The Swedish Banking Crisis: A Regulatory Perspective

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Abstract
The purpose of this thesis is to examine the regulatory actions taken before and during the Swedish banking crisis. The first part of the study concerns the build-up of the crisis and attempts to identify the relevant explanatory macroeconomic and microeconomic variables. It is found that the Swedish economy featured many of the characteristics empirically shown to raise the likelihood of a banking crisis. The second part applies the regulatory model of Dewatripont and Tirole (1994) in order to evaluate the crisis management conducted by the Swedish regulators. According to the model the regulators acted inconsistently; sometimes reacting adequately and other times committing errors. However, one should take this verdict with a grain of salt since the model's regulatory objective function probably does not exactly correspond to the objective of the Swedish regulators.
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1 INTRODUCTION

In the beginning of the 1990s Sweden suffered a severe financial crisis. At its worst stage, four of the country’s six largest banking groups needed direct State support, in one form or another. The State’s interventions included such measures as liquidation, forced reconstruction and/or merger, subsidised loans, and guarantees. The final bill amounted to 65 billion Swedish kronor\(^1\) which is equivalent to approximately 4 percent of GDP. Thus, the cost for the Swedish banking crisis is comparable to that of the U.S. S&L debacle which has been estimated to about 6 percent of GDP.

There are many angles from where to examine a financial crisis. This paper will take a regulatory perspective and focus on the behaviour of the State represented by the two regulators, the Riksbank\(^2\) and the Financial Supervisory Authority (FSA). In particular, the aim of this thesis is to investigate the actions taken by the regulators before and during the crisis. Thus, the thesis attempts to answer two questions. First, given the information available at the time, could any preventive actions have been taken before the crisis? Second, given their objectives, did the regulators act optimally according to recent theory during the crisis?

The theory of prudential banking regulation has until recently been mostly concerned with entrepreneurial banks and the moral hazard caused by the depositors’ inability to observe the quality of the asset portfolio chosen by the bank.\(^3\) However, this approach was not completely satisfactory since, in fact, most banks are public companies owned by outside shareholders. This incompleteness was first addressed in a model by Dewatripont and Tirole (1994) where they extended their general theory of the role of equity and debt in a firm to the special case of banks. In this model, the frequent use of capital ratios in banking regulation is rationalised as a way of allocating control between the regulator and the shareholders and at the same time solving the managerial moral hazard dilemma. Because of its generality and its clear implications regarding optimal regulation I have chosen to use this model as the theoretical framework when examining the actions of the Swedish regulators.

The remaining paper is divided into two parts. The first part, consisting of sections 2 and 3, investigates to what extent the Swedish banking crisis was typical and whether it could have been predicted. Section 2 will discuss the underlying macroeconomic development preceding the crisis. Did the Swedish economy show the symptoms most commonly connected with financial crises? In section 3 the focus is on the banking industry, its banks and their regulators. Which was the state of the banks

\(^1\) Values given in the paper will always refer to the amount in Swedish kronor (SEK). During the relevant period the relation was roughly: SEK 1 = USD 0.13 = SF 0.25
\(^2\) The Swedish central bank.
\(^3\) For surveys of this literature, see for example Dewatripont and Tirole (1994) and Freixas and Rochet (1997).
and the regulation? Then follows the second part, consisting of sections 4 and 5, where the aim is to relate recent theory on banking regulation to the Swedish case. Section 4 presents and discusses the normative model of banking regulation by Dewatripont and Tirole. Section 5 analyses and evaluates the behaviour of the regulators by relating their actions to the framework of the model. Section 6 concludes the thesis.

2 SETTING THE STAGE

This section attempts to present the macroeconomic factors that might have been important in producing the Swedish banking crisis. In order to do this we first need to identify which variables have proven to be significant, historically and internationally, in explaining financial crises. Thus, I will start by shortly presenting three recent empirical studies about the determinants of financial crises. Following the empirical findings of the papers, I will present and discuss the seemingly most relevant variables, one by one, for the Swedish case.

2.1 EMPIRICAL FINDINGS

The years preceding the Swedish financial crisis are often characterised as years of boom, reckless spending, wild speculation and rapid economical and structural changes. The list of potential factors explaining the crisis is impressively long. Some of the factors are quite tangled up with each other and different observers attach them with different weights of importance. However, in recent years, following the growing frequency of financial crises all over the globe, there have been several attempts to pin down, in a more general way, the determinants of financial crises.

In one of the first econometric studies of financial crises Canova (1994) investigates whether there are certain variables or conditions conducive to crises using monthly data for the US economy in the period between 1880 and 1914. He finds that abnormally high and volatile stock returns, rising short-term interest rates and unexpected movements in the money supply are all significant in explaining the occurrence of a crisis. On the contrary, business cycle events have close to no effect on the probability of crises – a result which conflicts with the findings of the two studies below.4

Eichengreen and Rose (1998) study the determinants of the probability of a banking crisis using a sample of 100 developing countries with annual observations from 1975 through 1992. Their most

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4 This is most probably due to different definitions of crisis. These differences will be clarified later on.
important finding is the high significance of rising industrial-country interest rates in precipitating financial crises. The authors explain this by the fact that banks in developing countries often rely heavily on offshore finance for funding and thus are very sensitive to a rise in foreign interest rates. In addition, an overvalued real exchange rate and slowing output growth have a significant impact on the probability of crisis. Contrary to a common hypothesis, domestic credit booms do not seem to play an important role.

Finally, in a similar study but using a sample of both developed and developing countries, Demirgüç-Kunt and Detragiache (1998) find that low GDP growth, high real interest rates and high inflation significantly increase the likelihood of crises. More interestingly, they find some evidence that the degree of recent deregulation increases the probability of crises.\(^5\)

Apart from the highly heterogenous samples used, one reason for why the findings are different is that the crisis definition varies in the three studies. Canova defines a crisis as “a rapid rise in the rate of discount, a sudden flood of bankruptcies, and a fall in consols (prices), followed by a rise”. Eichengreen and Rose identify a crisis “forming their judgement of the extent of the problem and the impact on net bank capital on the basis of both official published data and the opinion of country experts”. Demirgüç-Kunt and Detragiache set up four independently sufficient criteria concerning the share of nonperforming loans, the cost of the rescue operation, the extent of nationalisation and other emergency measures such as deposit freezes or generalised deposit guarantees. Thus, Canova’s definition captures abnormal financial disturbances more generally, while the other two definitions concern banking crises in particular.

In spite of these differences, there seem to be some determinants of financial crises that have more empirical support than others. Slightly simplifying, I will divide these determinants into four categories and discuss them one by one for the Swedish case. The categories and their theoretical or empirical justifications are\(^6\):

**Growth.** When the business cycle turns downwards, financial fragility is likely to increase as firms start to have difficulties repaying their loans.

**Monetary policy.** This broadly defined category captures the risks faced by banks through unexpected changes in monetary policy through exchange rates, interest rates and inflation. The banks are particularly vulnerable to fluctuations in these variables because of the asymmetry between their

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\(^5\) As a proxy for the degree of financial liberalisation they use the ratio of credit that goes to the private sector.

\(^6\) For a discussion of theories of financial crises, see for example Canova (1994).
highly liquid liabilities (deposits) and very illiquid assets (loans). Also included in this category is the structure of the capital markets, such as the reliance on foreign short-term investment.

**Deregulation.** When a historically regulated credit market is liberalised this might have several adverse effects. First, financial intermediaries are likely to expand their operations, getting involved in business areas where they lack the necessary experience. Second, it is often ignored that in case of deregulation, the regulatory authorities paradoxically need to be strengthened. Hence, if the regulatory system is not reformed after liberalisation, then the regulation will probably be insufficient.

**Asset prices.** Financial crises are often preceded by unusually high and volatile stock returns. Although not included in the above cited papers, property is another asset which often play an important role in banking problems. Banks are exposed to changes in asset prices in a number ways – indirectly, through collateral and as lenders to investors active in these markets and directly, as important investors in shares and property. Another aspect of high and volatile asset prices is that it might reflect short-term speculation or even a bubble. If prices do not reflect fundamental values, then credit allocation is likely to be sub-optimal and this might cause problems once prices start to fall.

### 2.2 Growth

After some years of weak growth in the early 1980s, the Swedish economy took off on a strong growth path starting from around 1984. During the rest of the 1980s, as shown in figure 1, Sweden experienced a prolonged boom with annual real growth rates averaging between 2 and 3 percent.

**Figure 1. Real GDP Growth and Unemployment, 1980-1993**

![Graph showing Real GDP Growth and Unemployment](image)

Source: Datastream

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7 For example in the U.S. S&L debacle or in the banking problems in Norway and Japan.
At the same time, Swedish companies were having problems with uncontrolled cost increases and in the late 1980s exporters were losing market shares due to high labour costs.\(^8\) Already in 1989 most agents agreed that the economy was approaching a recession and that a tougher business climate lay ahead.\(^9\) These expectations proved to be correct, although they seriously underestimated the severity of the coming fall.\(^10\) In 1990, the Swedish economy went abruptly into recession and at the same time the world economy was weakened by two negative shocks, namely the Persian Gulf Conflict and the German Reunification – the former brought uncertainty and the latter higher interest rates. During the following years, from 1991 to 1993, Sweden would suffer its worst recession since the 1930s. Industrial production fell by 10 percent and unemployment shot up from 1.1 percent in June 1990 to 9 percent in June 1993.\(^11\)

2.3 **MONETARY POLICY**

In this subsection we will first study the Swedish inflation and interest rates of the time and then take a closer look at Sweden's exposure to foreign capital flows.

2.3.1 **INFLATION AND INTEREST RATES**

Historically, Sweden has always had a relatively high inflation due to the fact that the first priority of the monetary policy has been to keep unemployment down. Another less pronounced, but equally inflation driving priority, was to keep interest rates low as a way of subsidising housing construction. Interestingly, this expansive monetary policy was combined with a fixed exchange rate regime – a combination that inevitably resulted in frequent devaluations.\(^12\) In 1985, when the credit market was liberalised, most agents on the market expected a further increase in inflation due to the awaited credit expansion.\(^13\) However, at the time the exchange rate was newly adjusted and in fact the Swedish krona was almost undervalued because of the 1982 devaluation.\(^14\) Hence, there was no room for the Riksbank to anticipate the rising inflation expectations by a pre-emptive rise in interest rates.

In the following years the inflation rose according to expectations and subsequently the Swedish interest rates had to rise to keep the interest rate parity. To counterbalance the inflationary pressure and avoid speculative attacks on the peg, interest rates had necessarily to be higher than abroad. As can be seen in figure 2 below, during this period, inflation ranged from 5 to as much as 12 percent and was also notably unstable.

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\(^{8}\) Bank Support Authority (1993).
\(^{9}\) See for example the annual reports of various banks.
\(^{10}\) Even the Riksbank was taken by surprise. Personal communication to a Riksbank official.
\(^{11}\) Lybeck (1994).
\(^{12}\) The krona had been devalued in 1979, 1980 and 1982.
\(^{13}\) Wohlin (1998).
\(^{14}\) The Swedish krona was pegged to a basket of currencies.
In 1990, the Bundesbank was trying to cool off the German economy which was overheating due to the reunification boom, which in its turn led to interest rate increases in all EMS countries including Sweden. Ironically, in the following year, the Swedish government would, for the first time, successfully manage to curb the inflation.

Figure 2. Inflation and Short-term Interest Rates, 1985-1994

Source: Datastream

Naturally, the combination of rising interest rates and a slumping inflation resulted in the real interest rate increasing sharply. The real cost of borrowing was further increased by a tax-reform meant to induce people to increase their savings by reducing the possibility of deducting the interest expense from income.\(^\text{15}\)

The turbulence on the capital market would continue during the beginning of the 1990s. In order to defend the fixed exchange rate the Riksbank gradually increased the interest rates culminating in September 1992 when the marginal rate reached 500 percent. However, this was not enough and in November the same year, the fixed exchange rate was abandoned and the krona subsequently depreciated as much as 20 percent during the following year.

2.3.2 Arbitrage and Expectations

Throughout the 1980s, one rather peculiar aspect of the Swedish monetary policy was the obvious possibilities it provided for arbitrage.\(^\text{16}\) Indeed, this was a consciously chosen strategy since the State was in need of increasingly more funds to finance its widening budget deficit. However, it wanted to

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\(^{15}\) There are estimates that the total real interest shock, including changes in taxation, amounted to a rise of 10% from 1991 to 1992 – starting from a slightly negative level. See the Swedish Financial Supervisory Authority (1995).
avoid direct borrowing on the international market and therefore tried to induce Swedish companies to do the borrowing instead. This was accomplished by exempting lending in foreign currency from the lending regulations\textsuperscript{17}. Thus, the Swedish banks borrowed funds in foreign currency, lent it to Swedish companies who in their turn bought government bonds. Since the Swedish interest rate premium was significant this was a very profitable arrangement for the companies. Even though it was a consequence of governmental policy, the Riksbank considered this reliance on short-term foreign capital as a major problem since it was aware of its vulnerability to a speculative attack.

Another interesting observation is the shift in expectations taking place around 1990. From 1985 to 1990 most agents seem to have been expecting, sooner or later, another devaluation.\textsuperscript{18} After all, the Swedish inflation was constantly higher than that of its major trading partners. Monetary policy being fixed, the only way to cool down the economy would have been a tighter fiscal policy. However, this was politically impossible. Then in 1990, Sweden declared its intentions of applying for EU membership and concurrently tied the Swedish krona to the EMS\textsuperscript{19}. Furthermore, the boom seemed to be definitely over and there was an unexpected shift to a more restrictive economic policy. These events seem to have made the fixed exchange rate policy credible to a majority of economic agents. This impression is suggested by the fact that Swedish banks continued to increase their foreign currency lending until finally in mid 1991 this development was halted – all of which is illustrated in figure 3.

**Figure 3. Lending in Foreign Currency by Swedish Banks, 1983-1993**

![Graph showing lending in foreign currency by Swedish banks from 1983 to 1993.]


\textsuperscript{16} For a full account of this phenomenon, see Wallander (1994).

\textsuperscript{17} Before 1985, the amount of bank lending was regulated.

\textsuperscript{18} The then CEO of the biggest mortgage lender writes: "There was no reason to believe that it (the inflation) would fall under 7 percent which was seen as the Swedish base inflation. Sweden was therefore clearly heading towards another devaluation. That the 1982 devaluation would be the last was something I just considered as political rhetoric." Wohlin (1998).

\textsuperscript{19} The tying to the EMS was formally accomplished in 1991.
However, foreign currency lending was still substantial at the time of the depreciation in 1992. Moreover, there are several reports of companies making huge losses on their foreign currency debt. Of course, these observations do not necessarily have to reflect naive expectations but perhaps only the fact that many agents were speculating and some of them were unlucky.

2.4 DEREGULATION

In 1985, two important steps were taken to deregulate the Swedish financial markets. First, the banks were allowed to freely set their interest rates and, second, all restrictions on credit supply were lifted. Combined with a booming economy and high inflation this resulted in a dramatic credit expansion. Due to the old credit rationing system there was a substantial pent-up demand for credit. The source of this demand was not so much from the industry, but rather from private consumption. Households were now able to use their steadily increasing property values as collateral when borrowing for consumption. In addition, the Swedish tax system was implicitly encouraging borrowing since it allowed for an important part of the interest expense to be deducted from income. In 1989, only four years after the deregulation of the credit market, the loan stock had doubled. In 1990, the stagnating economy, the increasing real interest rates and the already mentioned savings-inducing tax-reform all contributed to halt the growth in the public’s credit demand. This development is illustrated in figure 4 below and figure 5 on the following page.

Figure 4. Total Bank Lending, 1970-1993

![Bar chart showing total bank lending from 1970 to 1993 in SEK billions.]

Source: Lybeck (1994).

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20 See for example Bank Support Authority (1993).
21 Wohlin (1998) estimates that at the time of deregulation there was a discrepancy of 3-4 % between the set interest rate and the "would-be" market clearing interest rate.
22 Bank Support Authority (1993).
Another important deregulatory step was the scrapping of the exchange controls in 1989. Before, it had been more or less illegal to buy and sell currency, but as noted above, there were some important exceptions. Still, the deregulation meant that smaller, presumably less sophisticated, investors could join the bigger companies in the already described interest rate arbitrage. At the same time, various finance companies began selling commercial papers with higher returns than the treasury bills which had previously been used as part of the arbitrage. Thus, the arbitrage took a much more risky form than before – now the banks lent to speculators investing in commercial papers the finance companies issued to finance for example property investment.\textsuperscript{23}

**Figure 5. Total Bank Lending as Share of GDP, 1980-1993**

![Graph showing total lending as share of GDP from 1970 to 1990.](image)


One indirect effect of the deregulation when combined with high inflation, highlighted by Wohlin (1998), was that the mortgage lenders raised their lending ceilings. Traditionally, the mortgage lenders made the “bottom” loans and lent against around 70 percent of the value of the property used as collateral. However, the high inflation quickly eroded this percentage level which made mortgage lenders raise the ceiling up to 85 percent of the value. When mortgaged at 85 percent a property is normally considered to be completely mortgaged because if the bank has to claim the collateral a marginal of 15 percent is necessary to cover the costs of lost interest revenue and an executive auction. Yet, the banks were used to lend in the interval between 70 to 85 percent and were not willing to be forced out from the mortgage market. To compete for the “bottom” loans was not an option since the mortgage lenders had access to much cheaper funds through large bond schemes and thus could offer lower interest rates. Consequently, the banks started lending against collateral over 85 percent of the property value. At the time, this did not seem to be a dangerous policy since property prices were soaring. However, this move substantially increased the credit risk in the banks’ loan portfolios.

\textsuperscript{23} See Wallander (1994).
2.5 **ASSET PRICES**

As mentioned above, Sweden was experiencing a long period of growth during the second half of the 1980s. Naturally, as is to be expected during a boom, this resulted in rising asset prices which is clearly shown in figures 6 and 7 on the following page. According to Lind (1998) there are estimates that the real prices on commercial property more than quadrupled between 1980 and 1990. The corresponding increase for housing property was more modest, but still high, at 60 percent.

**Figure 6. Commercial Property Prices in Stockholm, 1980-1993**


During approximately the same period, from 1982 to the top in June 1990, the Stockholm Stock Exchange General Index rose by 581 percent in nominal terms.

**Figure 7. Stockholm Stock Exchange, 1980-1994**

Source: Datastream (1999).
As can be seen in the figures, asset prices first stabilised and then sharply fell in 1990. More precisely, the Stockholm exchange index fell by 40 percent in only four months and commercial property prices dropped by more than 50 percent in real terms over a period of three years. This price plunge can be explained by a number of events occurring at the same time. The beginning recession accompanied by downgraded expectations about the future lowered demand for commercial property and shares. Furthermore, the high real interest rate made both these assets significantly less attractive to hold. Finally, the Persian Gulf Conflict created general international uncertainty resulting in volatile asset prices. Thus, in one way the price fall can be explained by the unfortunate interaction of more or less unexpected macro shocks. However, many observers believe that the former high prices were not motivated by fundamentals and that the huge fall was rather the consequence of a bursting bubble than caused by external shocks.

Indeed, there are several signs indicating that the rising asset prices of the 1980s were not always based on rational expectations on future cash flows. Rather, they were based on expectations on further price increases. This latter form of pricing is precisely what according to some economists defines a bubble. Below, I will shortly discuss three facts that point towards the existence of an asset bubble.

First, figure 5 makes it clear that the credit supply grew much faster than the real economy. This was partly due to a pent-up demand for credit but most probably also to the existing perverse incentives for borrowers. It is not unreasonable to suppose that such an excess supply of capital on the relatively limited Swedish market could not be fully absorbed by efficient investments. Moreover, because of the exchange regulation the investors could not turn abroad but were stuck domestically with their funds.

Second, in the latter part of the 1980s, it is estimated that 50 percent of the new lending was related to construction and property companies. This property lending was fuelled by a perverse incentive structure created by various explicit and implicit subsidies to the construction sector. For example, housing construction was heavily subsidised by a system where the state pledged to pay the difference if the interest rate rose above a guaranteed level of 3 percent. With constantly high interest rates this subsidy was substantial. There are estimates that the present value of these subsidies increased up to 70 percent of the construction costs. Consequently, the constructors and their financiers became

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25 See for example the definition in Stiglitz (1990): “If the reason for the price being high today is only because that the selling price will be high tomorrow – when fundamental factors do not seem to justify such a price – then a bubble exists.”
26 More rigorously, the first two do not necessarily imply a bubble but rather sub-optimal credit allocation.
insensitive to the profitability and risk of the project.\textsuperscript{28} In fact, many of the highly leveraged property companies were not profitable but thanks to steadily increasing prices they were successful in trading properties.\textsuperscript{29}

Third, Lind (1998) reports several interesting facts about the valuation of properties in the second half of the 1980s. He has compiled and analysed a number of property valuations made by well reputed property valuation consultancies during the period 1980-1996. It is found that valuations made in the booming years 1985-1990 differ significantly from the others on the following four accounts.

1. \textit{Market value estimation}. In valuations of property it is common practice to use confidence intervals to show the degree of uncertainty in a point estimate. Nevertheless, in almost 40 percent of the valuations during the boom only point estimates were presented, indicating some sort of overconfidence in the estimate.\textsuperscript{30}

2. \textit{Profitability}. When comparing predictions of profitability and inflation it can be seen that during the boom the required real profitability was historically low – which could be interpreted as a very low price for risk. Indeed, in several valuations it is noted that the investment, given a normal level of debt, will result in a negative cash-flow for the first five years. Such an investment would normally be considered as very risky but this conclusion is not drawn in the valuations.

3. \textit{Sensitivity analysis}. In spite of the method being well known, it was almost never used.

4. \textit{Stability of value}. In most valuations there were no predictions about the future evolution of the property value.

When concluding, Lind makes a noteworthy analogy to White’s (1990) description of the U.S. stock market boom in the late 1920s: “Fundamentals became difficult to judge because of major changes in industry.” In Sweden of the late 1980s the deregulation of the financial market was a major change in the banking industry, which made economic agents believe that the dramatic credit expansion and the surging asset prices were part of a normal and sound development.

\textbf{2.6 SUMMARY}

According to recent empirical studies on determinants of financial crises, the Swedish economy of around 1990 seems to have been a hot candidate. First, there was an unexpectedly large slowdown in growth followed by a severe recession. Second, there was a surprising shift in monetary policy, with chronic high inflation being replaced by something close to deflation. Furthermore, the Swedish

\textsuperscript{28} Wohlin (1998).
\textsuperscript{29} Bank Support Authority (1993).
\textsuperscript{30} In the post-crisis period, less than 10 percent of the valuations lacked confidence intervals.
economy was vulnerable to shocks from the international capital market. Third, following the deregulation the formerly strictly controlled credit market was expanding rapidly. However, the interest rate could not act as the market clearing price due to the fixed exchange rate policy and borrowing was made even more advantageous through tax subsidies. Thus borrowing was artificially cheap and this probably lead to sub-optimal credit allocation. Fourth, asset prices fell steeply from a previously very high level. Moreover, several facts indicate the presence of an asset price bubble.

So, given the macroeconomic conditions, was the Swedish banking crisis predictable? Since the answer seems to be affirmative, can we then consequently condemn the regulators for excessive lenience? Perhaps not. Undeniably, the stage was set for a crisis – but that does not necessarily imply causality. Although worrying enough to a regulator, it only means that the Swedish economy was a likely candidate. Indeed, perhaps the most important determinant – the shape and quality of a country’s banking industry – is not included in the econometric studies due to obvious problems of measurability.

3 Banking Industry

In this section I will attempt to complement the above described macroeconomic background with a more microeconomic perspective. To achieve this I will closely examine the state and structure of the Swedish banking industry in the years preceding the crisis. The section is divided into three parts: starting with the market structure and behaviour of the banks, continuing with the functioning and reactions of the regulators and ending by providing a brief account of the crisis, its evolution and its costs.

3.1 Banks

The deregulation of the credit market in 1985 was the starting point for a period of rapid expansion and fierce competition in the banking industry. For the first time ever, the banks were allowed to freely set their own interest rates and to lend without limits, as long as they fulfilled the solvency requirements.\(^{31}\)

\(^{31}\) The Basle accord was not legally required until 1992, although most banks started reporting it in 1990. Before this, the banks were required to satisfy a minimum ratio of 7.25%. The capital base included equity, retained earnings, non-taxed reserves and subordinated debt, where the latter two could not exceed 100% of equity. In addition, the risk-weighting was different – most importantly, loan assets against collateral in property were treated more favourably.
3.1.1 Market Structure

In the mid 1980s there existed three big banks with nation-wide ambitions, namely SE-Banken, Handelsbanken and Nordbanken. The former two were the leading banks, measured by assets and profitability, with close ties to the big Swedish industrial groups. They also dominated the prestigious investment banking arena. Nordbanken’s main strength was its huge small-customer base. However, this strength was also its main weakness since it was rather unprofitable. In addition to the big nationals, there were a number of more regional banks, where particularly Gota Bank, Första Sparbanken, Nordbanken North and Föreningsbanken showed rising ambitions to join the “big three”. In terms of industrial organisation, one could characterise Handelsbanken and SE-banken as incumbents and the other five as challengers. Interestingly, during the most expansionist part of the 1980s three of the regional banks were all going through substantial reorganisation and consolidation.

Gota Bank was the result of a merger in 1987 between three provincial banks in western Sweden, a finance company and a brokerage house. Due to internal problems, this merger was not fully completed until 1990. The same year the initiator and principal owner of the project, Proventus, sold its share to the recently merged insurance corporation Trygg Hansa/SPF.

Första Sparbanken was a traditional Stockholm-based savings bank and the largest member of the nation-wide savings bank foundation Swedbank. In the end of the 1980s Swedbank declared its plans to transform the foundation into a commercial bank group which, measured by assets, would then have become the largest in Sweden.

Nordbanken North was the result of another merger between two regional banks based in the middle and northern parts of Sweden. Also in this case, the merger process was lengthy and problematic.

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32 Until a merger in 1990, the name of this bank was PK-banken (Post and Credit Bank). This bank had been created by the Government in the early 1970s in order to counter the perceived threat of the Swedish banking industry being dominated by private « big business », represented by SE-Banken and Handelsbanken. In 1990, it merged with the much smaller Nordbanken, which also became the name of the new entity. Therefore “Nordbanken” refers to PK-banken and from 1990 to the merged entity. “Nordbanken North” will be used when referring to the original provincial bank of the 1980s.
33 The huge small customer base of Nordbanken originates from the fact that the bank was used by the public sector wage payment system. Thus, all public employees had a wage account in Nordbanken. The problem (for the bank) was that this customer base was not very loyal – many of its customers arranged so that their money was directly transferred to some other bank.
34 Föreningsbanken was a non-profit cooperative credit institution resembling the savings banks. Traditionally, it was focused on the agricultural sector and had strong links with the nation-wide Federation of Swedish Farmers. I will refer to this bank as the Cooperative in order to distinguish it from the commercial banks.
35 See for example Affärsvärlden 1991.05.08
36 In Sweden a savings bank is a hybrid institution with both private and public characteristics. It is a kind of foundation, mutually owned by local business and the community, and its purpose is to supply credit to the local market. Indeed, the Swedish savings bank is quite similar to the US savings and loan association.
37 I have not been able to collect complete data for Första Sparbanken and thus figures and tables will refer to the 85% of the Swedish savings banks which subsequently formed the commercial bank group Swedbank.
38 Affärsvärlden 1989.04.05
Then in 1990, Nordbanken North was merged with Nordbanken, forming the “new” Nordbanken, which was by 70 percent controlled by the state.

The general impression is that these banks were rather occupied by the important shifts in ownership and management taking place in their organisations. It is highly probable that the combination of unstable owners and rapid expansion negatively influenced discipline in lending and risk management. The case of Nordbanken is even more peculiar. Here, the principal owner was not really interested in profits although it tried to change this image after the 1990 merger. Essentially, the State just wanted the bank to play an important role in the banking industry, that is, to hold a significant market share and present a serious alternative to the privately owned banks.

3.1.2 OPPORTUNITIES, CAPABILITIES AND INCENTIVES
In the aftermath of most banking crises, including the one in Sweden, the public blames the banks for excessive and irresponsible risk taking. Following White (1991), let us see if an increase in risk taking behaviour could be explained in terms of the set of opportunities, capabilities and incentives faced by the banks in 1985.

Opportunities
Due to the former system of credit rationing there was a strong pent-up demand for credit in the Swedish economy. This demand for credit was exacerbated by a low real interest rate and a borrower-friendly tax system. Thus the banks faced the great opportunities of a new and hitherto untouched market.

Capabilities
Since both interest rates and lending restrictions were abandoned, the banks certainly had the capability of borrowing the funds they needed to meet the increased demand. Even more importantly, since the beginning of the 1980s a well functioning money market had started to evolve in Sweden and during the same period the international market became increasingly available. Thus, the banks became less dependent on attracting depositors and could instead borrow on the money market.

Incentives
For the U.S. savings and loan debacle White emphasises the fact that most S&Ls were insolvent or had very low net worths giving them a strong incentive to “gamble for resurrection”, i.e. increase the risk since this is the only way for shareholders to save their investment. However, the Swedish banks were not in a bad state in the mid 1980s and thus should not have been tempted to take on excessive risk. Rather, in the Swedish case the incentives lay in the possibility to expand market shares and
profits in a domestic market which was perceived as relatively safe. More or less certain profits were supposed to be abound, just waiting to be made. After all, loan losses had not been a serious problem for Swedish banks since the early 1920s. Thus, because of an erroneous perception of the risks involved the banks had strong incentives to expand.

3.1.3 EXPANSION AND COMPETITION

We have already seen that total lending increased substantially during the latter part of the 1980s. Figure 8, which is based on data in Wallander (1994), shows the lending expansion of different banks. There are mainly two reasons for why the expansion of individual banks could be relevant for explaining the crisis. First, an expanding bank might enter markets where it lacks previous experience and therefore the necessary competence to make sound judgements. Second, in its ambition to gain market shares the bank might accept risks other more conservative banks would avoid.

Figure 8. Lending Expansion by Banks, 1980-1993

![Graph showing lending expansion by banks, 1980-1993](image)


From figure 8 it is clear that Gota Bank is the first to expand in the mid 1980s and also the first to stagnate in 1990. The other obvious case is Handelsbanken which is growing significantly slower than its competitors during the second part of the 1980s. Otherwise, the impression is that all banks were expanding at more or less the same speed.

39 See various issues of *Affärsvärlden* and also Lybeck (1994).
40 Since this section relies heavily on this data source it needs some further presentation. Wallander has compiled the data that are collected from the banks by Statistics Sweden and the Riksbank. Unfortunately, at the time, this information was not actively used by the regulators. Wallander’s paper was part of the Bank Crisis Committee’s report to the Government.
Partly the same picture is conveyed by the changes in market shares presented in figure 9. There is no clear evidence that the challenger banks gained a lot of ground on the expense of the incumbents in the late 1980s. Initially, the share of Gota Bank is growing marginally but this development stops in 1987. Nordbanken’s share is quite volatile but notably increases from 28 percent in 1987 to 34 percent in 1989. Also worth noting is the jumping market share in 1985 of the residual group which includes several regional commercial banks. Most striking is the shrinking share of Handelsbanken, from 28 percent in 1985 to 21 percent in 1989. In the same period SE-Banken’s share is rather stable. On the other hand, both the incumbents dramatically increased their market shares during the crisis years.

Figure 9. Market Shares for Commercial Bank Lending, 1985-1993

<table>
<thead>
<tr>
<th>Year</th>
<th>SE-Banken</th>
<th>Handelsbanken</th>
<th>Nordbanken</th>
<th>Gota Bank</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1986</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>1987</td>
<td></td>
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<tr>
<td>1988</td>
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<td>1989</td>
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<td>1990</td>
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<td>1991</td>
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<td>1992</td>
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<tr>
<td>1993</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: The share of Nordbanken includes Nordbanken North which held a market share of 6-7 percent. Source: Wallander (1994).

A more interesting picture is revealed by studying figure 10 below, which shows the volume expansion of the individual banks into some key sectors. First, notice that both SE-Banken and Handelsbanken have a less extreme expansion than the others, although they significantly increase their lending to the financial sector. On the other hand, Nordbanken and Gota Bank expand heavily into mainly three sectors; the financial sector, lending to foreigners and property. The savings banks and the Cooperative are both increasing their company lending more than the others. In addition, the Cooperative substantially increases its property lending.

The most obvious conclusion seems to be that those banks which expanded relatively more into “problem sectors” were the ones which later suffered most. As will be shown in the following section, most loan losses originated from lending to companies, finance companies and property. The reason for why the savings banks and the Cooperative were less hit than Nordbanken and Gota Bank might be that the former, although expanding, were still regionally based and much smaller than the two latter.
Presumably, their small size saved them from committing as serious mistakes as their bigger competitors.

Figure 10. Lending Expansion in Key Sectors, 1983-1990

Note: Households include small personal entrepreneurs. Financial Sector includes finance companies, credit companies, mortgage lenders, brokerage houses etc. Companies refer to employing companies. Foreign Borrowers constitute almost only of foreign subsidiaries of Swedish corporations. Property comprises lending to construction and property companies.

According to Wallander, in some cases the base year value was so small, perhaps signifying an entry into a new business sector, that it was inappropriate to base an index upon it. These cases are represented by a staple cut off at 2000, although the actual relative expansion was much higher.


Expansion is not a bad thing in itself. More important is the question whether the banks in their desire to expand, grew at the expense of sound risk taking. Theoretically, given a setting with uncertainty about the quality of a good and asymmetric information, the model of Akerlof (1970) demonstrates the presence of the so called Lemons Principle. In a banking case, we could think of a certain market segment where one bank (the incumbent) has an informational advantage compared to another bank (the entrant). Then the Lemons Principle implies that the entrant will always have a larger share of bad loans, i.e. lemons, than the incumbent who is able to better discriminate. Thus, until the entrants have acquired the necessary skills, we would expect them to be less profitable than the incumbents.41 With this theory in mind, it is not surprising to find that the challengers during the boom, that is Gota Bank, Nordbanken and Första Sparbanken, were the worst hit during the crisis. They all entered markets, most notably commercial property and financial sector lending, where they had an informational disadvantage compared to the two incumbents, SE-Banken and Handelsbanken.

41 For a model with asymmetrically informed banks, see for example von Thadden (1998).
Despite, or perhaps because of, substantial expansion by the challengers they were constantly less profitable than the two incumbents, which might indicate that the former were more focused on market shares and asset growth. Appendix A.1 shows the pre-tax profits on assets for the four commercial banks and the savings bank foundation.

Even before the crisis, when loan losses were low overall, the profits of the challengers were reduced by relatively higher loan losses. Although in particularly SE-Banken was troubled by increasing costs, the incumbents were slimmer than the challengers which were struggling with over-branched networks and overlapping operations due to mergers.\(^{42}\) Indeed, in retrospect the profitability turns out to be the best indicator of the banks' performance during the crisis.

### 3.2 Regulators

In Sweden the regulation of the banking industry is performed jointly by the Riksbank and the Financial Supervisory Authority (FSA)\(^{43}\). The Riksbank is responsible for the functioning of the payment system and the stability of the financial markets, i.e. the systemic risk. The FSA is responsible for the regulation of individual financial intermediaries, i.e. the specific or idiosyncratic risk.

#### 3.2.1 Aims and Resources

From the time of the deregulation to the crisis the Riksbank was fully focused on defending the fixed exchange rate. Hence, the Riksbank had no means with which to address the destabilising expansion taking place on the credit market. It had only one tool, the interest rate, but two opposing responsibilities, the fixed exchange rate and the financial stability. Indeed, this conflict of interests is an often cited dilemma in central banking.\(^{44}\) Still, it is not necessarily wrong to let an authority be responsible for sometimes conflicting issues. On the contrary, for example Lastra (1996) contends that this is even preferable, since it forces the authority to take into account the full picture instead of just one part of the trade-off. However, even if the Riksbank was aware of the trade-off it obviously had no possibility to choose the optimal level of the interest rate – then the exchange rate regime would not have held. Surprisingly, at the time, almost no economists questioned the feasibility of this double responsibility.\(^{45}\)

\(^{42}\) This was true for Gota Bank and Nordbanken North but not for Nordbanken where the problem was rather the opposite – an under-branched network made it difficult to make profits from its huge small-client base.

\(^{43}\) The result of a merger in 1990 between the Bank and Insurance Inspectorates.

\(^{44}\) Tirole (1994).

\(^{45}\) Wohlin (1998).
The FSA was mainly concerned with accounting standards and legal issues such as licensing, ownership restrictions, fraud and insider affairs. There was no continuous regulatory monitoring focusing on for example asset quality or risk management. According to several observers it was clear that the FSA did not have the necessary experience or powers needed in a deregulated market.\footnote{See for example Bäckström (1997).
Greenbaum and Thakor (1995).} Furthermore, the FSA was rather toothless since it had no real powers to forcefully intervene if banks misbehaved. The only way it could punish the banks was to withdraw their licence, which was seen as too harsh to be credible.

3.2.2 CAMEL

Being aware of the weakness of the regulators before the crisis, it is not surprising that they did not react until the crisis was already a fact. In this subsection I will try to give this regulatory passivity a more detailed explanation and I will also highlight two rather general points of critique. For reasons already mentioned my focus is now on the FSA.

As a framework for the discussion I will use the early warning bank rating system used by the U.S. regulatory agencies. This system is known as CAMEL which stands for Capital adequacy, Asset quality, Management ability, Earnings and Liquidity.\footnote{See for example Bäckström (1997).
Greenbaum and Thakor (1995).}

**Capital Adequacy**

In spite of rapid expansion none of the Swedish banks experienced any problems with obtaining the required ratio. Not until 1991, after continuing loan losses, the banks started to have problems with insufficient capital. The ratio used at the time was a bit more lax than the current Cooke ratio which was gradually introduced from 1990 and fully adopted in 1992.

Notably, the old ratio treated assets backed with property in a relatively much more generous way. According to the old ratio collateral in the form of housing property required 1 percent of capital up to 75 percent of the estimated property value. For collateral value of more than 75 percent or for collateralised industrial property up to 50 percent of the value, the required capital was 4 percent. In contrast, according to the Cooke ratio, housing property always requires 4 percent while all other kinds of property require the full 8 percent of capital.

Thus the introduction of the Cooke ratio significantly raised the capital requirements vis à vis property. At the same time, the FSA’s attitude towards collateral in property had not changed. By
tradition, this was considered a very safe form of assets since for the last 50 years the banks’ losses on property investments had been negligible.\footnote{For an interesting discussion on this issue, see Wallander (1994).}

**Asset Quality**

This measure refers to the credit risk of a bank’s loan portfolio. In fact, the FSA collected data on the banks’ portfolios but this data was not systematically analysed or actively monitored. Thus no one, often not even the banks, knew the quality of their assets. The fast growth in loan portfolios was observed but was seen as a normal reaction after the old system of credit rationing. A relevant question is whether something could have been observed by simply monitoring the development of the banks’ portfolios. Figure 11 shows the portfolio compositions of the major banks at the end of 1990, just a few months before the beginning of the crisis.

![Portfolio Compositions for the Major Banks, end of 1990](image)

**Figure 11. Portfolio Compositions for the Major Banks, end of 1990**

Notes: *Financial Institutions* refer to the financial sector excluding finance companies. *Property Related* is an imperfect measure of property exposure including both direct lending to property companies and construction as well as property backed assets.


For all banks, except the Cooperative, company loans have the heaviest portfolio weight. Gota Bank has notably the highest exposure to companies, at 58 percent of its portfolio, compared to the other commercial banks which average around 45 percent. An important fact which is not conveyed by this figure is that within the company category, Gota Bank had an explicit policy of focusing on small and mid sized companies,\footnote{See for example *Affärsvärlden* 1990.09.26.} while the incumbents rather aimed at the large company segment. Hence, Gota Bank was relatively more vulnerable to an economical downturn since smaller companies are less likely to survive a recession than larger ones.
The “big three” are relatively heavier in foreign lending than the others and the savings and cooperative banks have the largest shares of households. The last staple shows the share of loans related to property, either directly as lending to construction and property investment or indirectly as collateral. Interestingly, the property exposure can hardly be considered to differ significantly between the banks, although Gota Bank is again highest and Handelsbanken is lowest among the commercial banks. As a comparison, for an average U.S. commercial bank in 1990, corporate loans accounts for 12.7 percent and direct property loans for 16.1 percent. The former share is much lower than for Swedish banks while the latter is slightly higher – the direct property loans average around 10-12 percent for the Swedish banks.

To give an idea of the development of the portfolios in the 1980s figure 12 illustrates the most important weight changes in the banks’ portfolios from 1983 to 1990.

**Figure 12. Portfolio Changes for the Major Banks, 1983-1990**

![Graph showing portfolio changes for major banks, 1983-1990.]


The most important shift is that all banks decreased the weight of household loans. Another interesting change is that while the share of company loans shrinks for the “big three”, it grows significantly for Gota Bank and dramatically for the savings banks and the Cooperative. Regarding property loans, the portfolio weight of Gota Bank is once more increasing most, by almost 10 percent, while the other commercial banks show low, zero or even negative growth for this weight.

In answer to the above posed question, it seems improbable that one would have been able to predict the crisis by only monitoring the portfolios. Of course, ex post it is possible to say that Gota Bank, the savings banks and the Cooperative expanded into business segments that later on turned out to be

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50 Dewatripont and Tirole (1994).
costly. However, a heavy portfolio weight in companies and some 16 percent in property is hardly a reason for regulatory intervention.

Management Ability
On the surface Swedish banks were doing well so there were no obvious reasons to question the competence of managers and boards of directors. For example, as late as in December 1990, the management of Nordbanken received one of the highest scores possible among a selected group of international analysts.\textsuperscript{51}

Earnings
This is an important measure since it has a long run impact on a bank’s capital. In addition, it is known that an unprofitable bank might be more prone to take on excessive risk. However, the Swedish banks made huge profits and were also highly successful when compared to the banks of neighbouring countries. In a ranking from 1989, all of the top ten most profitable banks in the Nordic countries were Swedish. None were Swedish among the bottom ten. Also when measuring efficiency in revenue per employee, the Swedes were in a class of their own.\textsuperscript{52}

Liquidity
The sensitivity of a bank to a negative liquidity shock is assessed by summarising a number of factors such as deposit volatility, loan commitments, capital, current stock of liquidity and the bank’s ability to raise funds on short notice. Even though the Swedish banks did not show any explicit signs of liquidity problems, they were very dependent on short-term borrowing on the international interbank market. According to the 1990 annual reports, foreign short term borrowing accounted for about a third of total assets whereas foreign short term lending accounted for about a tenth.\textsuperscript{53} This type of imbalances might obviously cause problems in an environment of extreme interest rate and exchange rate uncertainty.\textsuperscript{54}

Overall CAMEL
In general, one cannot say that Swedish banks had obvious problems that should have triggered regulatory intervention. By obvious I mean problems that would have been revealed from studying an annual report without further relating it to other information, such as the quality of assets or the general state of the economy. Below I will briefly discuss these latter two kinds of information.

\textsuperscript{51} Euromoney. December 1990. « The World’s Best Banks ». This observation is originally made in Lybeck (1994).
\textsuperscript{52} Veckans Affärer. 1989.08.31. « Bankranking : Svenskar i särklass ». For a comparison with some major European and American banks, see the appendix A.1.
\textsuperscript{53} For the exact numbers, see the appendix A.2.
\textsuperscript{54} According to the Bank Support Authority (1993) at the time of the depreciation many banks made substantial losses due to insufficient maturity matching.
The quality of assets is, by definition, not reported in historical book value accounting data. Thus, it is insufficient to rely solely on annual and quarterly reports when assessing the health of a bank. The most obvious example is the capital ratio which was the only measure closely followed by the Swedish regulators. Since the declared ratios were based on values that did not reflect reality they became rather irrelevant. As two economists at the Riksbank comment *ex post*:

"even a rudimentary evaluation of the development of for instance the loan portfolios in banks and other financial institutions should at least have revealed the lack of consistent risk analysis in loan decisions and the tensions created by the rapid and biased expansion of loans to certain sectors, in particular the real estate sector".\(^{55}\)

Regarding the general state of the economy, it is surprising that the regulators did not take any notice of the S&L debacle in the U.S. or the banking crisis in neighbouring Norway, both of them illustrating very well potential macroeconomic threats to any banking system. Indeed, these two events were preceded by conditions very similar to those Sweden would experience in the late 1980s – in chronological order deregulation, credit expansion, asset bubble, recession, falling asset prices, loan losses and banking crisis.

In conclusion, the problems of the banks lay “hidden” in their loan portfolios and to some extent in their liquidity. In terms of the CAMEL, particularly capital, assets and liquidity were not sufficiently monitored. Thus, a complete and adequate application of the CAMEL might have revealed some of the problems earlier.

### 3.3 Crisis

**3.3.1 Course of Events\(^{56}\)**

In the autumn of 1990, the first signs of financial instability could be noticed through the problems of several finance companies. In their role as providers of credit (with least security) for share and property transactions they were the most vulnerable agents on the financial market and consequently the first to be hit. Since banks were the principal financiers of the finance companies, both through lending and direct investing, the problems were bound to spread to the banking sector.\(^{57}\) Curiously enough, the event was regarded as an isolated problem and accordingly called the “finance companies

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\(^{55}\) Andersson and Viotti (1999).

\(^{56}\) This section closely follows already existing descriptions of the event. For a full account see for example Bank Support Authority (1993) and Lybeck (1994).

\(^{57}\) Investment in finance companies accounted for only about 5% of total bank lending. At the same time, this bank lending amounted to 34% of the finance companies’ own lending. See Wallander (1994).
crisis". In 1990, the entire banking sector showed a significant increase in loan losses, from 2.8 billion to 11 billion. In addition, there were some quite spectacular losses reported by small, provincial savings banks.\textsuperscript{58} However, this was considered quite normal given the sudden downturn of the economy and the accompanying fall in asset prices.

In the spring of 1991, the large and to 70 percent State-owned Nordbanken found itself in serious problems after the finance company Gamlestaden had defaulted on its debt. Nordbanken was its principal bank and the incurred loan losses pushed its capital below the then allowed 7.25 percent ratio. The State organised a new share issue contributing 5.2 billion of which the State ended up subscribing for more than 80 percent, thereby increasing its ownership share to 77 percent.

At the same time, the sixth largest bank, Försa Sparbanken, reported heavy loan losses. In effect, the losses amounted to 5.5 billion (10 percent of its outstanding loans) and more than double the value of its equity. To avoid an instant failure, the State guaranteed a 3.8 billion loan from the bank's principal owner, Swedbank. However, this was not enough. The loan losses continued increasing and six months later the State had to intervene again. Now the earlier guarantee was transformed into a zero-interest loan and a new guarantee was issued to secure an additional 3.5 billion loan. As collateral for this loan and the new guarantee, Swedbank offered share holdings equivalent to 38.6 percent of the voting power.

Neither for Nordbanken was the first State intervention enough. Facing huge loan losses in the spring of 1992, the Swedish parliament authorised the State to reconstruct the bank for a cost of 20 billion. This was done by first buying out the remaining private shareholders at the current market price for a total value of 2 billion and then split the bank into one healthy and one sick part. The latter, named Securum, was given the inspiring task of managing a non-performing loan stock at a nominal value of 50 billion.

The extreme circumstances during the autumn of 1992 when the Riksbank in its defence of the krona raised interest rates to previously unimaginable levels turned the looming banking problems into an acute crisis. In September, with the marginal interest rate reaching 500 percent and increasing loan losses, the Swedish banks' credit lines from the international interbank market were cut. International lenders no longer had any confidence in the Swedish banking industry. In order to avoid an immediate liquidity crisis and a breakdown of the payment system the Government proposed a general State guarantee covering all banks with a Swedish charter, including those with foreign owners. This guarantee substantially facilitated the Swedish banks' borrowing on the international interbank market.

\textsuperscript{58} For example, only in this year Tomelilla Sparbank lost 28% of its loan stock, due to commercial property lending. It was subsequently forced to merge with the financially stronger Sparbanken Skane.
and thus avoided the impending systemic breakdown. When the fixed exchange rate was finally abandoned in late November it resulted in large foreign exchange losses for many companies which had loans denominated in foreign currency and hence further worsened the crisis.

From having gradually slipped deeper into trouble, the cutting off of the interbank credit lines in September 1992, brought Gota Bank to the state of bankruptcy. A planned new share issue had to be cancelled and the bank's principal owner was not willing to contribute the fresh capital of 1 billion that was immediately needed. Consequently, the holding company Gota AB was declared bankrupt and the State bought all the shares in Gota Bank. As in the case of Nordbanken, the bank was split into two parts – the healthy part being swallowed by the State-owned Nordbanken and the sick part, Retriva, containing non-performing loans nominally valued to almost 40 billion. In contrast to the Nordbanken case, this time the State let the shareholders incur the loss. Only the depositors were saved.

In addition to the above three major problem banks, following the currency crisis both S-E-Banken and the Cooperative applied for State support. These two banks could however be saved through capital contributions from their shareholders. Still, this might not have been feasible without the Parliament’s issuing of the State bank guarantee.

3.3.2 Loan Losses and Costs

During the period of crisis, 1990-1993, the total loan losses of the banking industry amounted to about 175 billion\textsuperscript{59}. This subsection will briefly summarise the extent and distribution of these losses since this might shed further light on the reasons for the crisis. Figure 13 shows the steep increase in loan losses starting in 1990, continuing in 1991 and culminating during 1992 and 1993.

Figure 13. Total Bank Loan Losses as Share of Lending, 1981-1993

\begin{center}
\includegraphics[width=\textwidth]{figure13.png}
\end{center}


\textsuperscript{59} This estimate does not include the mortgage lenders which often are subsidiaries of the banks. If these are included the total loan losses rise to about 200 billion.
Below table 1 shows the individual banks’ loan losses for the crisis years and also the amount of state support received. In absolute losses, Nordbanken and Swedbank top the list, while Gota Bank clearly incurred the largest losses relative to the size of its lending. Both SE-Banken and Handelsbanken are significantly less worse off than the others. The total amount of bank support, including guarantees, amounted to 85 billion, although “only” 65 billion was actually paid out.

<table>
<thead>
<tr>
<th>Bank</th>
<th>Loan Losses</th>
<th>% of Lending*</th>
<th>Amount pledged</th>
<th>Amount paid out</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE-Banken</td>
<td>24.5</td>
<td>11.7</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Handelsbanken</td>
<td>16.5</td>
<td>9.5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nordbanken**</td>
<td>46.0</td>
<td>21.4</td>
<td>50.2</td>
<td>40.2</td>
</tr>
<tr>
<td>Gota Bank**</td>
<td>29.1</td>
<td>37.3</td>
<td>27.5</td>
<td>24</td>
</tr>
<tr>
<td>Swedbank</td>
<td>38.8</td>
<td>17.6</td>
<td>4.6</td>
<td>1.0</td>
</tr>
<tr>
<td>Cooperative Bank</td>
<td>10.7</td>
<td>19.6</td>
<td>2.5</td>
<td>0</td>
</tr>
<tr>
<td>Others</td>
<td>9.0</td>
<td>-</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>174.6</td>
<td>-</td>
<td>84.9</td>
<td>65.3</td>
</tr>
</tbody>
</table>

* Outstanding loans end of 1990.
** Including the “sick” banks Securum and Retriva, respectively.

It is worth noting that although Swedbank and the Cooperative suffered almost as bad as Nordbanken, they managed to stay in business with little or no State support. The reason for this is that they had financially strong owners willing to contribute the necessary capital. In the case of Nordbanken, the owner was the State. As one observer notes, the lion’s share, 40 billion out of the total 65 billion the State paid out during the crisis, were lost due to bad State ownership and not to clean up the banking industry in general.\(^{60}\)

Concerning the distribution of loan losses over different sectors Wallander (1994) makes several interesting observations.\(^{61}\) In average, about 70 percent of the losses originate from corporate lending and of these more than two thirds are related to property.\(^{62}\) For SE-Banken and Handelsbanken, finance companies account for 15 percent of losses while the same share is 11 percent for Nordbanken and only 4 percent for Gota Bank.

The large differences emerges when the loan losses are related to the loan stock sector-wise. For the “big three”, losses on corporate loans range from 14 to 26 percent of the stock and of corporate loans

\(^{60}\) Wohlin (1998).
\(^{61}\) For a complete presentation of the data, see the appendix A.3 and A.4.
\(^{62}\) Lybeck (1994) estimates that 75% of the total loan losses were related to property. This estimate includes (correctly) the banks’ indirect property losses through their financing of the finance companies.
related to property more than 90 percent are lost. Here Gota Bank stands out by losing more than 50 percent of its corporate loans and two thirds of the property related corporate loans. Regarding lending to finance companies, SE-Banken, Handelsbanken and Gota Bank lost about a third of their loans while Nordbanken lost 96 percent, that is, almost its entire lending to that sector.

For each sector, Handelsbanken followed by SE-banken, with a few exceptions, show the lowest loan loss share. Wallander also investigates whether the difference in loan losses between Handelsbanken as a benchmark and the other banks is explained by differences in portfolio compositon or differences in risk within each sector. The finding is that the risk effect is substantially more important than the portfolio effect, although the latter is not insignificant. This supports the impression from the above study of the asset portfolios – that the portfolios entering the crisis were fairly homogenous and that the problems rather lay in the quality of loans within each sector.

Concluding this subsection, it must be said that the Swedish banking industry recuperated very fast. The State bank guarantee, the fall in the nominal interest rates after the abandonment of the fixed exchange rate and a historically high differential between the lending and borrowing rates are all factors that helped the banks back to profitability.

3.4 SUMMARY

During the years preceding the crisis the Swedish banking industry went through a period of rapid expansion and extensive transformation through various mergers and acquisitions. This combination might have weakened the owners’ control and thus the discipline of the internal organisation. Because of the emergence of a money market the banks could much more easily than before meet the strongly increased credit demand resulting from the deregulation. In addition, the risks were perceived as minimal.

All banks were expanding but particularly the state-controlled Nordbanken and the more medium sized Gota Bank and Första Sparbanken expanded into business segments where they had little or no previous experience – notably, the financial sector for the former and corporate and property for the two latter. Neither the Riksbank or the FSA had the necessary resources or experience needed for regulating a freely competing banking industry. In order to predict the crisis the FSA would have needed to closely monitor the composition and more importantly the quality of the banks’ loan assets. During the crisis approximately 80 percent of the loan losses originated from lending to companies and finance companies. At least two thirds of total losses were related to property.
4 THEORY

With this section starts the second part of the thesis. The section begins with a very brief introduction to some related theoretical issues and then continues with the presentation of the model.

4.1 LITERATURE

Before presenting the Dewatripont-Tirole model it might be useful to set it into the context of other solvency regulation models. According to Freixas and Rochet (1997), there are mainly three approaches among this group of models; the portfolio, the incentive and the incomplete contract approaches.

The portfolio approach assumes that bank managers act like portfolio managers when choosing the bank’s assets. Hence, the conclusion is that the weights used for computing solvency ratios should be risk-related. It is also shown that, with risk-weights that imperfectly reflect the real risk of assets, the introduction of a capital ratio might increase the risk of the bank’s assets.

The incentive approach models solvency regulation as a principal-agent problem between a public deposit insurer and a private entrepreneurial bank. The regulator’s objective is to minimise the expected insurance pay-out under the incentive compatible constraint of the bank. Since public funds are scarce, there is a trade-off between the cost of tying up needed banking capital and the cost of insuring depositors. One of the key results from this approach is that the optimal incentive scheme could be implemented by a solvency requirement inducing banks to internalise the cost of the deposit insurance. In addition, solvency ratios should vary with the quality of the banks’ assets. For example, a bank with a top CAMEL rating should be allowed to have a lower ratio than a bank with a bottom rating.

The incomplete contract approach takes into account the fact that, in reality, most banks are not owned by the managers but by outside shareholders. In this case, it is less obvious why the solvency ratio should have any relevance for the behaviour of the managers. As will be shown in the following subsection, in a setting with incomplete contracts, the solvency ratio can serve as a mechanism for transferring control between the regulator and the shareholders.

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03 According to Lybeck (1994) the differential ranged between 3% and 5% during the 1970s and 1980s but increased to around 8 percent in 1992 and 1993.
4.2 The Model

This is a model of incomplete contracting which means that some actions cannot be completely prespecified by a contract. This might be because the signal on which the action is based is not verifiable to a third part, for example a legal court. Therefore, the allocation of control rights on the bank becomes crucial. Since the action is noncontractible, what matters is who decides on which action to take.

In the model there is a classical principal-agent problem between outsiders and insiders. The outsiders consist of the shareholders and the depositors. Both these two groups have a stake in the bank but they have different attitudes to risk. The insider is the manager in charge of the bank. It is assumed that the manager is indifferent to monetary incentives. She only cares about the non-monetary benefit $B$, which is derived from the prestige of independently running the bank.

4.2.1 Structure

The setting is dynamic and consists of three dates. At date 0, the manager invests the bank’s funds in a loan portfolio. The quality of this portfolio is influenced by the manager’s chosen level of effort, $e$, which can be either high or low, that is $e \in (\bar{e}, e)$. However, there is a cost $K$ attached to the high effort since it implies more work for the manager. Furthermore, the chosen effort level is unknown to the outsiders. Thus, in the absence of proper incentives, there is room for some moral hazard since the manager will choose the insufficient effort.

At date 1, two signals are received about the performance of the bank. The verifiable signal $v$ conveys the value of loans maturing at date 1. The non-verifiable signal $u$ concerns the future liquidation value $\eta$ of the loans maturing at date 2. Thus the overall liquidation value of the bank is $v + \eta$. The signals, $u$ and $v$, are uncorrelated conditional on $e$, with which both are positively correlated. Let $\tilde{f}(u)$ and $\tilde{f}(u)$ denote the density of $u$ for high and low effort, respectively. In the same way, let the density of $v$ be denoted by $\tilde{g}(v)$ and $g(v)$ for high and low effort, respectively.

Intuitively, one could think of $v$ as a quarterly or annual report, including measures of profitability and capital strength, and thus giving the outsiders a hint of the quality of the manager’s effort. In the same way, $u$ could represent forecasts about the economy, such as the stock and property markets or the expected development of consumption and savings. However, neither $u$ or $v$ are by themselves a sufficient statistic for determining effort $e$. For example, the bank might show a strong result $v$, partly

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64 This section closely follows the presentation by Dewatripont and Tirole (1994), although some intuitive interpretations are added and several formal expressions are left out in order to simplify the exposition.
due to successful property investment. Simultaneously with the results hitting the market some well known property analyst raises doubts about the current price level of property and predicts a substantial price drop. Since the bank is known to be a heavy investor in the property market this is a bad signal $u$. Obviously, both signals are needed to estimate the effort made by the manager. Hence, an ideal managerial incentive scheme should include both signals.

After observing the two signals, the outsiders have to decide whether to let the manager continue running the bank independently or to interfere, in which case she is “humiliated” and loses the benefit $B$. Formally, this choice of action is expressed as $A \in \{C, S\}$ where $C$ and $S$ denote Continuing and Stopping, respectively. $S$ does not necessarily imply immediate liquidation, but rather reorganisation, change of strategy or just a reduction in the scope of the bank’s activities. Since action $A$ impacts on the operation of the bank it also determines the distribution of the future profit. Denote the probability and cumulative distribution of $\eta$ conditionally on $u$ by $h_A(\eta|u)$ and $H_A(\eta|u)$, respectively. Thus the distribution of future profits depends on the signal $u$ and on the action chosen. Furthermore it is assumed that a higher signal $u$ makes $C$ more desirable than $S$.

Now let us derive the outsiders’ decision rule. Define the expected profit from continuing instead of stopping, that is the incremental profit of continuing, given $u$, as

$$
\Delta(u) = \int_0^\infty \eta dH_C(\eta|u) - \int_0^\infty \eta dH_S(\eta|u)
$$

which, after integrating by parts, is equal to

$$
\Delta(u) = \int_0^\infty \eta [h_C(\eta|u) - h_S(\eta|u)] d\eta
$$

Thus, it will be optimal to continue only if the incremental profit, as stated in the last expression, is positive. Then define a threshold signal $\hat{u}$ such that

$$
\Delta(\hat{u}) = 0
$$

The interpretation is that if the received $u$ is higher than the threshold value $\hat{u}$, then the expected profit from continuing instead of stopping is positive and the controlling party should choose $C$. For a signal below the threshold, the expected net profit of $C$ is negative and consequently the controlling party should choose $S$. Indeed, this is the first best, ex post efficient decision rule. Unfortunately though, it is
not \textit{ex ante} efficient since the decision is based only on $u$ which is not a sufficient statistic for $e$. Hence, the manager might be tempted to shirk and hope for a favourable $u$.

The way to discipline the manager is to face her with a probability $x(u,v)$ of choosing action $C$ given $(u,v)$. The threat of interference, by choosing $S$ with probability $1-x(u,v)$, provides the manager with an incentive to exert the high effort since this influences the probability through $v$ and $u$. Following Freixas and Rochet (1997), the optimal probability $x^*(u,v)$ is obtained by maximising the expected net profit from continuing under the managerial incentive compatibility constraint,\cite{10} that is

$$\max_{x(u,v)} \iint x(u,v) \Delta(u) \tilde{f}(u) \tilde{g}(v) \, dudv$$

subject to

$$B \iint x(u,v)[\tilde{f}(u) \tilde{g}(v) - \underline{f}(u) \underline{g}(v)] \, dudv \geq K$$

(4)

The constraint ensures that the manager's expected gain from a high effort exceeds the cost of providing it. Setting up the Lagrangean we have

$$L = \iint x(u,v) \Delta(u) \tilde{f}(u) \tilde{g}(v) \, dudv + \mu \left\{ B \iint x(u,v)[\tilde{f}(u) \tilde{g}(v) - \underline{f}(u) \underline{g}(v)] \, dudv - K \right\}$$

(5)

$$= \iint x(u,v) \left\{ \left( \Delta(u) + \mu B \right) \tilde{f}(u) \tilde{g}(v) - \mu B \underline{f}(u) \underline{g}(v) \right\} \, dudv - \mu K$$

Maximising expression (5) with respect to $x(u,v)$ gives

$$\begin{cases} x(u,v) = 1 & \text{if } \Delta(u) + \mu B \geq \frac{\underline{f}(u) \underline{g}(v)}{\tilde{f}(u) \tilde{g}(v)} \\ x(u,v) = 0 & \text{if } \text{otherwise} \end{cases}$$

(6)

Thus, it is optimal to continue if and only if

$$\frac{\tilde{f}(u)}{\underline{f}(u)} \left[ 1 + \frac{\Delta(u)}{\mu B} \right] \geq \frac{\underline{g}(v)}{\tilde{g}(v)}$$

(7)

\cite{10} Dewatripont and Tirole (1994) formulates the problem in an equivalent but slightly different way as "minimising the expected ex post inefficiency while preserving managerial incentives".

33
To make this expression somewhat more interpretable we proceed in two steps. First, define $u^*(v)$ as the function $u$ of $v$ such that condition (7) is satisfied with equality. Second, notice that the left hand side is increasing in $u$ and that the right hand side is decreasing in $v$. The latter fact implies that $u^*(v)$ is a decreasing function. Then the second best, ex ante efficient decision rule is to continue if and only if $u \geq u^*(v)$. Finally, define $\hat{v}$ such that

$$u^*(\hat{v}) = \hat{u} \tag{8}$$

In words, under managerial moral hazard, it is optimal to continue if and only if the observed signals $(u,v)$ are more likely under high than low effort.

**Figure 14. The Optimal Managerial Incentive Scheme**

Figure 14 shows the relationship between both decision rules and the two decision variables. The ex ante efficient rule addresses the moral hazard dilemma by providing the manager with an incentive scheme that includes both signals. The intuition underlying the scheme is to reward the manager by external passivity when performance is good and punish her with external interference when performance is bad. Obviously, this conflicts with the ex post rule where the decision of interference or passivity is solely based on $u$. Below $\hat{v}$ the ex ante rule is excessively interfering and above $\hat{v}$ it is excessively passive. Hence, there is a credibility problem since it is not always optimal to follow the second best rule ex post. Who could credibly implement this ex post inefficient rule?

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66 Since both $f(u|e)$ and $g(v|e)$ are increasing in effort we have necessarily that $\frac{f(u)}{f(u)}$ and $\frac{g(v)}{g(v)}$ are increasing functions. This is the so called the Monotone Likelihood Ratio Property.
4.2.2 IMPLEMENTATION

Above we have derived the second best decision rule. Below we will see how this rule can be implemented. The problem with this rule is that it is based on a non-verifiable signal, which means that it is noncontractible. The main contribution of the Dewatripont-Tirolo model is to show how this rule can be implemented by the outsiders by providing proper incentives through the structure of debt and equity in the bank. This is achieved by using the fact that the payoff of equity is a convex function of the bank’s profit, whereas the payoff function of debt is concave. Hence, shareholders will prefer more risk and depositors less.

Consequently, if we assume that it is more risky to stay passive than to interfere, then control should be allocated to shareholders when \( v \geq \hat{v} \) and to depositors when \( v < \hat{v} \). When first-period performance is good, shareholders stay in control since they tend to be excessively passive vis-à-vis management. If, on the other hand, first-period performance is bad, then control is shifted to the depositors who tend to be excessively interfering. However, depositors are most often uninformed, incompetent and highly dispersed and thus ill suited to be in control of a bank. Indeed, according to Dewatripont and Tirolo this is the essential difference between a bank and an ordinary firm. Hence, the depositors need to be represented by some kind of entity, public or private, which I will call the regulator. Ideally, the regulator should act as the depositors would have acted if they were sophisticated enough and completely coordinated. This way of motivating the need for banking regulation is called the representation hypothesis.

Let us see if this rule of control allocation can be expressed in terms of real-world solvency ratios. At date 1, after observing the two signals the net worth of the bank is given by \( E = v + \bar{\eta} - D \), where \( v \) is the first-period profit, \( \bar{\eta} \) is the book value\(^{67}\) of loans maturing at date 2 and \( D \) is the value of deposits. Since it is assumed that \( v \) is reinvested in a safe asset the required minimum risk-weighted solvency ratio\(^{68}\) is given by

\[
    r_{\text{min}} = \frac{\hat{v} + \bar{\eta} - D}{\bar{\eta}}
\]

(9)

Consequently, to keep the shareholders in control the bank need at least a solvency ratio \( r \) such that

\[
    r = \frac{v + \bar{\eta} - D}{\bar{\eta}} \geq r_{\text{min}} \tag{10}
\]

\(^{67}\) In practice this is based on the historical cost and not on the current estimated market value.
To achieve an exact implementation, the allocation of control must be complemented by an adjustment in the net worth of the bank. Following the authors, let us concentrate on the case of shareholder control. The better the first-period result \( v \) is, the higher is the net worth of the bank. This means that the shareholders’ stake in the bank increases with its first-period performance which implies that they have more to lose from the more risky alternative of continuing. One could think of a successful quarterly report indicating high dividends at the end of the year. In this case, some influential shareholders might want to choose a safer strategy than earlier. But this means that the board will "interfere" and try to persuade managers to change strategy which for the manager is equivalent to losing \( B \), the pleasure of independently running the bank. In contrast, the \( \textit{ex ante} \) rule requires the shareholders to be increasingly passive the better the performance, which in the above example means to leave the manager alone if she delivers a strong quarterly report.

The way to circumvent this dilemma is to gradually adjust the net worth so that the incentives of the shareholders always correspond to the \( \textit{ex ante} \) rule. Thus, the net worth must \textit{fall} with the bank’s performance by letting the dividends grow even faster. This rule is called the \textit{multiplicative rule}.

Analogously, in the region of depositors’ control, net worth must \textit{rise} with the bank’s decline by recapitalising even more. However, the \textit{multiplicative rule} has an unfortunate consequence since at \( v = \hat{v} \), the \( \textit{ex ante} \) rule is indeed also \textit{ex post} efficient (see figure 14). This can only be implemented when the firm is completely owned by either equity or debt since it requires unbiased maximisation of expected profits. Thus, for \( v \) tending to \( \hat{v} \) from below, net worth must tend to minus infinity in order to make equity worthless, and for \( v \) tending to \( \hat{v} \) from above, net worth must tend to \( \eta \), implying that the bank is purely financed by equity.

Inevitably, this creates a discontinuity in the net worth level at the moment when allocation is shifted from one party to another. For example, suppose the first-period performance is very close but not enough to keep the shareholders in control. Then the depositors obtaining control would be required to distribute the maximum possible dividends in order to deteriorate the bank’s net worth as much as possible. If this is not done, the incentives of the depositors will not correspond to the \( \textit{ex ante} \) rule which consequently would not be implemented.

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68 This could be the so called Cooke ratio as stipulated in the Basle Accords, where for example safe investments
4.2.3 Adjusted Voluntary Recapitalisation

To address the problem of discontinuity Dewatripont and Tirole make the simplifying assumption that the regulator always choose $S$ when in control.\(^6\) This is reasonable since if performance has deteriorated to the extent that the shareholders lose their control right, then the regulator is likely to interfere in management and thoroughly reorganise the bank. The simplification also avoids the otherwise rather absurd implication that the regulator, following a shift in control, would start distributing dividends to adjust for its own incentives. Such a policy would hardly be credible.

The idea is to give the shareholders an opportunity to sufficiently recapitalise the bank and thus stay in control even when first-period performance has been bad. The shareholders will be willing to do this if the future prospects, represented by signal $u$, are good enough. Formally, a new threshold $\hat{\nu} > \hat{\nu}$ is defined and if the observed $\nu$ is lower than $\hat{\nu}$, then control is allocated to depositors unless the shareholders are willing to recapitalise the bank by injecting $I(\nu)$. The amount to be injected is set to equalise, when $u = u^*(\nu)$, the value of equity without recapitalisation (with $S$ chosen by depositors) and the net value of equity with recapitalisation (with $C$ chosen by shareholders). This definition induces shareholders to recapitalise only if $u > u^*(\nu)$. Indeed, in this way the shareholders are implementing the ex ante rule over both regions.

5 Analysis

This section starts by discussing some of the difficulties in directly applying the Dewatripont-Tirole model to the Swedish case. Then follows the analysis of the regulators' reactions when facing the three major bank collapses.

5.1 Application

One weak point when applying the model is whether one could plausibly assume that the Swedish regulators were solely acting for the best of the individual bank. Remember that the model assumes that the regulator's objective perfectly corresponds to that of the depositors and that the regulator is only concerned with the particular bank currently in question. Still, a governmental regulator is likely to be tempted to do more than just minimising insurance payments.\(^7\) Indeed, there are several statements by the Swedish regulators which indicate that the main objective of the regulatory actions

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\(^6\) OECD government bonds and ordinary loans have risk-weights zero and one, respectively.
\(^7\) The solution to the discontinuity does not rely on this assumption. See the original paper, Dewatripont and Tirole (1993) for the general case.
was to save the economy from spiralling down into some debt-deflation fuelled depression.\(^7\) If the general economy is the main concern there is a high probability that the regulator will treat the banks with forbearance or even bail them out in order to avoid a banking crisis with possibly harmful effects on the economy. Therefore, if it is the case that the regulator incorporates more objectives than those of common depositors the implementation of the second best rule becomes significantly less credible. Moreover, since the model does not incorporate these broader concerns, it becomes a little bit too harsh in evaluating the performance of the regulators.

Another problem with applying this model to the Swedish case is that it is centred on providing optimal incentive schemes for managers and outsiders, i.e. shareholders and depositors. However, in Sweden there were no explicit rules stating what would happen to management in case of bad performance, that is if a bank did not meet the capital requirement. Formally, the shareholders were obliged to immediately recapitalise the bank, but there were no outspoken threats of intervention in management which is how the model addresses the risk for moral hazard. Assuming that Swedish managers anyway found the prospect of a forced recapitalisation humiliating enough in itself, one could still use the model's implications.

Finally, it is worth noting that the Dewatripont-Tirole model assumes that the capital ratio is a good proxy for the verifiable signal \(v\). However, as was painfully experienced by the Swedish regulators, capital ratios based on historical book values will not be of much help for evaluating the strength of a bank. Furthermore, since capital ratios almost never drop under the stipulated level until the banks are in deep trouble, the model becomes more relevant for crisis management than for crisis prevention. Of course, as suggested by the authors themselves, this could be addressed by complementing signal \(v\) by some sort of early warning system signal. One possible way could be to relate an overall soundness rating to the capital ratio. Indeed, U.S. banks that do not have the highest CAMEL rating are required to hold relatively more tier one capital. In the model one could use two or even more different required capital ratios depending on the overall soundness of the bank. Since the rating in this case would influence the allocation of control it needs to be verifiable – a fact that supports using an average of private ratings rather than the regulator's own, more confidential, early warning system.

\(^7\) See the model of Mailath and Mester (1994) where the regulator is assumed to care about the social value of banks (e.g. monitoring, asset transformation etc.). Among other things, it is shown that this welfare maximising regulator is more likely to act with forbearance than the insurance cost minimising regulator.
5.2 Regulatory Interference

When the crisis broke out in late 1991 it came as a complete surprise to the authorities. There was no predetermined plan of action for how to deal with large, bankrupt banks. A new entity, the Bank Support Authority (BSA), had to be set up. However, this was not fully operational until the spring of 1993 – by that time two banks had already been nationalised and the most critical phase of the crisis was over. Hence, the regulators constituted principally of the Ministry of Finance, assisted by the Riksbank and the FSA.

In this subsection I will use the Dewatripont-Tirole framework to evaluate the actions taken by the State in the three main cases, namely, Första Sparbanken, Nordbanken and Gota Bank. In addition to these direct interventions, the State was engaged in negotiations with both SE-Banken and the Cooperative. These negotiations resulted in the banks undertaking by themselves major reorganisation measures including extensive cost cutting and refocusing on the core business. Table 2 below recalls the timing of the various events.

Table 2. Timing of the Regulatory Actions

<table>
<thead>
<tr>
<th>Year</th>
<th>Event Description</th>
</tr>
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<tbody>
<tr>
<td>1990</td>
<td>The economy stagnates and asset prices stop rising.</td>
</tr>
<tr>
<td></td>
<td><em>Autumn:</em> The finance companies crisis breaks out and loan losses increase substantially for all banks.</td>
</tr>
<tr>
<td></td>
<td><em>December:</em> Nordbanken’s entire board of Directors and top management is replaced.</td>
</tr>
<tr>
<td>1991</td>
<td>The economy deteriorates further and asset prices start plunging.</td>
</tr>
<tr>
<td></td>
<td><em>Spring:</em> The State organises a share issue in order to recapitalise Nordbanken.</td>
</tr>
<tr>
<td></td>
<td><em>Autumn:</em> Första Sparbanken is insolvent but receives a State subsidised loan from its principal owner.</td>
</tr>
<tr>
<td>1992</td>
<td>The economy experiences a second consecutive year with negative growth. At the same time, interest rates sky-rocket as the Riksbank defends the fixed-exchange regime.</td>
</tr>
<tr>
<td></td>
<td><em>Spring:</em> The State bails out the private shareholders and thus nationalises Nordbanken. Första Sparbanken is merged into Swedbank with some assisting State support.</td>
</tr>
<tr>
<td></td>
<td><em>Autumn:</em> The holding company of Gota Bank is declared bankrupt and Gota Bank is nationalised.</td>
</tr>
</tbody>
</table>

There are two important regulatory actions, which fall outside those addressed by the model and therefore are not analysed in this thesis; namely, the issuing of the State guarantee covering the liabilities of all Swedish banks and the Riksbank’s lender of last resort activities during the most acute phase of the currency crisis. In fact, the former action very nicely corresponds to the policy implications of Diamond and Dybvig’s (1983) model of bank liquidity and self-fulfilling bank runs. In this model it is shown how governmental intervention, through a general deposit insurance, can achieve the no-bank-run equilibrium due to the Government’s ability to collect taxes. If the Government can credibly commit to insure all deposits no depositors will run on their banks and thus the Government will never have to make any insurance payments. However, in the Swedish case, it

71 See for example Bäckström (1997), the then Head of the Ministry of Finance.
was not the depositors who scrambled for their money but the foreign banks on the international interbank market.

5.2.1 Första Sparbanken

Första Sparbanken was the first case of regulatory interference. The bank’s net worth was negligible and it needed immediate support. New capital was injected through a 3.8 billion loan from the principal owner Swedbank. Since this loan was a form of subordinated debt it could be seen as a buffer for the depositors. On the one hand, since the loan steeply increased the principal owner’s stake in the bank it could have provided an incentive to take action and start restructuring the bank. On the other hand, the State had guaranteed the loan and thus was taking all the risk which certainly made the mentioned incentive to intervene rather weak. Since the State was indirectly injecting money into the bank it should also have intervened in management.

In terms of the model, the allocation of control was not properly implemented. There was a very bad result signal \( v \) with a substantial part of the losses originating from property loans. Yet, the future prospects, signal \( u \), were not seen as too severe.\(^{72}\) Recalling figure 14, the signals should have been somewhere in area 2, that is, the shareholders should have recapitalised the bank under the threat of a regulatory take-over. Instead the State supported the bank and thus failed to use its control right by acting too passively and trusting the shareholders to take necessary actions. However, the shareholders still held a negative stake and therefore would rather prefer to gamble for resurrection, that is to stay passive. Furthermore, the lack of interference or threats on the part of the State increased the future risk for moral hazard since it sent management the signal that bad performance was not punished.

One might very well question if the reason for the regulatory passivity was only due to lack of information or naive expectations? Just a few months later the bank would show loan losses widely exceeding the value of its equity. Were the regulators really completely unaware of the true state of the bank or were they rather engaging in what Kane\(^{73}\) calls regulatory gambling? There is a possibility that the regulators wanted to avoid the negative attention, with extensive criticism of the authorities’ competence in media, that would inevitably follow upon revealing the true state of the bank. According to this hypothesis, the regulators chose to quickly provide help, in a fairly anonymous form, and then cross their fingers and hope for some positive shock helping the bank to a miraculous recovery.

\(^{72}\) See Ingves and Lind (1998). At the time, the regulators were not expecting other banks to follow the same path as Första Sparbanken which was considered an exceptional case.

\(^{73}\) Cited in Dewatripont and Tirole (1994).
Six months later, the 3.8 billion had been consumed by continuing loan losses and again the bank was in desperate need of new capital. Thus, this time there was no doubt that both signals $u$ and $v$ were much worse than before, and probably lay in area 3, which would imply regulatory take-over since, in this case, shareholders are not expected to be willing to recapitalise. In spite of this, the State repeated its previous mistake by continuing to support the bank, transforming the previous guarantee to a advantageous loan and issuing a new guarantee for another 3.5 billion loan, without claiming control and enforcing reconstruction. However, to the defence of the State it must be noted that, at the time, Första Sparbanken was merging into the new savings banks group Swedbank which was still willing to absorb its largest member. Thus, a new financially strong owner with the ability to absorb future loan losses was engaged. Also, this time the State took collateral for its commitments in the form of shares in Swedbank and thus provided the shareholders with incentives to handle the injected money with care and therefore to start restructuring Första Sparbanken.

5.2.2 NORDBANKEN

The case of Nordbanken is very peculiar since here the State was the controlling shareholder and therefore was supposed to regulate itself.

As we have seen, when Nordbanken first got into trouble the State, as its principal shareholder, organised a new a share issue of 5.2 billion and thereby came to control 77 percent of the stock. Applying the model, there was a very weak result signal $v$ but perhaps a not so bad signal $u$ - regulators contend that no one understood the scale of the imminent problems. Accordingly, the owner recapitalised the bank and stayed in control. In one sense, one can argue that the State acted correctly since it let the owner stay in control given that the bank was recapitalised. Hence, there was a reaction because of bad performance which might have provided some sort of incentives to future managers. Of course, the threat of reallocating control was a bit vague since the State would stay in control in either case, albeit in different shapes.

As in the case above, the unwillingness of the State to take regulatory action and instead act as an owner might just as well be interpreted as regulatory gambling. Indeed, only half a year before the entire board of directors and the old management had been replaced after a disastrous first annual result of the recently merged new Nordbanken. If not as a regulator, so at least as an owner the State seemed to be well aware of the depth of the problems facing the bank.

One year later it was clear that Nordbanken would need substantial support or else go bankrupt, which, in the model, means that both signals were in area 3. Then the model implies that since the shareholders most probably are not willing to recapitalise the regulator should claim control and start
reorganising the bank. Moreover, since the net worth of the bank was obviously negative there was no reason to compensate the shareholders for losing their investment. Yet, instead of using its position as regulator, the State chose to continue playing the role of shareholder. Consequently, to obtain full control it bought the remaining shares at their market value of 2 billion and thus saved the other shareholders.\textsuperscript{74} The principal reason for this choice of strategy was that the State feared that without compensation, the private shareholders might have started a legal process, claiming that the State had withheld information about the health of the bank at the time of the share issue one year earlier.\textsuperscript{75} Then having obtained full control of the bank, the State started acting as a regulator by forcefully divesting and reconstructing what was left. Clearly, the roles had been mixed up.

5.2.3 **GOTA BANK**

From the perspective of the model the case of Gota Bank was quite well handled by the authorities. Ever since the end of 1990, the bank had been showing weak or negative results but, as in the case of the other banks, the regulators did not fully realise the severity of the difficulties or they simply just hoped for a lucky turnaround in the economy. In September 1992, in the midst of the defence of the exchange rate regime, Gota Bank needed a capital injection of at least 1 billion to meet the capital requirements but the principal owner, Trygg Hansa/SPP, was not willing to contribute this amount. Neither was anyone else. Then the State let the holding company Gota go bankrupt, thus allowing the shareholders to lose some 5 billion. Shortly after, the State bought Gota Bank from the bankruptcy estate and started the necessary reconstruction.

Formally, the signals $u$ and $v$ were both very low and, as predicted by the model, the shareholders were unwilling to recapitalise the bank. Consequently, the State seized control and correctly replaced the top management because of bad performance. Since the bank's net worth was negative there was no reason for compensating the shareholders. In contrast to the case of Nordbanken, this time the State let the shareholders incur a heavy loss.

6 **CONCLUSION**

In the introduction to this thesis two questions were posed. First, given the information available at the time, could any preventive actions have been taken before the crisis? Second, given their objectives, did the regulators act optimally according to recent theory during the crisis?

\textsuperscript{74} That the market share value was positive despite the bank’s negative net worth is probably explained by the fact that the market expected a bail-out. Thus the share price did not reflect the fundamental value of the bank.

\textsuperscript{75} See for example Lind (1997).
From a macroeconomic viewpoint we have seen that according to various indicators Sweden was a likely candidate for having a financial crisis. The Swedish economy of the latter part of the 1980s showed several of the symptoms that, historically, have shown to be conducive to financial crises. Perhaps most important, the banks were competing in an environment featuring many, until then, unknown risks related to for example foreign currency lending and property investment. Because of the deregulation the banks could freely engage in these activities. The unexpectedly severe recession of the early 1990s certainly triggered the crisis but was not in itself a cause.

The microeconomic study of the banking industry showed that all the banks were rapidly expanding. In particular, it was evident that those banks which expanded relatively more into new sectors where they had limited previous experience, were the ones which suffered most during the crisis. Still, the main conclusion is that the composition of the individual bank portfolios was fairly homogenous. What really differed was the risk taken and thus the loan losses suffered within the different sectors.

Therefore, I contend that the macroeconomic conditions were necessary, but not sufficient, for the crisis to break out. Unsurprisingly, the sufficient condition concerns the banking industry and the banks’ inadequate risk management. Allow me to further clarify this point. Without the deregulation the banks would not have been able to expand and without the steep slump in growth their risky loan portfolios would not have been revealed to the same extent. The unpredictable shift in monetary policy and the extreme movements in interest rates and asset prices are less necessary but undeniably significantly worsened the outcome. Nevertheless, although all banks suffered abnormally high losses, not all of them needed State support. In a way, the case of Handelsbanken proves the point – a highly risky and new environment does not automatically imply that a bank must go bust. A reasonably skilled banker would have avoided many, though not all, of the mistakes made by the Swedish banks.

Consequently, the regulators could have taken preventive actions before the crisis broke out. Even though they did not have the resources or experience to closely monitor banks, the obvious similarities with the U.S. and Norwegian banking crises should have worried the regulators. At least, the regulators should have made the Government aware of the risks and accordingly have demanded more resources.

Regarding the regulatory actions taken during the crisis, they were of a varying quality according to the Dewatripont-Tirole model. The support to Första Sparbanken was clearly inadequately managed and raises strong suspicions of regulatory gambling. The case of Nordbanken was also incorrectly handled. Here, the State gambled both as a shareholder and as a regulator, inviting private investors to participate in a project with hidden risks while at the same time turning the bank a blind regulatory eye. In addition, the private shareholders were completely bailed out. Of course, in this case the State
was in an exceptionally awkward position and, as already mentioned, legally constrained from acting optimally. Finally, the interference in Gota Bank very closely corresponds to the implications of the model. However, again it must be emphasised that the regulatory objective of the model is much more narrow than the objective of the Swedish State. Thus, the model’s evaluation of the Swedish State as a regulator becomes excessively negative.

Ingves and Lind (1998) argues that the different ways of managing the three cases reflect the fact that the regulators gained experience during the course of crisis and learned how to avoid the early mistakes. This might be partly true. However, one might as well interpret the change in behaviour as the result of decreasing regulatory gambling. In the beginning, the regulators were probably reluctant to acknowledge the severity of the crisis and there was still a slight hope that the recession would pass quickly. In contrast, when facing the collapse of Gota Bank, the worst recession since the 1930s was already a fact and the banking crisis frequently made the newspapers’ headlines. The gambling option was no longer available.
REFERENCES

*Affärsvärlden.* Various issues.


*Veckans Affärer*. Various issues.


### APPENDIX

#### A.1 Profitability, Solvency and Credit Rating for Some Commercial Banks, 1984-1991

<table>
<thead>
<tr>
<th>Bank</th>
<th>Pre-tax Profits on Assets %</th>
<th>Capital/Assets Ratio %</th>
<th>F.T.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE-Banken</td>
<td>1.19 1.26 2.16 1.96 -</td>
<td>1.25 0.64 0.40</td>
<td>5.45 6.20 7.02 7.19 7.26 6.31 5.66 5.51</td>
</tr>
<tr>
<td>Handelsbanken</td>
<td>1.15 1.22 2.16 1.64 -</td>
<td>1.44 1.25 0.52</td>
<td>5.79 5.74 7.15 6.38 6.49 5.96 5.20 4.83</td>
</tr>
<tr>
<td>Nordbanken</td>
<td>0.22 0.29 0.63 1.47 -</td>
<td>1.03 -0.39 -2.51</td>
<td>5.30 5.00 4.99 5.78 5.16 5.18 0.91 2.96</td>
</tr>
<tr>
<td>Gota Bank</td>
<td>1.01 1.41 1.18 1.64 -</td>
<td>2.59 0.75 -2.14</td>
<td>4.75 5.89 5.11 6.55 6.47 7.65 3.27 4.63</td>
</tr>
<tr>
<td>Swedbank</td>
<td>0.08 0.05 0.12 0.42 -</td>
<td>0.35 0.24 0.24</td>
<td>2.26 2.02 2.01 2.16 2.27 2.54 2.00 2.29</td>
</tr>
<tr>
<td>Bankers Trust</td>
<td>0.99 1.08 1.02 0.55 -</td>
<td>-1.50 1.30 1.35</td>
<td>4.93 5.19 5.06 5.32 6.40 3.98 4.16 4.69</td>
</tr>
<tr>
<td>First Chicago</td>
<td>0.16 0.50 0.93 -1.58 -</td>
<td>1.00 0.62 0.34</td>
<td>4.97 5.49 6.07 4.15 4.21 4.58 4.54 4.72</td>
</tr>
<tr>
<td>BNP</td>
<td>0.35 0.41 0.54 0.48 -</td>
<td>0.40 0.21 0.31</td>
<td>1.70 2.02 3.15 3.17 2.83 2.67 3.23 3.71</td>
</tr>
<tr>
<td>Crédit Agricole</td>
<td>0.00 0.36 0.35 0.43 -</td>
<td>0.52 0.46 0.52</td>
<td>4.11 4.33 4.36 4.08 4.35 4.32 4.35 4.77</td>
</tr>
<tr>
<td>Deutche Bank</td>
<td>0.87 1.09 1.10 0.62 -</td>
<td>1.03 0.61 0.77</td>
<td>3.33 3.99 3.93 4.06 3.78 4.18 3.89 3.80</td>
</tr>
<tr>
<td>Commerzbank</td>
<td>0.46 0.51 0.51 0.49 -</td>
<td>0.55 0.48 0.48</td>
<td>2.57 2.81 3.33 3.13 3.09 3.37 3.50 3.70</td>
</tr>
<tr>
<td>Nat West</td>
<td>1.02 1.12 1.30 0.83 -</td>
<td>0.35 0.42 0.11</td>
<td>3.68 4.09 5.54 5.61 6.11 5.23 4.58 4.56</td>
</tr>
<tr>
<td>Midland Bank</td>
<td>0.24 0.59 0.78 -0.99 -</td>
<td>0.99 0.02 0.06</td>
<td>2.74 3.18 3.80 5.34 4.69 4.36 3.94 3.84</td>
</tr>
</tbody>
</table>

Note: Capital refers only to tier one capital. Pre-tax profits on assets for 1988 are missing due to an incomplete library collection. F.T. is the Financial Times average of the grading of 12 different rating agencies where 1.0 is best and 10.0 is worst. Source: The Banker, 1985-1992.

#### A.2 Short Term Lending and Borrowing to Foreign Banks, End of 1990 (Percent)

<table>
<thead>
<tr>
<th>Bank</th>
<th>Lending</th>
<th>Borrowing</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE-Banken</td>
<td>13.4</td>
<td>38.4</td>
</tr>
<tr>
<td>Handelsbanken</td>
<td>8.2</td>
<td>28.6</td>
</tr>
<tr>
<td>Nordbanken</td>
<td>8.8</td>
<td>35.9</td>
</tr>
<tr>
<td>Gota Bank</td>
<td>9.5</td>
<td>28.9</td>
</tr>
</tbody>
</table>

Note: In each case, the shares have been computed for the bank and not the entire group. Source: Respective Annual Reports.
A.3 Distribution of Loan Losses over Different Sectors, 1990-1993 (Percent)

<table>
<thead>
<tr>
<th>Sector</th>
<th>SE-Banken</th>
<th>Handelsbanken</th>
<th>Nordbanken</th>
<th>Gota Bank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Households</td>
<td>6</td>
<td>12</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Finance companies</td>
<td>15</td>
<td>15</td>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td>Financial institutions</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Companies</td>
<td>69</td>
<td>64</td>
<td>71</td>
<td>82</td>
</tr>
<tr>
<td>Property related*</td>
<td>74</td>
<td>76</td>
<td>76</td>
<td>55</td>
</tr>
<tr>
<td>Foreign borrowers</td>
<td>8</td>
<td>7</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sector</th>
<th>Savings banks</th>
<th>Cooperative</th>
<th>Banking industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Households</td>
<td>11</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>Finance companies</td>
<td>7</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Financial institutions</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Companies</td>
<td>67</td>
<td>77</td>
<td>71</td>
</tr>
<tr>
<td>Property related</td>
<td>69</td>
<td>74</td>
<td>71</td>
</tr>
<tr>
<td>Foreign borrowers</td>
<td>7</td>
<td>2</td>
<td>7</td>
</tr>
</tbody>
</table>

*This is only an estimate. Since the share of property related loan losses for 1990-1991 is unknown, the proportion is assumed to be the same as for 1992-1993.

A.4 Loan Losses as Share of Loan Stock, Sector-wise, 1990-1993 (Percent)

<table>
<thead>
<tr>
<th>Sector</th>
<th>SE-Banken</th>
<th>Handelsbanken</th>
<th>Nordbanken</th>
<th>Gota Bank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Households</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Finance companies</td>
<td>34</td>
<td>31</td>
<td>96</td>
<td>31</td>
</tr>
<tr>
<td>Financial institutions</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>54</td>
</tr>
<tr>
<td>Companies</td>
<td>18</td>
<td>14</td>
<td>26</td>
<td>53</td>
</tr>
<tr>
<td>Property related*</td>
<td>93</td>
<td>95</td>
<td>93</td>
<td>66</td>
</tr>
<tr>
<td>Foreign borrowers</td>
<td>7</td>
<td>4</td>
<td>8</td>
<td>30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sector</th>
<th>Savings banks</th>
<th>Cooperative</th>
<th>Banking industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Households</td>
<td>5</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Finance companies</td>
<td>33</td>
<td>23</td>
<td>32</td>
</tr>
<tr>
<td>Financial institutions</td>
<td>5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Companies</td>
<td>26</td>
<td>37</td>
<td>24</td>
</tr>
<tr>
<td>Property related*</td>
<td>88</td>
<td>89</td>
<td>90</td>
</tr>
<tr>
<td>Foreign borrowers</td>
<td>16</td>
<td>18</td>
<td>9</td>
</tr>
</tbody>
</table>

*This is only an estimate. Since the share of property related loan losses for 1990-1991 is unknown, the proportion is assumed to be the same as for 1992-1993.