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A Residential Mortgage Market in Crisis: Something to Learn from the Swedish Case

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In the early 1990s Sweden experienced its most severe financial crisis of modern times. Because this economic crisis originated in the real estate market, Sweden's management of the event often has been brought forth in comparison to and as a pattern for the solution of the subprime crisis. And there is a lot to learn from the Swedish case. But often in the discussion comparing the two, some important regulatory differences are forgotten. Regulations on the Swedish residential mortgage market were able to protect it from some of the effects of the crisis. In this essay the credit risk in the Swedish residential mortgage market for self-contained or semi-contained housing will be discussed, and a short comparison will be made between the Swedish and the American residential mortgage markets. The aim is to elucidate some features of the Swedish residential mortgage market that make it a more stable market than the American market.

In the early 1990s Sweden had a severe financial crisis that originated in the real estate market. The problems started in the mid-1980s with the sudden deregulation of a very strict regulatory system built on low interest rates and credit rationing, in which the available amount of credit was allocated primarily toward the home construction sector.[1]

[1] See for example Guy Arvidsson, *Bostadsfinansiering och kreditpolitik* [House Finances and Credit Policy] (Stockholm, 1958); Mats Bladh, *Bostadsförsörjningen, 1945-1985: det industriella byggandets uppgång och fall* [The Financing of Houses, 1945-1985: The House Construction Industry's Rise and Fall] (Gävle Solna, 1991); Mats Larsson, *Den reglerade marknaden: svenskt försäkrings-*

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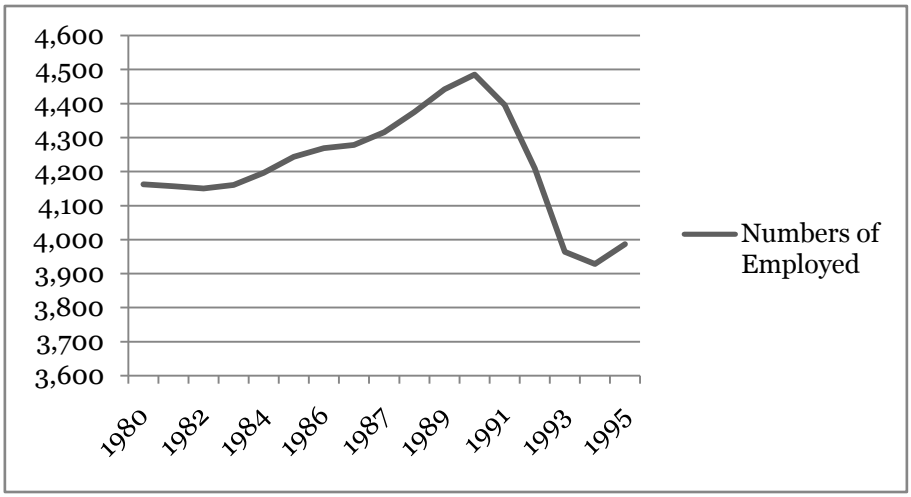
The Swedish Crisis of the 1990s

In the beginning of the 1990s several events occurred in a short span of time that led to an economic downturn in Sweden. An international recession hit the country, coupled with an already low domestic growth rate and a tax reorganization that rapidly decreased demand for credit and also lowered the price of assets. The last factor applied especially to real estate. The real estate business thus stood in the forefront of a crisis that was transmitted through the banks into the whole economy. The crisis had severe effects on the Swedish economy, increasing the national debt and the unemployment level as well as decreasing GDP growth in the aftermath.[2]

The effects of the crisis on the labor market were severe. The level of employment declined rapidly from 1990 until 1994 after a longer period of increasing numbers (see Figure 1). Between 1990 and 1994 employment

Figure 1. Numbers of Employed in Sweden, 1980-1995
(in 000s)



Source: Serie: Sysselsätta män och kvinnor (tusental), 1980-1995 [Employed Men and Women in Thousands], on demand from Statistiska Centralbryån [The Office for Official Statistics of Sweden] [hereafter, SCB].

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väsende 1850-1980. [The Regulated Market: The Swedish Insurance Market, 1850-1980] (Stockholm, 1991); Lars Werin and Peter Englund, *Från räntereglering till inflationsnorm: det finansiella systemet och Riksbankens politik, 1945-1990*. [From Interest Rate Regulation to Inflation Policy: The Financial System and the Policy of the Riksbank, 1945-1990] (Stockholm, 1993); Mats Larsson and Hans Sjögren, *Vägen till och från bankkrisen: svenska banksystemets förändring, 1969-94* [The Road To and From the Bank Crisis: The Change of the Swedish Bank System, 1969-94] (Stockholm, 1995); Hans Sjögren, *I takt och otakt med tiden: Stadshypotek mellan marknad och politik* [In and Out of Time: Stadshypotek between the Market and Politics] (Stockholm, 2002).

[2] Lars Hörngren and Hans Lindberg, "The Struggle to Turn the Swedish Krona into a Hard Currency," *Sveriges Riksbank Arbetsrapport*, no. 8 (1993).

decreased by 12.5 percent, from almost 4.5 million in 1990 to fewer than 4 million in 1994.

Considering that this crisis had its origin in galloping real estate prices and that it had a huge effect on, among other things, the level of employment, credit risk in the residential mortgage market is an interesting area to study, especially because this market managed to handle the crisis relatively well.

Credit Risk

During the crisis of the 1990s the existence of credit risk in the housing market became extra obvious as everything was shaken up. Credit risk treats the credit-worthiness of the borrower, the risk that the borrower will be unable or unwilling to make the payments on a loan. In estimating whether the borrower will be able to fulfill the payment schedule, many different variables are of interest. Of first importance is the value of the house and how it changes; if the borrower cannot make payments, one possibility is to sell the house to pay back the loan. This leads to another important variable; the house price in combination with credit debt, the so-called loan to value ratio. To be sure that the borrower will be able to pay the loan in full, the capital debt needs to be lower than the value of the house. The ability to make a down payment on the loan and to cope with the level of the interest rate are also factors in establishing credit risk.[3]

But interest rate is normally divided into two parts, the real rate and inflation. This is the cornerstone in Irving Fisher's equation from the beginning of the twentieth century.[4] The interest rate (i) depends on the real rate (r) and on inflation (π).[5]

Formula 1: $i = r + \pi$

The equation means that if the real rate is constant and the level of inflation decreases or increases, the interest rate moves in the same proportion. Inflation is measured as the percentage rise in prices during a certain time. (Usually, inflation is measured by how much prices have risen during the last year, and that will also be the meaning of inflation in this essay.) Therefore, when lenders decide the interest rate, they want to be sure that they get paid for the losses that they may sustain because of rising prices, and they also want to have a premium for the service of lending capital. As a result, the interest rate that lenders give depends on

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[3] Urban E. Funered, *Bankernas risktagande* [The Risk Taking of Banks] (Stockholm, 1994), 43.

[4] Jeffrey Carmichael and Peter W. Stebbing, "Fisher's Paradox and the Theory of Interest," *American Economic Review* 73 (Sept. 1983): 619-30, at p. 619.

[5] For example, see N. Gregory Mankiw, *Principles of Economics* (Fort Worth, Texas, 2000), 621. The formula is actually $(1+i) = (1+r)(1+\pi)$; the approximation works as long as e i, r, and π are relatively small (below 20% a year).

the rate of inflation and the real rate. The real rate is the payment for the loan to the bank, when the costs for inflation have been deducted.

In addition to these elements, there are some distinctions that have to be considered in the case of the Swedish market—particularly the tax reduction system. In Sweden interest rates are, for the moment, reducible by 30 percent via tax deductions, but this has changed over time.

The tax reduction system, together with the requirement of personal responsibility, makes the Swedish mortgage market an interesting object of study. In this essay the focus will be on house prices and on the interest rates for self-contained or semi-contained house loans during the period 1980-1995 in order to answer the question, how was credit risk in the residential mortgage market for self-contained or semi-contained houses affected in the 1990s Swedish crisis and why?

I will concentrate primarily on house prices, but loan to value ratios and interest rates are also important for measuring the credit risk exhibited by borrowers.

House Prices

The value of houses is the most basic component when judging credit risk in the residential mortgage market. In Sweden house prices had increased steadily during the three decades following World War II. Between 1980 and 1995 the prices of self-contained and semi-contained houses also increased, but less than the cost of living (CPI) (see Figure 2). However, house prices did not grow steadily throughout the period. In the beginning of the 1980s, house prices did not increase much at all, and they increased only slowly until 1986-1987. During the same period the CPI increased much more rapidly, so the first half of the 1980s saw a price decrease in terms of real values. The newspapers called it "the death of house producers," as the number of new-built houses decreased severely.[6]

In 1985, the ceiling on lending disappeared, which created a boom in the Swedish economy. A large increase in house prices in the residential market occurred, continuing until 1992, when prices dropped as a result of the emerging Swedish crisis. The prices then decreased for two years in a row before starting to increase again following the trend set in the mid-1980s. Between 1985 and 1991 prices increased by 99 percent, and between 1991 and 1993 prices decreased by 15 percent.

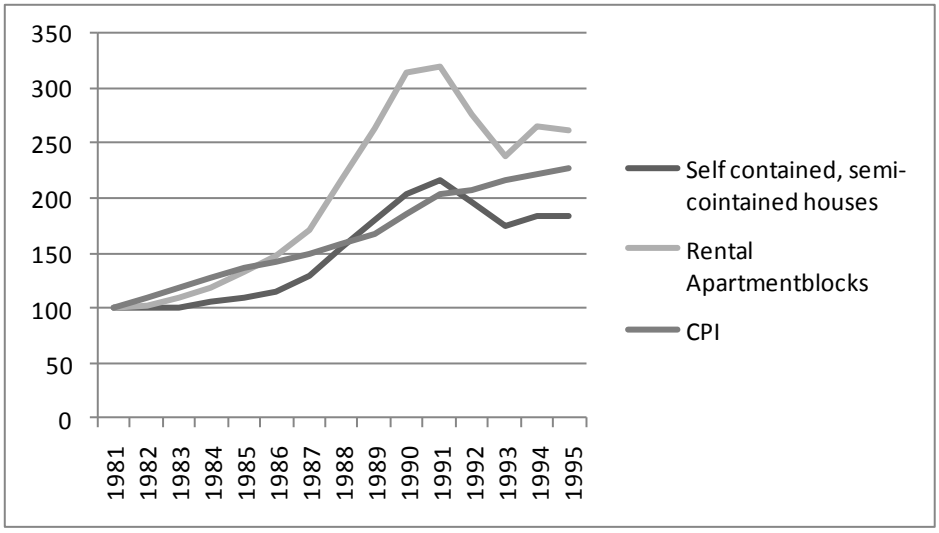
A development similar to that for self-contained and semi-contained housing was seen in the case of apartment blocks, but with much more severe fluctuations. Prices for apartment blocks increased by 241 percent during the period 1985-1991 and decreased by 18 percent between 1991 and 1993.

The conclusion from this is that credit risks were less significant in the residential mortgage market than in the market for apartment buildings. With smaller fluctuations credit risk decreases, because with a more

[6] "Sämre för småhus," *Affärsvärlden* 42 (1980).

constant level, predictions of future prices are easier to make, and lenders can more easily decide how much capital debt borrowers can have in comparison with the house price, the so-called loan to value ratio.

Figure 2. House Prices and Cost of Living (CPI) in Sweden, 1980-1995



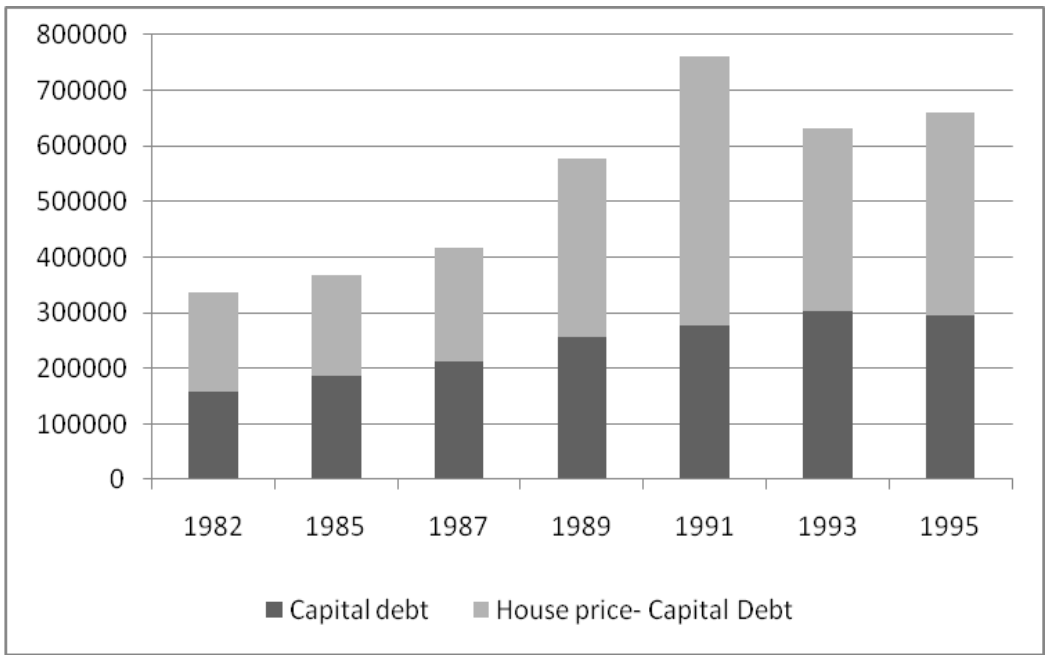
Note: Index 1981=100.
Source: *Bostads- och byggnadsstatistisk årsbok* [The Yearbook of Housing and Building Statistics], 1981-1995, SCB; Konsumentprisindex [CPI], SCB.

Loan to Value

In assessing credit risk the capital debt is of importance and especially the capital debt in relation to the house price—that is, the loan to value ratio. The credit risk is seen from the point of view of the lender, and hence the lower the loan to value ratio, the lower the risk for the lender, because the borrower will take more of any eventual losses.

From 1982 to 1992 capital debt per house almost doubled, from about 157,000 to 302,000 SEK. Until 1995 there was a steadily growing increase in capital debt that followed inflation closely: inflation grew by 90 percent, while capital debt grew by 92 percent between 1982 and 1992. Both almost doubled during one decade. But from 1992 to 1995 capital debt decreased and inflation increased, though neither of them by much (see Figures 2 and 3). Capital debt was pretty stable, but house prices were not, which caused the capital-debt ratio to wobble between 36 and 51 percent. With a capital-debt ratio around 50 percent, any underlying credit risk should be relatively small, but this is a truth requiring some modification. The capital-debt ratio was not evenly spread between old and new loans. Sweden had had, with the exception of the early 1980s, a long period of strongly increasing house prices. In consequence, for many house owners the capital debt was decided the day the house was bought, and they often

Figure 1. House Prices and Capital Debt in Sweden, 1982-1995



Source: *Bostads- och byggnadsstatistisk årsbok* [The Yearbook of Housing and Building Statistics], 1982-1995, SCB; *Bostads- och hyresundersökningen* [House and Rent Report], 1982, 1985, 1987, 1989, 1991, 1993, 1995, SCB.

did not increase the loan at the same speed as house prices increased. This is supported by the steadiness of the growth of capital debt over time. So from the perspective of credit risk, it is often more interesting to analyze house prices from the point of view of first-time loans. Here an assumption is made that the lender has a steady capital-debt ratio when the loan is taken. In Sweden it has been the practice to give loans with a gearing rate of 90 percent. But there is a huge element of uncertainty here because we do not know how the remaining 10 percent was funded. Relatives, institutions outside the ordinary financial market, or various other parties may have funded the top 10 percent of the loan. However, it is likely that, although banks stretched the limit of loans during the second half of the 1980s because of the institutional changes during that period, house prices still can be used as a guideline for capital debt for newly taken, risky loans. The importance of loan to value is noticed first when the house has to be foreclosed, and long after the borrower fails to fulfill the payments for the loan. Why a borrower fails to make payments depends on reasons such as interest rates and wages. He has to be able to pay for the cost of the loan.

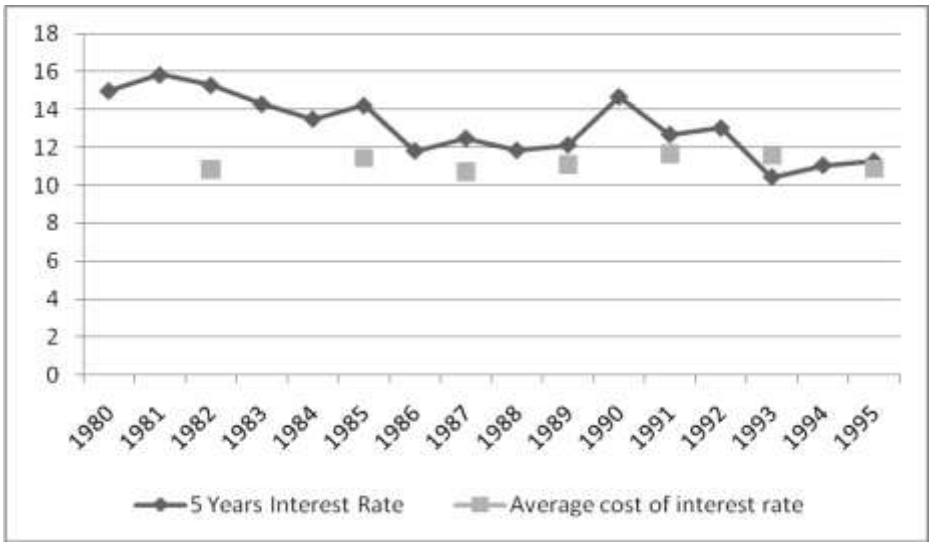
Cost of Loans

The cost of loans depends on several things, first of all the interest rate. In Sweden it was common until the mid-1990s to fix the interest rate for five years. During that time the borrower had to pay the contracted interest rate, and if he wanted to be free from the mortgage he had to pay a penalty interest equal to the estimated losses for the lender.

The official five-year interest rate fluctuated between 10 and 16 percent, with the highest rates in the beginning of 1980s and the year 1990 and the lowest interest rates between 1986 and 1989 and after 1992. In 1985 the ceiling for interest rates was abolished, allowing lenders to compete by decreasing interest rates; then the average rate was around 12 percent for four years (see figure 4). A fixed interest rate depends on predictions about future inflation and floating interest rates. During this period the predictions were seldom accurate because of the turbulent economy.

In fact, few paid the five-year interest rates. What Swedish borrowers have paid on average in interest rates has varied between 10.7 and 11.7 percent during the period 1982-1995 (see Figure 4).[7] The difference is a consequence of government subsidies, abatements given by lenders, and borrowers choosing to fix the rate when interest rates were rising.

Figure 2. Interest Rates in Sweden, 1980-1995



Source: *Bostads- och hyresundersökningen* [House and Rent Report], 1982, 1985, 1987, 1989, 1991, 1993, 1995, SCB, and Serie: Bolåneräntor [Interest Rates for Self-Contained and Semi-Contained Houses], on demand from Riksbanken [The Central Bank of Sweden].

[7] *Bostads- och hyresundersökningen* [House and Rent Report], 1982, 1985, 1987, 1989, 1991, 1993, 1995, Statistiska Centralbryån [The Office for Official Statistics of Sweden] [hereafter, SCB].

Although the average interest rate did not fluctuate a lot, the level of inflation differed considerably between 1980 and 1995. During the first half of the 1980s there was high inflation, which decreased toward the end of the decade. In the beginning of the 1990s inflation increased again: in 1991 CPI was 9.2 percent; however, 1995 CPI was down to 2.5 percent.

At that time Sweden had adopted a low inflation policy. Sweden no longer had a fixed exchange rate, and the Swedish central bank changed its goal from defending a fixed exchange rate to trying to keep inflation at 2 percent plus or minus one percentage point. According to Fisher's equation (see Formula 1), this affected the real rate. The real rate fluctuated between 2.4 and 8.4 percent (when the average costs of interest rates are used). In the beginning of 1980 the real rate was low but increased until 1987. In 1989 and 1991 the real rate decreased again. In 1993 inflation dropped severely and produced a high real rate. This large fluctuation in the real rate occurred because interest rates in most cases were fixed for five years, which evened out the fluctuations there, whereas inflation moved more drastically.

Real rates, together with the tax reorganization, are probably the main causes behind the decreasing capital debt in 1995. The difference in tax deduction rights from 50 to 30 percent made a big difference in the cost of having a house. In Table 1 the average costs of the average capital debt from 1982 until 1995 are shown. Average cost increased from 17,046 SEK in 1982 to 32,100 SEK in 1995. The increase depended almost entirely on the increase in capital debt (see also Figure 2). The cost for the real rate of capital debt varied much more, from 3,702 to 24,725 SEK. Even though the lowest number is for 1982 and the highest for 1995, the same as the

Table 1. Cost of Loans in Sweden, 1982-1995

	Cost for Interest Rate of Capital Debt	Cost for Real Rate of Capital Debt	Cost for Real Rate of Capital Debt incl. Tax Deduction
1982	17,046	3,702	-4,821
1985	21,300	7,536	-3,114
1987	22,600	13,738	2,438
1989	28,400	12,016	-2,184
1991	32,200	6,532	-3,128
1993	35,000	20,806	10,306
1995	32,100	24,725	15,095

Source: *Bostads- och hyresundersökningen* [House and Rent Report], 1982, 1985, 1987, 1989, 1991, 1993, 1995, SCB; *Bostads- och byggnadsstatistisk årsbok* [The Yearbook of Housing and Building Statistics], 1981-1995, SCB; Konsumentprisindex (CPI), SCB.

nominal cost, the real cost had not increased as steadily as the nominal cost. Especially noticeable is the figure for 1991, 6,532 SEK, when inflation was high and produced a low real rate. Even more interesting are the costs of capital debt when the effects of tax deduction are included. Tax deductions were made on the interest rate, not on the real rate, so that in some years the rate of payment became negative: it was profitable to borrow. In the beginning of the 1990s two things happened that changed this; first, the tax reforms changed tax deduction rights from 50 to 30 percent, and second, the level of inflation decreased. The cost for having an average capital debt changed from –4,821 in 1982 to 15,095 SEK in 1995.

The Characteristics of the Swedish Market

House prices on the Swedish market increased strongly by the end of the 1980s for a variety of reasons, but the most important were the deregulation of the credit market in combination with the system of government-subsidized loans and 50 percent tax reduction possibilities for interest rates. These combined to make it profitable to borrow. Furthermore, there was a global economic upswing, followed by increasing house prices in many countries, among them the United States.[8] During 1989 and 1990 the upswing wore off, and the major tax reform introduced in 1990 limited tax reduction rights to 30 percent and reduced severely the possibility of getting a subsidized loan. These drastic changes in the conditions of the housing market resulted in decreasing house prices. House prices continued to decrease in connection with the crisis of 1992, but house prices did not decrease nearly enough in relation to the severity of the crisis. Swedish economic growth fell dramatically, and became negative for three years in a row. The level of employment decreased by 12.5 percent during the period 1990-1994. Then the rate of inflation decreased from more than 10 percent in 1990 to just over 2 percent two years later, while the average cost for interest rate stood still. The Swedish economy experienced a real shock. Despite all this, house prices decreased by only 17 percent from their peak in 1991 to the lowest point in 1993.[9]

The Swedish crisis of the 1990s and today's American crisis are not totally comparable. In Sweden it was primarily commercial buildings that had the biggest problems, whereas in the United States the real problems developed in the subprime residential market. But at the same time both crises developed from a real estate crisis, and therefore it is interesting to perform a simple comparison between the two countries and their crises.

While Swedish house prices dropped 17 percent during the 1990s crisis, American house prices dropped 25 percent between June 2006 and October 2008. That the Swedish house prices for self-contained or semi-contained houses were relatively stable can also be seen in comparison to the prices of apartment buildings. Prices of Swedish apartment buildings

[8] S&P/Case-Shiller Home Price Indices, Halifax House Price Index.

[9] Ibid.

showed a larger increase and a larger decrease than the prices of self-contained and semi-contained houses. The explanation for why the residential market for self-contained and semi-contained houses behaved in this way probably lies in the institutional structures that characterized the Swedish residential mortgage market.

One thing that gave relative stability to the Swedish residential market was the system of personal responsibility for loans: if a house were sold for a lower amount than the loan, the borrower had to continue to pay off the loan. Instead of a big fall in house prices, then, the main event in Sweden was a rapid decrease in the number of houses sold. During one year, between 1991 and 1992, the number of sold houses decreased by 42 percent. This can be compared with the American market, where sold houses decreased by 37 percent between 2007 and 2008, even though the fall in prices was a bit more severe in the United States.[10] The Swedish market also underwent a more rapid recovery than the American market, as far as the story tells us today.

The personal responsibility requirement leads the fall of prices to de-escalate, when borrowers risk losing more than only the gearing rate. Buying a house on pure speculation can of course be very expensive when the borrower has to take all eventual losses himself. In addition, subletting is not profitable in Sweden, because of the high taxes put on renting and because landlords are not allowed to charge higher rents than those exhibited by the rent-controlled apartments. Rents will therefore seldom cover the costs of a house.

Another reason for the mild price fall was the system of government loans, which were given only under tight premises regarding credit-worthiness, which probably resulted in fewer foreclosures.

In addition, it is worth noting that the structure of housing in Sweden could mitigate the movement in prices; 50 percent of people owned their own houses, while this number was 75 percent for the United States. This is important because the larger the market, the bigger effect it has on society as a whole if the market starts to experience problems.[11]

So there was a mild price fall and a drastic drop in the number of houses sold in Sweden during this time, but neither the price decline nor the drop in the number of houses sold in the United States was so much different from events in Sweden. There has to be some institutional feature that explains why the U.S. residential mortgage market fared so much worse.

One difference is that Sweden has had a tradition of relatively low amortization in comparison with the United States. For example, at the end of the 1960s and the beginning of the 1970s, Sweden had a so-called parity loan system, with the aim of redistributing expenses over time with a form of annuity loan with low amortization in the beginning and higher

[10] http://www.economagic.com, 2010-01-10.

[11] Ibid., SCB.

in the end. The problem was that the basis of the calculation was wrong because of high inflation, and in the end the debt increased instead of decreasing.[12]

Another feature of the Swedish market was the practice of lending with five-year fixed rates. During this time the lenders were not allowed to change the terms and the borrowers could do so only by incurring penalties. After five years the loan had to be rearranged. This is different from the American system, in which the rate is known for a long time forward and borrowers usually have been allowed to change the terms via refinancing.[13] The rearrangement at five years in Sweden could lead to problems with a too high, unpredicted interest rate for some borrowers. But on other hand this gave more equal conditions for both the lender and the borrower. The banks were not so much at risk of having a large stock of unprofitable loans due to liquidity risks or discrepancies with the financing of the loans.

Concluding Remarks

In conclusion I want to highlight some important features concerning credit risk in the residential mortgage market.

First, concerning personal responsibility: it may seem harsh that a borrower has to pay for a house he no longer owns. However, the alternative in the end affects borrowers much more, while personal responsibility allows several positive consequences. A stable financial system demands that the actors who benefit from upturns also bear the pain in downturns, in order to avoid pure speculation. This is very important for a market such as the residential mortgage market. Even though it can seem a good cause to protect the little borrower, the power of many should not be forgotten. In times of declining prices not only one borrower, but many, are affected, and that leads to effects on the whole economy. When an entire economy becomes afflicted, this hits back on the

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[12] See Per Landgren and Ingemar Nilsson, *Paritetslån och konkurrens* [Loan of Parity and Competition] (Stockholm, 1971); Kenneth Boberg, *Bostad och kapital: en studie av svensk bostadspolitik* [Houses and Capital: a Study of Swedish Housing Policy] (Stockholm, 1974); Matti Niva, *Bostad, politik och marknad: en jämförande studie av bostadspolitiken i efterkrigstidens Sverige och Finland* [Housing, Policy and Markets: A Comparative Study of the Housing Policy of the Postwar Period in Sweden and Finland] (Stockholm, 1989); Bladh, *Bostads-försörjningen*, 17.

[13] See for example Ned Eichler, "Homebuilding in the 1980s: Crisis or Transition?" *Annals of the American Academy of Political and Social Science* 465 (Jan. 1983): 35-44. However, the latter has started to be a bit of a problem in the United States as well. In 2005 10% of Fannie Mae loans had penalty clauses that made it expensive to rearrange loans. Johan Norberg, *En perfekt storm: hur staten, kapitalet och du och jag sänkte världsekonomin* [A Perfect Storm: How the State, Capital, and You and Me Brought Down the Economy of the World] (Stocksund, 2009).

borrowers, and the households have to carry a heavy burden. Therefore, in the long run it is better that the borrower takes personal responsibility for the loan in the first place. Furthermore, if the state is forced to act as a lender of last resort and save the banks from failing, there is a higher possibility of recovering the money from failing house loans given that the borrower has to continue to pay off the loan.

Even though I think that personal responsibility is important for the residential mortgage market, its effects should not be overestimated. There are social costs in leaving a house, and that is true whether personal responsibility governs the situation or not. The house is often more than an object of speculation; it is a home. The owner might not want to move because of social networks in the area, schools for the children, and so forth. The possibility of finding somewhere else live also has to be accounted for.

The second highlight is that a higher degree of amortization reduces credit risks. One possible way for governments to create more stable residential mortgage markets is to regulate the time of amortization, thereby decreasing the capital-debt ratio. Another option for reducing the capital-debt ratio is to increase the degree of input, but the first alternative is preferable. The second alternative creates higher barriers to entry.

The third thing I want to highlight here is the problematic nature of the co-existence of two unmatched systems. In Sweden the credit market was deregulated while two important components from the earlier system remained: the high tax reduction system and government-subsidized loans. As a result, such loans could be abused to make profits, because borrowers could earn money by borrowing. Two incompatible systems were intended to work together. One was built on strict control by government and the other was built on a belief that the market could control itself. This is an important conclusion to draw: that if and when a system is changed, it is important that it happens rapidly and completely. Two different systems lead to loopholes that actors in the financial market can abuse. This can also be applied to the subprime crisis, in which the subprime market was acting under regulations not conforming with the American market economy as a whole.[14]

The fourth highlight takes on the form of two open questions. What kind of control ought the government to have over the residential mortgage market? Is it the credit risks that the government should be responsible for, or are there other forms of subsidies that might be more useful—as, for example, building houses and apartments for renting? Is it really a right to own a house or should it just be a right to have somewhere to live?

[14] This is the subject of another chapter in my dissertation.