. When making a loan the lender calculated the so called Loan-to-Value (LTV) where the loan was not allowed to cover more than say 80 percent of the value of the house, the rest had to be paid in cash by the borrower. This was soon forgotten and the usual 80-90 percent loan to value ratio was replaced by a system where it was not uncommon that on top of the original mortgage a so-called “Piggyback loan” was issued. This loan covered the remaining 10-20 percent left to the borrower to pay and thereby dropped the requirement of a down payment completely. Occasionally LTVs of over 100 percent were possible; here the borrower may have wished for money to buy a new car or renovate the new house. (Felsenheimer & Gisdakis, 2008, p. 73) The option to put no money down at all was a good way for a speculator to buy up houses in order to sell them with a profit since it didn’t require any capital from the speculator, all could be borrowed.

In order to make use of the rise in house prices without actually selling or buying the option of “Net equity extraction” is available. This phenomenon rose sharply from 2001 to a peak in the first quarter of 2006. Net equity extraction is the process of borrowing on the value increase of the assets (for example real estate). This is no small phenomenon on the peak it accounted for 10% of disposable income in the United States. (Russo, 2008, p. 13) Say for example that that the value of a house increases by 30%, and then the debt volume can be increased by 30% and the LTV stays the same. Clearly the house owners saw the opportunity to
increase consumption (and possibly use the loan to invest in other real estate) by borrowing on their current assets. It is unlikely that the homeowners anticipated any loss in value of their houses, or at least not in a very long time and not to any great extent.

### 4.4 Loss of Value in Houses as well as in bonds on mortgages

In spring 2006 the boom in house prices came to an end. It was the houses in the lowest price tier that had increased the most in value up to the peak and these houses were also the once hardest hit by the price decline. Certain states were hit harder than others, the general pattern that the states with the fastest and strongest price increases saw the most rapid and deep fall in price (See Figure 2). (Shiller, 2008, p. 35) The houses had been used as loan collateral and those that previously loaned with an LTV of 80-100 percent could now very well be facing double that due the rapid fall in prices.

As mentioned in the previous stage, Net value extraction had been a strong driver of consumption for a few years. After a top in 2006 a gloomier state took hold and in the third quarter of 2007 it had dropped to half of that seen on the peak. (Russo, 2008, p. 13)

In a speech on the 17 of May 2007 Ben Bernanke the Chairman of the Federal Reserve, announced that despite the fall in home prices and bankruptcies of non-depository lenders had caused little spill over into banks. (Bernanke 2007) This was about to change in the coming months.

On July 17th 2007 one of Wall Street’s largest investment banks, Bear Stearns told clients that two of their hedge funds had become almost worthless. (Morgenson 2007) The two hedge funds had announced subprime related losses during April and showed difficulties the following months. (Felsenheimer & Gisdakis 2008 p26) On the 30th of July the hedge funds were closed, following this was a complete shutdown in mortgage securities trading which led to an imminent freeze in private mortgage lending, the loans available from the government through FHA and loans backed by Fannie May and Freddie Mac this were still available but it could not fill the void in credits, especially not in the hardest hit states where government lending had been virtually nonexistent during the boom. Prices that had been falling for about a year now fell twice as fast between spring 2007 and 2008 (Zandi, 2008, p. 168)

The Bear Sterns funds that came to an end were hedge funds that had invested heavily in sub-prime mortgages and in order to achieve higher returns borrowed heavily on the value of the own assets that consisted primarily of non-AAA rated MBS tranches. (Morgenson 2007)
4.5 The power of lending, a worldwide credit crunch

This event occurred after the bankruptcy of Lehman Brothers (That is covered in more detail later) that spread fear through the markets. It became much harder to take up liquidity and banks didn’t dare to lend money to each other, the interbank market virtually froze. Mr Westerlund (2008) thinks that the bankruptcy of Lehman Brothers was the big surprise in this crisis. People didn’t think that the American government was going to let Lehman Brothers fail. He also states that the trust between the banks declined a lot after Lehman’s bankruptcy. Nobody knew for shore if it was safe to lend money to another bank over the day. Therefore they chose to keep their liquidity instead of earning the extra interest they could get from lending it out on the interbank market. (Westerlund, 2008) Furthermore Mr Westerlund (2008) says that even if SEB didn’t have any lack of liquidity they saw the absence of it in the market. Mr Hallåker (2008) sees the problems on the interbank market as one of two things that had the largest impact upon Swedish banks. Due to the linkage between banks all over the world countries that had little part in creating the problems is nevertheless affected. According to Mr Hallåker (2008) it was difficult to make a good judgement about counterparty risk and therefore banks became increasingly restrictive with their lending not wanting to lend to counterparts that could risk failure. The market from which Handelsbanken borrows in order to lend to customers has been virtually closed for the last three to four months. Securitized Securities on Mortgages that they themselves have issued has however been accepted by the marker throughout the crisis. (Hallåker 2008) The lending freeze is also visible when looking at the STIBOR. The STIBOR have a clear peak during this time. The TED-Spread can also be used to see the effect of the lending freeze and it shows a peak during the same time as the STIBOR. Figure 5 that shows the TED spread in points for the US, UK, Euro-countries and Sweden, it is clear from the diagram how a rise in the US TED-spread affects the other countries.

The news that came on August the 9th 2007 that the ECB injected 95bn Euros into the European banking market (BBC 9 August 2007) is further evidence of a liquidity squeeze. This was a reaction to the problems in the French bank BNP Paribas. (Felsenheimer & Gisdakis, 2008, p. 31) BNP Paribas had told investors that they couldn’t take out any money from some of their funds due to what they called "complete evaporation of liquidity" in the market. It was simply impossible for BNP Paribas to lend on the interbank market, lending between banks had frozen. (Timeline: Global credit crunch, 2008)
The Subprime crisis in a Kindleberger framework and how it affected Swedish banks
M. Aunes and E. Luhr

Figure 4
Source Reuters, Ecowin and Riksbanken

Figure 5
Source: Reuters, Ecowin and Riksbanken
4.6 Panic and asset sales
As indicators of panic in the market we have chosen to look on how the financial press describes this stage and what periods they identify as well as on the VIX index. To show the massive asset sales we include diagrams of the Swedish Banks stock performance that plunges as investors flee the stock market.

When the search term “panic” is used in the Dow Jones Factiva database along with the filter “commodity and financial market news” there are two peaks in the results. One is in January and one in September-October 2008. The peak in September-October is much larger and when looking more into details of the results interesting things can be seen.

Dow Jones Factiva

The Wall Street Journal writes in an editorial on January 19th referring to Kindleberger that “Students of the good professor will recognize where we now are in the current credit crisis: the panic stage.” (Hot Topic: The Panic Stage, 2008)

On September the 17th an article called “Panic grips credit markets” was published in the Financial Times. They discussed the panic that they now saw on the market. Some significant quotes from the article is “The panic in world credit markets reached historic intensity on Wednesday, prompting a flight to safety of the kind not seen since the Second World War.” And “Barometers of financial stress hit record peaks across the world. Yields on short-term US Treasuries hit their lowest level since the London Blitz, while gold had its biggest one-day
gain ever in dollar terms. Lending between banks, in effect, stopped.” (Guha et al., 2008) The fear came from Lehman Brothers bankruptcy, which made it possible for money that was thought to be safe to be lost. Now investor’s valued safety more than the chance of a large profit resulting in that large sums were transferred to safe short-term Treasuries. (Guha et al, 2008) Nobody knew which counterparts that where going to be saved if they failed and which that would not.

In another article in the Financial Times from the 13th of October 2008 it is written about the orgy of “panic selling” that had been seen in the weeks prior to that. Share prices of hedge funds have tumbled in value and there had been no differentiation on what to sell and what to keep based on wheatear the funds had delivered or not. (Johnson, 2008)

The VIX-index also had a peak during the period September-October as can be seen in the VIX-diagram. This is indicating that the period was very uncertain and that big movements in the market were expected. The VIX hit record levels during this time it came up to levels around 80 when the average over its lifetime has been around 22. The VIX was also traded in large quantities according to the Financial Times the cause was that Wall Street was gripped by panic and despondency. (Weitzman, 2008)
According to Mr Westerlund (2008) no real panic was felt at SEB in Sweden. Even though they had some extra urgent activity in trying to close their open positions against Lehman Brothers.

Figure 8  
Source: DataStream

The Diagram above (Figure 8) shows the performance of the stocks of the four major Swedish banks over the period 2004-01-01 to 2008-12-01. The stocks rose strongly and SEB, Swedbank and Nordea reached All-time-high in 2007. This however changed and as the worldwide asset sales following the Credit Crunch took off, stocks of all four banks began to fall sharply. SEB and especially Swedbank were hit the hardest, Swedbank has since the base date of 2004-01-01 lost more than 50% of its value, compared to the peak in 2007 more than 75% has been erased, SEB has also suffered whereas Nordea has lost all of its gain since 2004, Handelsbanken (here SHB) has lost the least compared to its high but never saw the strong gains that the other banking stocks experienced. The model below (Figure 9) illustrates the overall loss in value of each respective bank, showing how the value has been slashed to levels short to unimaginable before the crisis.
How well the stock price reflects the underlying value and potential of a company is a different question but there can be no doubt about the fact that the asset selling sent Swedish banking stocks plunging. Handelsbanken stand out compared to Swedbank and SEB, before the crisis both banks were according to the stock market each more worth than Handelsbanken. On the first of December 2008 Handelsbanken was valued higher than the two competitors together.

4.7 Company bankruptcies/bank failures
During this crisis it is hard size up the time frame in which subprime related problems lead to company bankruptcies and bank failures, we have possibly not yet seen the end of these events but the beginning is to be found in the failures of US mortgage lenders, primarily non depositories. The mortgage lenders where the ones sitting closest to the mortgages and responsible for making a major part of the loans. Even thou most were resold to investors the lenders carried risk related to the loans and were dependent upon issuing new loans and refinancing old ones to earn money. (Zandi, 2008, p. 100)

On April 2nd 2007 New Century Financial files for chapter 11 bankruptcy. (Felsenheimer & Gisdakis, 2008, p. 24) New Century Financial was specialized on subprime lending and it had sold a lot of its securitized debt to banks around the world that in turn got affected by its fail-
ure. (Timeline: Global credit crunch, 2008) New Century Financials was the second largest subprime mortgage originator as well as number two in MBS issuance. (Ashcraft & Schuermann, 2008, p. 4) A few months later on August the 16th the biggest private mortgage lender, (not just in non-prime loans) Countrywide Financials was forced to take the largest emergency loans possible, borrowing USD 11.5 billion from a group of 40 large banks. This was the last possible lifeline for the company that went bankrupt a few months later and was then acquired by Bank of America. (Felsenheimer & Gisdakis, 2008, p. 32) These two companies alone made up a sizable part of the subprime market and held in many cases the roles of Originators, Arrangers as well as Servicers, with them and several smaller competitors gone the whole sector was close to vanished.

**Bank Run on Northern Rock**

On the 13th of September 2007 BBC reported that the Bank of England had decided to give financial support to one of the largest British mortgage lender Northern Rock. This was necessary when the lending freeze caused by the crisis in the US subprime mortgage market made it impossible for Northern Rock to get money from the money market. (BBC, 2007) Northern Rock was dependent on lending money in the money market because the mortgages they had issued was primarily financed from the money market however the institution also carried a relatively small amount of deposits from savers. (Hall, 2008) The intervention from the Bank of England hurt the confidence in Northern Rock and the next day people lined up in front of the bank to withdraw their money, this meaning that Britain suffered its first bank run in more than a century. All of this naturally affected the stock price that experienced huge falls. (Chris Hughes, 2007) Mr Hallåker (2008) views this event as what can closest be described as panic in this crisis.

The case of Northern Rock proves relevant when looking at the spread of the crisis into foreign markets as well as being an event in this crisis that could be closest described by panic, a stage in the Kindleberger Model. The Swedish market has not witnessed any banking runs during this crisis even thou a mostly media driven move of capital from mainly Swedbank to Handelsbanken. According to Mr Hallåker (2008), Handelsbanken's deposits has significantly increased during the crisis, this without offering better interest rates or aggressive campaigning. Large changes in market share of deposits are according to Mr Hallåker (2008) uncommon; they tend to stay stabile since people don’t move their money much between banks. Mr Westerlund (2008) sees this move of capital as completely driven by irresponsible Swedish
media and that it possibly had destabilizing effects in the financial markets due to the loss of confidence in banks, according to him there were never any reason during the crisis to fear for your deposits in any of the Swedish banks. Mr Hallåker (2008) agrees with that, there was never any risk for deposits in Swedbank or any of the other Swedish banks.

The failure of Lehman Brothers

On the 15th of September 2008 the fourth largest US investment bank Lehman Brothers filed for chapter 11-bankruptcy protection. (BBC, 2008) Stock markets around the world tumbled as a reaction to the downfall of the Wall Street giant. (BBC, 16 September 2008) Lehman Brothers bankruptcy was said to be “one of the biggest financial shocks in years”. (Wearden et al 2008) This naturally affected the Swedish banks and speculations on how much money either one of them could lose started right away. The banks had different kinds of agreements with Lehman, but no one knew which banks that were to face losses, nor did they know the size of the losses. (Cervenka, 2008) The stock prices of the Swedish banks tumbled (See Figure 8). Swedbank was hit hardest after news released that they were to suffer big losses and further third part risk.

Mr Hallåker (2008) of confirms that the fall of Lehman Brothers was an important event in the crisis, Handelsbanken had little exposure to Lehman Brothers (approximately 100 million dollars) so the direct losses is very limited and the 100 million dollars were not direct loans to Lehman Brothers but instead so called Letters of Credit were another party will have to default on its payment before Handelsbanken will incur any losses.

According to Mr Westerlund (2008) the fall of Lehman brothers led to the only direct credit losses that SEB has suffered due to the crisis, approximately 137 million SEK, any other crisis related losses that the bank has taken are write downs in the bond portfolio. As long as the bonds don’t default (which is very unlikely since they are highly rated) or are sold SEB will earn the same as they calculated with when buying the bonds.

Bankruptcy risks in Sweden

In a report published by the Swedish finance control authority Finansinspektionen the 15th of October 2008 the state of the four major banks is covered to some extent. The state of all four banks is described in a positive manner and their losses are primarily due to write-downs in the bond portfolios. (FI Report, 2008, p. 4) Several years of strong profit have allowed the banks to build up capital and their financial strength is judged to be good both with regard to
earnings as well as capital holdings. According to Finansinspektionen the largest problems faced by the banks has been shortage of funding (This is confirmed by Mr Hallåker (2008)), interventions from the Swedish central bank that offers lending opportunities to the banks has never the less eased these problems. (FI Report, 2008, p. 5) The largest risks according to Finansinspektionen is those due to large exposure to the three Baltic states, SEB and Swedbank are the banks with largest exposure to these markets but even with a combined Swedish and Baltic recession similar to that faced by that Sweden in the beginning of the 90s (but in the scenario the credit losses in the Baltic states are twice as high as those in Sweden in the 90s crisis) the risks of bankruptcy for either of the banks are judged as very low. (FI Report 2008 p. 9)

The new issue of stocks in Swedbank

Less than two weeks after Finansinspektionen had released their report (October the 27th), Swedbank confirmed that they were going to issue new stocks to a value of 12 billion SEK. (Ydrenäs, 2008) The largest owners guaranteed the issue but the trust in the bank was slashed further as was its stock price that lost eleven percent on the news.

Newspapers in Sweden reported that in a prospectus released by Swedbank on December 1st the bank stated that the risks it was facing due to the bankruptcy of Lehman Brothers might be larger than they had at first realized. Their exposure was said to be 1350 million dollar (Froste, 2008) and Swedbank didn’t believed that this exposure would lead to any actual credit losses. However, more recent development in the markets forced the bank to reconsider their first statement since the risk that the borrowers won’t be able to pay their amortisation and interest in time is greater than first anticipated. (Gripenberg, 2008)

4.8 Crisis Halted?

On the question whether the crisis is halted? Mikael Hallåker (2008), Laurence Westerlund (2008) and Mats Larsson (2008) all think that we have seen the worst regarding the financial industry’s setbacks. It may however continue to be unstable on the markets for a while and a few unexpected events might still occur. Mr Larsson (2008) says that we will know more about the problems in the Swedish banks when the annual reports for 2008 are available. Even if the crisis in the financial part of the economy might be over for now there is still problems to be expected. What we now have entered is a period of weak economic climate in the real economy. This period will also affect the banks when companies and private individuals no longer will be able to fulfil their responsibilities. It is when the companies start to fail the
banks will take their biggest losses. Mr Westerlund (2008) accentuates the shipping industry in particular. This is an industry where Nordea has a big commitment. Mr Larsson (2008) is also a bit concerned about Nordea’s status. He thinks that it has been suspiciously quiet about them for a while now.

4.9 Establishing a Lender of last resort
In order to save troubled banks or other financial institutions governments has the opportunity to offer loans to save these important domestic actors and maintain financial stability. This crisis has seen a lot of such interventions three of them are mentioned briefly below. The sheer size of the bailout plans is worth noting. On September the 28th the lawmakers of the US announced their plan for a USD 700bn rescue plan for the financial system. (Timeline, 2008) The senate finally approves the rescue plan on October the 1st. The stock markets reacted positive on the event even before it happened. (Bail-out hope sends shares higher, 2008)

The British government was forced to act in a similar way and on October the 13th 2008 it announced that they were going to give three big British banks a bailout worth £37bn. The bailout would make the government part owner of the three banks: Lloyds TSB, HBOS and RBS. (UK banks receive £37bn bail-out, 2008) Just a week after the release of the British rescue plan Sweden followed suit, on the 20th of October the government presented a plan for a bank guarantee on up to 1.5 trillion SEK. (Timeline, 2008) The big banks in Sweden where among the winners on the stock exchange on the day of the news. (Börserna upp i hela Norden, 2008)

4.10 Structural changes in the financial market
Many of the CDOs that contributed to the crisis received the highest credit rating AAA, this is the same rating as US treasury bonds have. AAA rated bonds was considered to be safe and if the investors had realised how speculative the CDOs was they wouldn’t have been so popular as they were. (Strier, 2008, p. 534) The rating institutes have been trusted in the financial world and their AAA rating has been regarded as “the closest thing bond investors can get to a fool-proof guaranty.” (Strier, 2008, p. 535) Some say that the reason to why the highly speculative CDOs were given the best credit rating available in such a high degree where a conflict of interest in how the raters are compensated. (Strier, 2008, p. 535) The major credit rating agencies Standard & Poor’s, Moody’s, and Fitch receive almost all their income from the issuers of the bonds that they are evaluating. (Strier, 2008, p. 535) Smaller rating agencies on the other hand get their money from the investors that use their ratings. (Strier, 2008, p. 535)
This conflict of interest leads to the suspicion “that CDO issuers may have essentially bought their AAA ratings from the Big Three” (Strier, 2008, p. 535)

After the failure of all those AAA bonds several different reforms are proposed. The reforms that are proposed try to deal with the conflict of interest that has occurred in the rating industry. (Strier, 2008, p. 543) Strier says that the proposals can roughly be grouped into three categories. The categories are: 1. Proposals requiring increased disclosure of various types of pertinent information. 2. Proposals that would change some aspect of the rating agency–client relationship. 3. Proposals that call for increased direct government regulation. (Strier, 2008, p. 543)

When commenting on who is responsibility for this crisis Mr Larsson (2008) finds the issuance of Subprime loans and the credit transfer through Securitization to be deeply unsound. The process of increasing the distance between the lender and borrower is always a problem and here it has led to severe consequences for all parts involved. When assigning the blame for what happened Mr Larsson points at the politicians for not regulating the market and putting an end to loans with an LTV above 80-85 percent, but the politicians alone does not carry the responsibility, equally responsible are reckless lenders that in their hunt for profit and market share has given loans to just about anyone.

In a paper written by Ashcraft and Schuermann (2008) for the Federal Reserve bank of New York the problem with securitization as system for handling mortgages are further accentuated, the frictions, moral hazard problems and information asymmetries that arise due to this process could have been mitigated by the rating institutions but as shown above they have not performed according to what could be demanded. Their view on the structural changes needed in order to prevent a new crisis does not end with rating institutions, they see a need for changes in the incentive structures of investment managers, the managers need to have goals set not only focusing on return but on risk adjusted return. (Ashcraft & Schuermann, 2008, p. 66)
5. Analysis

Kindleberger and the Subprime Crisis

This analysis aims to go beyond that of comparing Empirical evidence to theory but nevertheless we will begin there in order to explain the merits and shortcomings of the Kindleberger framework when analyzing the Subprime crisis. At first glance The Kindleberger Model of a financial crisis extended by Mats Larsson and Hans Sjögren provides a fairly good fit with the Subprime crisis. We have an apparent object of speculation and data that supports this. Increased bank lending is obvious, the global interest rates were low and yield hungry investors were eager to take on risk in order to earn that extra percentage. Down on the most basic level Non-prime lending is as a matter of fact increased bank lending since the liable borrowers grow in quantity. That non-depositories instead of banks accounted for a large part of the lending does not change this fact. According to Kindleberger an outside shock is what triggers this type of displacement, the financial liberalization that allowed for so much foreign capital to be invested in mortgage backed securities can very well be this shock. Another possibility is that improved financial engineering skills found at Wall Street acted as the shock. As we see it there were really two stages of speculation, borrowers speculated on the rise of house prices hoping to sell the house with a profit or keep it and get the loan refinanced with a lower interest rate, this would have been possible if house prices would have continued rising, the LTV would have gone down and the equation would have added up. The other object of speculation are structured products like MBSs, CDOs and similar products that offered high yields in comparison to treasury bills, but practically received the same AAA rating.

If the term euphoria is an accurate description of the conditions prevalent in the mortgage market is up for discussion, we believe that it is an accurate description since the type of lending as well as home construction and repacking of loans signals that borrowers, lenders, builders as well as bankers and investors were indeed “living in a fools paradise”. The number of outsiders that were now eligible to take out a mortgage drove the price up and speculation was definitely present. It stands pretty clear now that many of the people that bought houses did it on the hope that it would rise in value. Nobody wanted to miss the chance to make a profit or have a better house.

These steps that can be described as the build up phase of a crisis or “bubble before burst”, as for Swedish banks these events did not have any significant direct impact. The strong world
economy that followed due to the American lust for consumption and investment made with borrowed money of course benefited Swedish exports, and thereby the Swedish economy in general. Some banks were more involved than others in mortgage related deals but measured as a percentage of the respective banks total deals the share is relatively small and as risk were measured at the time (“Lehman is too big to fail” etc.) the risks were equally small. This period can be placed between 2004 and 2007.

The next step follows as the model predicts, the object of speculation that naturally acts as loan collateral begin to lose its value. This was the thing that happened when the price on houses started to decline. It was no longer possible to refinance loans on the increase in house prices. Highly leveraged borrowers went bankrupt when the assets they had borrowed to in order to buy (that also acted as loan collateral) lost value. This has made many loans worthless and even when the lender took over the loan collateral they couldn’t get their money back since its value had lost a great deal of its value, if it was at all sellable.

The lending freeze came to a large part because of Lehman Brothers downfall instead of leading to it as the model predicts; this distorts the order of the stages of the model. The existence as well as magnitude of the lending freeze that followed has been very visible in the Ted-spread and STIBOR. This phenomenon known as a Credit Crunch has been accentuated by many of our sources as a key event in the crisis, it clearly has its place in the Kindleberger framework. If there was a panic stage is harder to determine, the data retrieved from the Factiva search however indicate two periods were the word panic was frequently used in the press. The most significant period is in September-October 2008 following the fall of Lehman Brothers. That asset sales has been big can be seen from the plunging Swedish bank stocks. The Swedish OMX index as well as the US Dow Jones and NASDAQ indices has also seen very steep declines.

Company Bankruptcies/Bank Failures is a stage that begins already as the Non-depositories go down and continues breaking Northern Rock in Great Britain and the Wall Street giants Lehman Brothers and Bear Stern. This stage is really too long to qualify in the chronological order Kindleberger uses for his stages. The same goes for lender of last resort, seeing as the central banks of the world were quick to react when emergency liquidity was needed, this to maintain trust in the system and save banks.
Swedish Banks, battered and bruised or better of then most?

International propagation is according to Kindleberger a typical element of a crisis, a bubble in one country almost always attract capital from abroad, this crisis is no different. The money from Swedish banks was however limited and so were also the direct effects from foreclosures leading to losses in value of MBS and CDOs. Our findings indicate that the event with the largest impact upon Swedish banks is the downfall of Lehman brothers and the liquidity squeeze that followed, causing funding problems. This is the view brought forward by Finansinspektionen and Mr Hallåker (2008) confirms it, for Swedbank this went so far as to a new issuance of stock. The new issuance has however not been as troublesome as it could have been, when a large and previously stable actor on the Swedish banking market is in such need of capital that additional funds are raised from shareholders one could expect the stock market to punish the bank even harder than it did. In general our findings indicate that once the lending squeeze began to ease the problems directly related to the crisis faded. The psychological effects that the problems and asset sales in the United States caused in Sweden can be seen by looking at the stock prices, which has plunged.

It is our view that the Swedish banks have fared well at large, the banks have been cautious when it comes to holding instruments were the risks inherent has been hard to judge. Since all four banks are retail banks that make their profits not from risky trading but from traditional full service banking another view on risk than found with some European counterparts is prevalent. This strategy enables the banks to make judgments about credit risks themselves, judging each single case instead of relying on rating institutions. Swedbank still has a large real estate related loan outstanding in the United States, the effects of this yet to be seen. Apart from that the credit losses that the banks are likely to face in the coming year will be related to the overall downturn in the world economy and not to the US mortgage market in particular. None of the four big Swedish banks have had any serious problems. But if you want to see problems caused by this crisis you only have to go to the fellow Nordic country Iceland or European countries such as the United Kingdom. A possible explanation of the relative success of the Swedish banks is experience from the banking crisis in the 90s that could have prompted a more cautious behavior.
Moral Hazard in all steps, the element of Fraud

The origination of subprime loans has involved elements of fraud through the whole process from borrower to investor. It begins with that the borrower that has not previously been considered credit worthy is given the opportunity to borrow. By filling out an income statement the borrower is granted a loan to buy a home. The mortgage broker that underwrites the loan earns money not from if the borrower repays the loan but instead from the sheer number of loans underwritten. It is a clear case of moral hazard and sometimes even outright fraud; the incentive of the broker is not to underwrite sound loans but to underwrite many. After the broker the originator takes the loan, knowing slightly less than the broker, then pools it and sends it on to the arranger that knows even less about the loan than the previous parties. The arranger performs an (at best) incomplete due diligence on the lending practices and the pooled loans. This is followed by creation of a trust that cut the arranger away from the risk in the MBS issued. The trust pays a rating institution that earn their money from this business, we find this dependency highly unsound since the rater most generous with high ratings are likely to attract more customers and forcing the others to follow suit. The whole incentive structure is flawed and asymmetric information is prevalent between the parts involved in the lending and securitization process. It is unlikely that the investors could make a good judgment of the risks inherent in these products; therefore raters play a key role in preventing the asymmetric information in the system, unfortunately they earned their money not from the investors that wanted fair ratings but from the bond issuers that wanted high ratings.

Who is to blame? The need for structural changes

At the moment it is hard to blame any specific player for this crisis. People tend to blame the one that they want to be responsible. If they don’t like Wall Street they put all of the blame on them. If they don’t like the Democrats or the Republicans they put the blame on them. The truth is that there is enough blame to go around and the whole system has a built-in incentive to go over the line. But some actors are of course more responsible than others. Like we earlier stated we share the belief that the rating institutes carry a large part of the responsibility for this crisis. Their over-optimistic rating of CDOs and MBS made these securities very popular, more of them were made and they spread across the world. This could have been prevented if the rating institutions had been more restrictive with their ratings. We also share Mr Larsson’s view that the politicians ignoring the carelessness of subprime lenders deserve part of the blame.
6. Conclusion

This thesis has explained the build up of the Subprime crisis and how it spread from the United States across the Atlantic to affect Swedish banks. The Kindleberger model that is employed provides a good fit with the crisis when it comes to the stages in the build up of the crisis. As the bubble bursts the other stages appear but not in the order projected by the model but all the events never the less appear.

It is our conclusion that Swedish banks have fared well considering the magnitude of the crisis, their view of risk has kept them from taking on too much American mortgage debt. Swedbank stands out as the bank that has most risk directly related to American mortgages and has taken the hardest hits. As the annual reports for 2008 appear we will hopefully see the last of the direct effects of the crisis, instead awaits a period of general economic downturn.

The process of subprime origination and securitization has been highly unsound with incentives for fraud and the like. If this crisis is not to repeat itself the process of how rating institutions earn their money must change and regulators must oversee the whole process in order to stop unserious lending to borrowers that don’t fully understand their loans and are unlikely to be able to repay them.
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M. Aunes and E. Luhr


Appendix 1: Abbreviations

ABS – Asset backed securities
ARM – Adjustable rate mortgage
CBOE – Chicago Board Options Exchange
CDO – Collateralized debt obligation
FHA – Federal Housing Administration
FICO – Fair Isaac Corporation is a credit score used to evaluate potential borrowers
GDP – Gross Domestic Product
GSE – Governmentally Sponsored Enterprise
LIBOR – London Interbank Offered Rate
LTV – Loan-to-Value
MBS – Mortgage-backed security
ROW – Rest of World
S & L – Savings and loan institution
STIBOR – Stockholm Interbank Offered Rate, See p. 12
TED-spread – See p. 12
VIX – CBOE Volatility Index, See p. 11