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THE SWEDISH BANKING CRISIS: ROOTS AND CONSEQUENCES

PETER ENGLUND
Stockholm School of Economics[1]

The article analyses the Swedish banking crisis in the early 1990s. Newly deregulated credit markets after 1985 stimulated a competitive process between financial institutions where expansion was given priority. Combined with an expansive macro policy, this contributed to an asset price boom. The subsequent crisis resulted from a highly leveraged private sector being simultaneously hit by three major exogenous events: a shift in monetary policy with an increase in pre-tax interest rates, a tax reform that increased after tax interest rates, and the ERM crisis. Combined with some overinvestment in commercial property, high real interest rates contributed to breaking the boom in real estate prices and triggering a downward price spiral resulting in bankruptcies and massive credit losses. The government rescued the banking system by issuing a general guarantee of bank obligations. The total direct cost to the taxpayer of the salvage has been estimated at around 2 per cent of GDP.

I. INTRODUCTION

More than one hundred countries are reported to have had some form of banking crisis during the past quarter century. Some have been isolated events, such as the failure of the Herstatt Bank in Germany or Barings Bank in UK. Others have been integral parts—both cause and effect—of more general macroeconomic crises. A recent paper by Demirgüç-Kunt and Detragiache (1998) identifies 30 major banking crises from the early 1980s and onwards. Most of these are in developing countries, the main exceptions being three of the Nordic countries (Norway, Finland, and Sweden) in the late 1980s and early 1990s.[2] The majority of these crises appear to have followed a common pattern. They have (i) been initiated by deregulatory measures, which have (ii) led to overly rapid credit expansion. This has in turn been followed by (iii) a sustained increase in asset prices, apparently unwarranted by fundamentals (a 'bubble'). At some point (iv) the bubble has burst, with a dramatic fall in prices and

[1] I am indebted to participants at the Financial Instability Conference in Oxford, July 1999, for comments. In particular, I wish to thank Rainer Kiefer, Colin Mayer, and Clara Raposo.

[2] See Steigum (1992) and Vihriälä (1997) on the Norwegian and Finnish cases.

disruption of asset markets (in particular for real estate) and widespread bankruptcies. This has been accompanied by (v) non-performing loans, credit losses, and an acute banking crisis, in many cases intertwined with (vi) a currency crisis. Finally, (vii), a weakened banking sector has inflicted a credit crunch on the private sector, the severity of which has depended on (viii) the government measures taken to salvage the ailing banks.

Understanding similarities and differences across countries experiencing banking crises is important, both from a theoretical perspective and in guiding economic policy. Demirgüç-Kunt and Detragiache (1998) find that macro factors such as slow GDP growth, high inflation, high real interest rates, and adverse terms-of-trade changes are positively correlated with the occurrence of banking crises. They also find that a crisis is more likely to occur in an unregulated environment. Interestingly, however, the occurrence of a crisis is not correlated with the *change* from a regulated to an unregulated environment.[3] This suggests that a balanced macroeconomic development has become more important in securing a stable financial system once the credit markets are deregulated.

The purpose of this paper is to survey the Swedish banking crisis against this general background. Since the Swedish crisis appears to have all eight elements outlined above, this offers a natural chronological organization of the paper. We focus on the following set of questions.

(i) To what extent did the deregulation contribute to inflated asset prices and a general macroeconomic situation which prompted the banking crisis?
(ii) What was the role of new shocks in breaking the asset price bubble and initiating the crisis? Did the bubble burst 'by itself' or did it take exogenous shocks?
(iii) What was the relation between the banking crisis and the currency crisis? Would having let the currency float at an early stage have altered the course of the crisis?
(iv) What could the government have done to prevent the crisis? What was the role of the safety net once the crisis occurred? How did government actions succeed in dampening the macroeconomic consequences of the crisis?

II. THE SWEDISH ECONOMIC ENVIRONMENT

By the mid-1980s Sweden had experienced at least a decade of higher inflation rates than many other countries (see Figure 1). This resulted in an ongoing real appreciation of the exchange rate, interrupted by occasional devaluations, six times after 1973. The most recent had been in 1982 by as much as 16 per cent, and had given Sweden a temporarily undervalued currency. But the real appreciation continued, by 8 per cent only between 1982 and 1985.[4] Naturally, this fostered renewed devaluation expectations that were reflected in high interest rates. During the second half of the century the Swedish (1 year) interest rate was consistently 1–2.5 per cent above the international average. In periods of currency speculation, as in 1985, the difference rose to as much as 5–6 per cent.

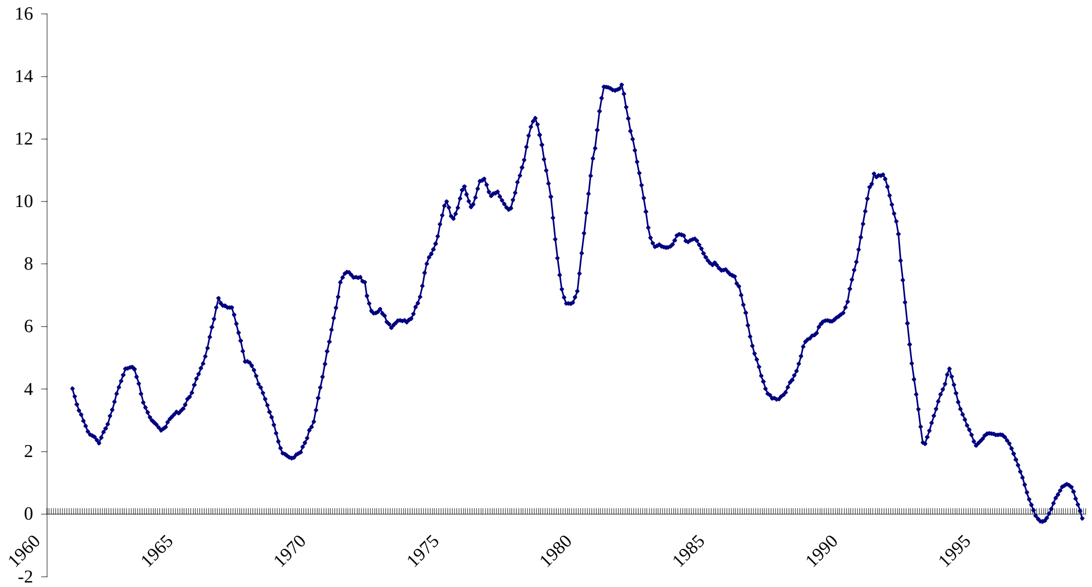
The credibility of the exchange rate was also affected by weak government finances, with the deficit for the consolidated public sector growing to around 7 per cent of GDP in 1982. The deficit was then gradually brought down and even turned to small surpluses in the boom years 1987–90. But as subsequent developments made clear, it was far from being a balanced budget over a whole business cycle.

High inflation interacted with a nominal tax system with full deductibility of interest payments into making real after-tax interest rates low or even negative. Figure 2 depicts the development of the *ex-post* real 5-year interest rate. It is based on a simplified view of the tax system, where the marginal tax rate is set constant at 50 per cent until 1991, when it was lowered by a tax reform to 30 per cent. This disregards the progressivity of the tax system be-

[3] More specifically, they test model specifications with a deregulation dummy equal to one for all years following deregulation against specifications with a deregulation dummy equal to one only for 3, 4, 5, or 6 years after deregulation. They reject the latter specifications in favour of the former.

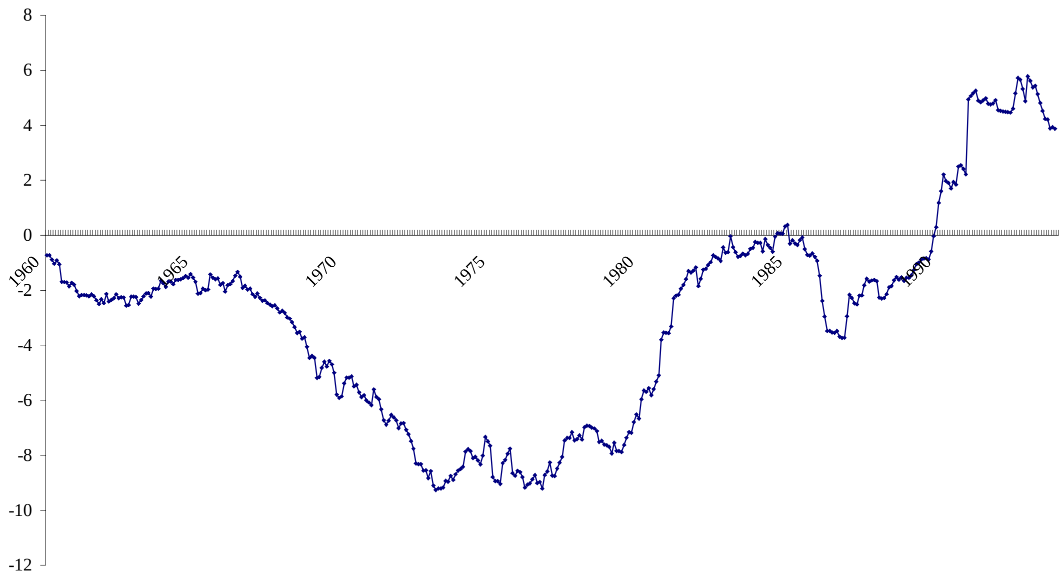
[4] The TCW-weighted effective real exchange rate; see Sveriges Riksbank, *Inflation Report* (1998:3, diagram R7).

Figure 1
CPI Inflation
(12-month average)



Source: Statistics Sweden.

Figure 2
***Ex-post* 5-year Real After-tax Interest Rate**



Source: Sveriges Riksbank.
Note: The graph shows $r_t^5(1-\tau_t)-\pi_{t,t+5}$, where r_t^5 is the 5-year interest rate at t, τ_t is 0.5 until 1990 and 0.3 thereafter, and $\pi_{t,t+5}$ is the average yearly rate of inflation between t and $t+5$.

fore 1991, when the marginal tax on interest deductions was dependent on personal income. It also disregards variations over time, with a gradual increase in marginal tax rates during the 1970s and a decrease between 1982 and 1985 as a result of a tax reform. We see that the real interest rates were strongly negative all through the 1970s, that they came close to zero after 1980 to become negative again after 1985. It is only in connection with the crisis of the early 1990s that Swedish households met positive costs of borrowed funds for the first time in three decades.

It is natural to ask how an economy could operate with negative borrowing costs for such a long time. Part of the answer no doubt lies in the prevailing credit market regulations, regulations that were soon to be lifted.

III. DEREGULATION 1983–5

Swedish banks, and the Swedish credit markets in general, remained heavily regulated long after the Second World War; see, for example, Hodgman (1976) for a contemporary international comparison, and Englund (1990) for an account of the deregulation process. Banks, insurance companies, and other institutions were subjected to *lending ceilings*, and *placement requirements* (*liquidity ratios*) required them to invest in bonds issued by the government and by mortgage institutions. Large budget deficits and an ambitious programme for residential investment led to a situation where banks were required to hold more than 50 per cent of their assets in such bonds, typically with long maturities and with interest rates being fixed for 5 years at below market levels. Combining this with a ceiling on lending, banks were, in effect, transformed into repositories for illiquid bonds, crippled in fulfilling their key function in screening and monitoring loans for consumption and investment. True, the lending ceiling applied primarily to lending for 'low priority' purposes, in practice household consumption, but the liquidity ratios also put a constraint on lending in general. Furthermore, *interest regulation* put a cap on lending rates, but not directly on deposit rates. This limited the ability of the banks to capture scarcity rents created by the lending ceilings. Apart from the formal regulations, bank actions were continuously scrutinized. The Riksbank's views on proper bank behaviour were communicated in weekly meetings between the Governor and representatives of the major banks. This was not an environment where banks aggressively expanded lending of any sort, subject to formal limitations or not. Nor was it an environment where good risk analysis was very important. This made banks ill prepared for the environment that they would enter a few years later.

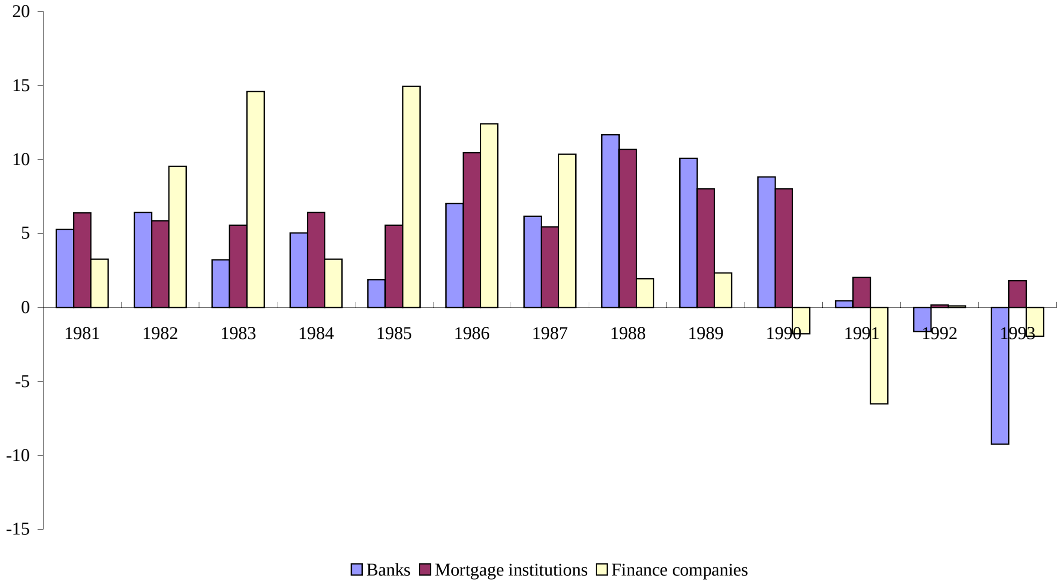
This being said, it is important to point out that Swedish households, despite the regulations, were more indebted than households in many other countries (see, for example, Jappelli and Pagano (1989) for an international comparison). In 1980 household sector debt amounted to 67 per cent of disposable income (33 per cent of household sector gross assets).[5] An indication of the overall impact of credit constraints on household consumption patterns can be gained from Euler-equation studies (Jappelli and Pagano, 1989; Campbell and Mankiw, 1991; Agell and Berg, 1996), typically suggesting that Swedish households on aggregate were among the *least* credit-constrained within the OECD group of countries. The relative unimportance of credit constraints is partly due to government-sponsored systems of housing finance and loans for university studies, which entitled students and buyers of newly constructed homes to favourable loans with little or no credit evaluation.[6] Furthermore, it should come as no surprise that banks had found ways of circumventing the regulations. One was to act as broker between lender and borrower, an activity that was difficult to regulate. On the housing market direct loans from seller to buyer were common.

In the early 1980s the stage was set for deregulation. Although advocated by economists for a long time, it had been stubbornly resisted by the Riksbank and by politicians. When it took place it happened with a swiftness that surprised most observers. An early step was the abolition of the liquidity ratios for banks in 1983. Interest ceilings were lifted in the spring of 1985, and finally the lending ceilings for banks and the placement requirements for insurance companies went away in November 1985. The main driving force behind the deregulation was

[5] See the appendix to Agell and Berg (1996)

[6] See Berger *et al*. (1999) for an analysis of the housing finance system.

Figure 3
Lending from Banks, Mortgage Institutions, and Finance Companies (percentage changes)



Source: Wallander (1994) table A1.

probably the rapid development of financial markets, e.g. the growth of an active money market in certificates of deposit and Treasury Bills in the early 1980s, a development that was stimulated by the mounting budget deficits that was financed in the domestic market. The new environment of active financial markets contributed to make the regulations increasingly inefficient. This was acknowledged in the official statement from the Riksbank announcing the deregulation, where it was argued that 'the aim of restricting credit expansion is not attained, whereas permanent usage of regulations has a destructive effect on the structure of credit markets'.[7] Deregulation was still not complete, since international transactions remained partly regulated. In particular, Swedish residents' portfolio investments in foreign currency and foreigners' investments in domestic securities were restricted, until the currency regulations were finally abolished in 1989.

The Riksbank realized that the deregulation would stimulate bank lending and increase competition on the credit markets. To counter this effect, non-interest-bearing cash reserve requirements for banks were increased from 1 to 3 per cent. But in no other ways did monetary or fiscal policy change as a result of the deregulation. Banks, mortgage institutions, finance companies, and others now entered a new environment where they were free to compete on the domestic credit market.

IV. CREDIT EXPANSION, 1986–90

The impact of the deregulation was immediately apparent. The rate of increase of new lending from financial institutions, which varied between 11 and 17 per cent per year during the first half of the 1980s, jumped to 20 per cent in 1986. Over the 5-year period, 1986–90, lending increased by 136 per cent (73 per cent in real terms).[8] Deregulation also opened up new opportunities for competition over market shares. The institutions most directly hit by regulations now expanded most rapidly, banks by 174 per cent and mortgage institutions by 167 per cent between 1986 and 1990 (see Figure 3). Finance companies and insurance companies, on the other

[7] *Kredit- och valutaöversikt*, Sveriges Riksbank (1985:4, p. 15, my translation).

[8] These numbers do not include brokered loans. Part of the increase was simply that (unknown amounts of) previously brokered loans now were transformed into bank loans.

hand, which had largely thrived as a result of regulatory arbitrage, lost market shares at a rapid pace. Most of the finance companies had originally expanded from activities such as leasing, factoring, and credit cards into direct lending, reflecting that regulation gave them more degrees of freedom than banks had. Now that banks entered into the markets previously in the domain of the finance companies, these were pushed into higher-risk markets. Not being able to receive deposits nor to issue bonds, finance companies were financed partly by direct borrowing in banks and partly by issuing *marknadsbevis* (company investment certificates). New issues of *marknadsbevis* were typically guaranteed by banks. As a result, banks became indirectly exposed to extra credit risk.

Applying hindsight to the crisis that followed, it is obvious that all actors took higher risks than before. To what extent this extra risk-taking was understood as a conscious decision at the time, and seen as an instrument for competition over market shares, is an open question. To many of the actors (e.g. Första Sparbanken—see Pettersson, 1993) it simply seemed very profitable with positive interest flows coming immediately and credit risks manifesting themselves only later. A measure of risk-taking is the maximum loan-to-value (LTV) ratio for mortgage loans to owner-occupied housing. This LTV ratio was held constant at 75 per cent for 3 years after deregulation, indicating no extra risk-taking at this stage.[9] This sluggishness can probably be explained by the pent-up credit demand in 1985, which gave little reason for banks to compete aggressively over new lending, when administrative and other factors restricted a faster expansion. In 1988 the LTV ratio was increased to 90 per cent. In early 1991, when the crisis was under way, it was again reduced to 75 per cent and further lowered for apartments in cooperative associations to 60 per cent in 1992.

Sweden's macroeconomic weaknesses continued to show up in domestic interest rates being continuously higher than international rates. This tendency was aggravated by the government's policy of not borrowing abroad to finance budget deficits, which meant that domestic interest rates must be maintained at a level high enough to make private borrowing in foreign currency attractive. Foreign borrowing was mostly intermediated by the banking system. Lending in foreign currency increased from 27 per cent of total bank lending in 1985 to 47.5 per cent in 1990 (Wallander, 1994, Tables A1 and A3). It is not known how much of this was hedged by forward contracts,[10] but clearly the private sector took on considerable exchange-rate risk.

Where did the increased lending go? Seen over the 5-year period 1986–90, lending to corporations increased considerably faster than lending to households—by 129 per cent as against 86 per cent.[11] The time profiles are quite different, however. Household borrowing jumped immediately after deregulation, whereas the corporate sector only responded with a 2–3-year lag. For households, the ratio of debt to assets increased from 35.8 per cent in December 1985 to 38 per cent in December 1988.

Increased *household borrowing* was accompanied by a rapid increase in consumption, by more than 4 per cent per annum in 1986 and 1987. It would be tempting to infer a causal relation, but available studies offer little support. A study by Ekman (1997) estimates consumption as a function of non-human wealth and permanent income on data from repeated cross-sections of household balance sheets over the period 1981–93. If previous regulations had been important, one would expect to see the marginal propensities to consume out of permanent income, and perhaps also out of non-human wealth, increase after 1985. Interestingly, no such patterns appear. On the contrary Ekman's consumption equation—which is estimated on micro data unrelated to the national accounts—is quite successful in tracking the increase in consumption observed in macro data without any shift around 1985. In his equation the observed consumption increase is instead explained by rapid growth of disposable income resulting from an expansionary fiscal policy.

[9] The numbers are from one of the leading mortgage institutions (SPINTAB), but should be representative for the market as a whole.

[10] Dennis (1998, p. 307) reports calculations made by the Riksbank indicating that around 20 per cent was hedged in 1992.

[11] These numbers are based on the Financial Accounts of Statistics Sweden. They add up to a lower rate of growth than according to the banking statistics presented earlier. The time pattern, with a pronounced acceleration after 1985, is the same, however. Part of the explanation for the differences is that real estate holding companies are not included in the Financial Accounts figures.

This is consistent with the findings of Agell and Berg (1996) on aggregate data for non-durables consumption. They estimate Euler equations augmented by an income term (the coefficient of which indicates credit constraints) recursively for data starting in 1950. The coefficient of the income term is around 0.3, a typical number for countries with well-developed financial markets. It is very stable as the estimation window is rolled forward to include years after 1985, giving no indication of relaxed credit constraints. On the other hand, it shows some tendency to increase after 1990, i.e. indicating more rationing when the banking crisis was under way. Agell and Berg instead ascribe the consumption boom to the rapid increase in disposable income resulting from an expansionary fiscal policy. Summing up, the available evidence suggests that the deregulation had a sizeable impact on household borrowing, but that this did not have much of an effect on consumption. It should be borne in mind, though, that these results are contingent on the development of wealth (at least in Ekman's study) and a full evaluation has to await the discussion of asset prices in the next section.

Lending to the *corporate sector* grew slowly in 1986 and 1987, which is consistent with stagnant investments during these years, whereas it exploded in 1988–90. Measured over the whole 5-year period the ratio of debt to gross assets in the corporate sector increased only moderately, from 65.5 to 68.2 per cent according to the Financial Accounts. One could hypothesize that deregulation should have had most of its impact on smaller firms, but there is nothing in the data to support that. On the contrary, the debt-to-asset ratio of firms with less than 20 employees *fell* from 74.6 per cent in 1985 to 72.3 per cent in 1990. Hansen and Lindberg (1997) have attempted to estimate the effects of the deregulation on corporate investment using an unbalanced panel of firms in the manufacturing industry which had been in existence for at least six consecutive years between 1979 and 1994. They capture borrowing restrictions by treating the marginal cost of capital as an increasing function of indebtedness. This effect is significant, but quantitatively small, in their estimated Euler equations, but there is no sign of any change after 1985.

Summing up, the evidence suggests that, although the 1983–5 deregulation certainly contributed to rapid credit expansion, it was not a very dramatic event. The *immediate impact* on consumption and investment appears to have been limited. Expressed differently, the rationing effects of the abolished regulations do not seem to have been quantitatively important for the real decisions of households and corporations. On the other hand, there is no doubt that financial flows were affected in an important way. Credits were increasingly channelled via financial institutions, such as banks and mortgage institutions, rather than directly between firms (e.g. trade credits) and between households (e.g. seller financed housing loans). Loans were also increasingly used for high-leverage financial investments. These effects on financial flows may, via their impact on asset prices, have had important effects on the banking crisis.

V. THE IMPACT ON ASSET MARKETS

While there may not have been a lot of suppressed consumption in the early 1980s, credit regulations certainly limited portfolio choices. For one thing, they put limits on otherwise profitable tax-arbitrage transactions. Swedish capital taxation was still strongly asymmetric, with interest payments fully deductible and various forms of capital income taxed at much lower effective rates. This gave opportunities for various forms of tax-motivated transactions. Some were very simple operations, such as borrowing and investing in tax-exempt vehicles, often supplied by the government, such as lottery bonds and savings in special mutual funds (*allemansfonder* ('everyman's funds')). Others involved much more sophisticated schemes, e.g. the type of leasing arrangement analysed by Angelin and Jennergren (1998).

Tax arbitrage, facilitated by the deregulation, probably played a role in the boom in the stock market. From Figure 4 we see that the stock index (*Affärsvärldens generalindex)* increased rapidly after deregulation, by 118 per cent between 1985 and 1988. During the same period, household financial assets grew from 82 to 102 per cent of GDP.

Figure 4
Stockholm Stock Exchange Indices, Monthly Averages 1982:1–1999:9

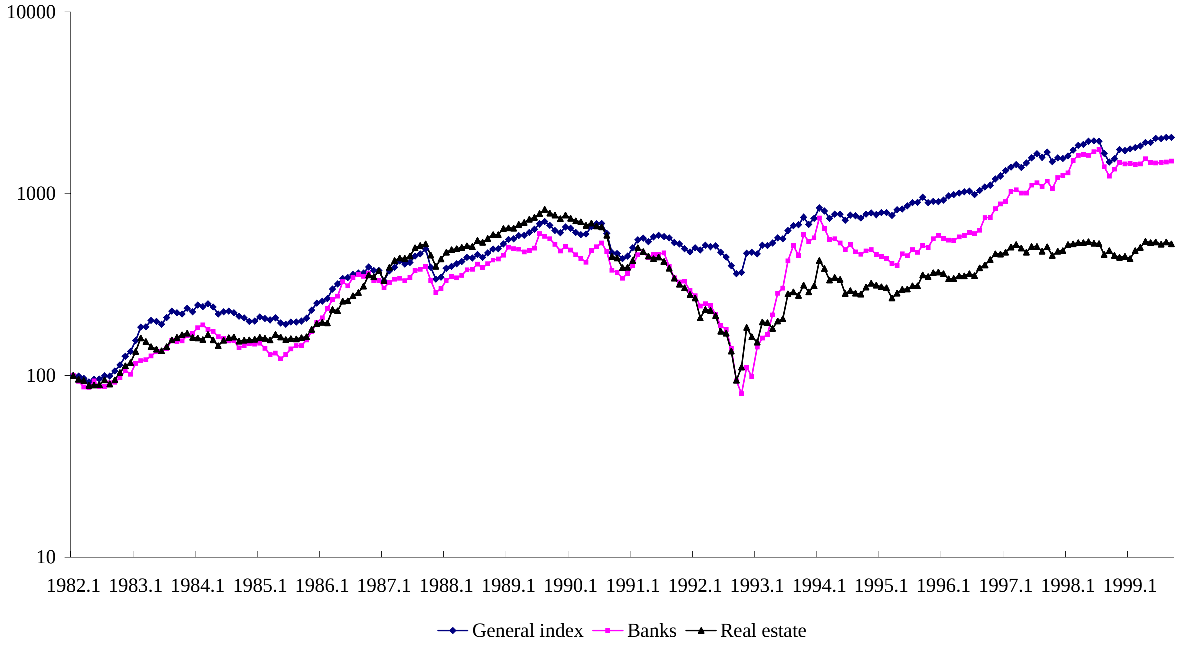
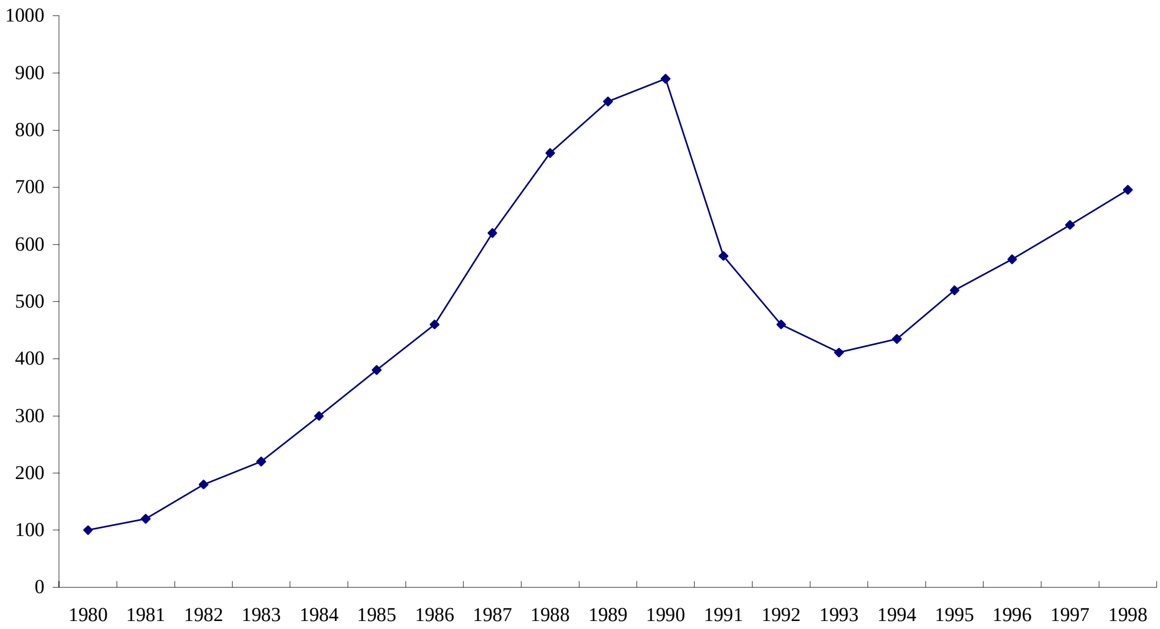


Figure 5
Price Index for Prime Location Stockholm Non-residential Real Estate



Source: Jaffee (1994, Figure 5.4) and Catella Property Management.

However, these numbers seem more like a slight acceleration of a longer-run trend. In the three preceding years, 1982–5, the stock price index rose by nearly as much (97 per cent) and the financial assets share increased from 76 to 82 per cent.

The main reason for the claim that the deregulation initiated a price bubble comes from the market for commercial real estate. Figure 5 paints a dramatic picture, indicating that the rate of price increase for prime location commercial properties in Stockholm was much higher than elsewhere in Europe. Note, however, that prices rose much faster prior to deregulation than after it. The increase was 275 per cent between 1980 and 1985 compared with 140 per cent between 1985 and 1990. The latter number differs only slightly from the European average of 135 per cent during the same period. The price increase after 1980, which is in stark contrast to the stagnant prices for owner-occupied one-family houses during the same period, can partly be accounted for by increasing rents (+150 per cent between 1980 and 1985),[12] largely a lagging effect of the deregulation of commercial rents in 1972. Partly, it can also be seen as an adjustment to inflation; several years of two-digit inflation rates started to colour capital-gains expectations and creep into the pricing of properties.

The question is to what extent the continued explosion of real estate prices after 1985 reflects fundamentals. Identifying fundamentals with rents, and assuming real estate assets to be valued as perpetuities we can focus on the development of the yield, defined as the ratio of rents (net of depreciation and operating costs) to asset values. The yield fell from 10 per cent in 1980 to 7 per cent in 1985 and to 4 per cent in 1990.[13] Assuming a market in long-run equilibrium with constant growth (and no bubbles), the yield would equal the discount rate minus the growth rate of rents. This implies that the dramatic decrease in yield could in principle be ascribed to changes in any of four factors: the after-tax real risk-free interest rate, the risk premium, the expected rent growth, or borrowing restrictions. Comparing 1980 with 1990 it is difficult to see that the first three of these factors could account for a decrease in yield by six percentage points. The *ex-post* real interest rate was about the same in 1980 as in 1990; it increased during the first half of the decade and decreased thereafter. Real estate investments were hardly riskier in 1980 than in later years. Accelerating income growth after 1985, in particular in the Stockholm region, could presumably account for some increase in expected long-term rent growth, but nowhere close to the yield change. In conclusion, then, it seems that the yield levels should be seen as disequilibrium phenomena at both ends of the decade, the high 1980 level probably partly explained by borrowing restrictions, whereas the low 1990 yields appear to contain an element of bubble made possible in an unregulated environment.

The price development for owner-occupied one-family houses shows a much clearer break in the mid-1980s, when 5 years of stagnant nominal prices (40 per cent fall in real terms) turned into an increase by 99 per cent from 1985 to the peak in 1991.[14] Here the data are much better, and we can rely on econometric evidence. Hort (1998) estimates an error-correction model on a panel of house-price indices for the 20 largest metropolitan regions. She finds the long-run trend to be well explained by three fundamental variables: real income, real after-tax interest, and building costs. She also finds a strong positive autocorrelation in price changes, with a tendency to price overshooting following disturbances to fundamentals. The price boom is well captured by the model, which shows no sign of structural changes after 1985. On the other hand, it does have difficulties tracing the bust after 1990. A possible interpretation is that the increased indebtedness that was built up during the late 1980s made housing demand more sensitive than before to disturbances, thereby aggravating the downturn in the 1990s.[15]

Summing up, it is difficult to explain 1990 prices of real estate, and perhaps also of other assets, purely in terms of fundamentals. There are two rival explanations for the price boom. One is that it

[12] Based on an index from Ljungqvist Fastighetsvärderingar, according to Jaffee (1994).

[13] To fix the *level* of yields I have used data from Catella Property Management on yields in 1990.

[14] According to the price index for one-family houses of Statistics Sweden.

[15] This is consistent with US evidence on the relation between indebtedness and house price volatility reported in Lamont and Stein (1999).

reflects excessive volatility (‘bubbles’) induced by a recently deregulated credit market allowing high-leverage investments. Alternatively, it may be regarded as the result of several major shocks to fundamentals—high inflation, expansionary macro policy, and low post-tax real interest rates—propagated by the ‘normal’ market-price dynamics. My interpretation, based on the studies quoted above, is that the deregulation did not play a decisive role in triggering the price boom. However, once the price boom was under way it was amplified by the new borrowing opportunities and by lax risk analysis in financial institutions. Both inexperience in a new environment and competition among credit institutions unleashed by deregulation played important roles in this process. The crisis that was to follow could be seen as the logical next step of the credit and asset price cycle initiated in the second half of the 1980s, but it was also affected by new shocks that occurred at the turn of the decade.

VI. THE CRISIS

At least until the autumn of 1989 there were no signs of an impending financial crisis. There was a strong recognition that the economy was overheated. The open unemployment rate reached an all-time low of 1.4 per cent in 1989, and prices continued to rise faster in Sweden than in other countries. The real exchange rate had appreciated by 15 per cent since the devaluation in 1982. Yet there was little parliamentary support for a restrictive fiscal policy, and monetary policy was tied up by a fixed exchange rate lacking credibility to an increasing extent. But apart from occasional episodes of higher interest rates to defend the exchange rate, there was nothing on financial markets that signalled a crisis. The stock market continued to boom and reached a peak in August 1989, 42 per cent above the level at the beginning of the year. The sub-indices, both for banks and real estate holding companies, followed a parallel development.

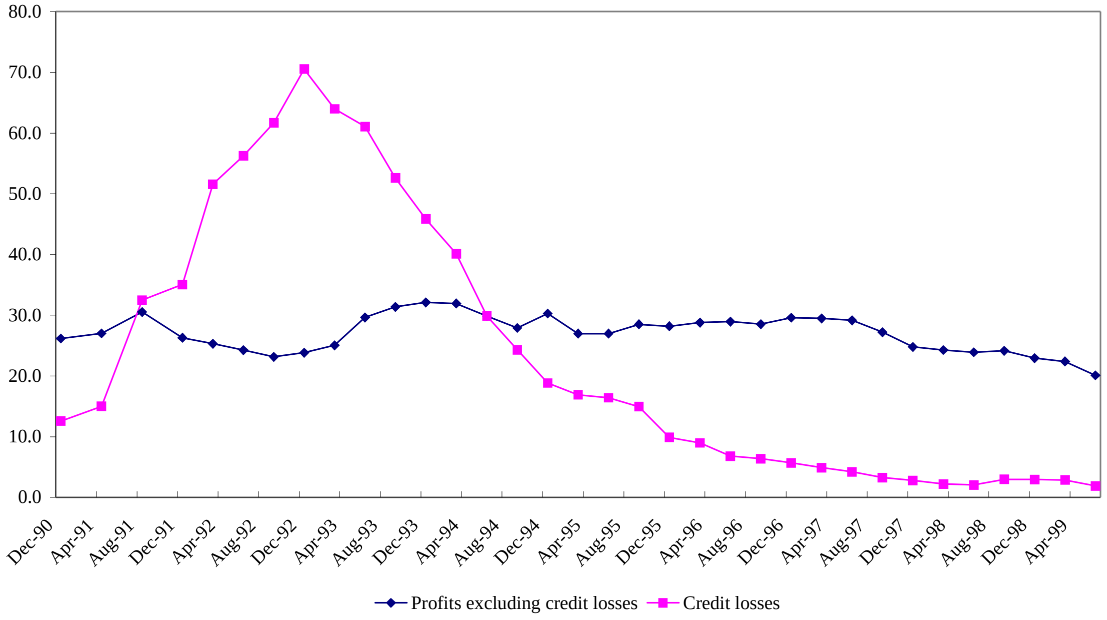
As a result of the price boom, investment in real estate (other than housing) had nearly doubled; the average for 1988–90 was 88 per cent above the average for 1983–5. During the autumn of 1989 one saw the first indications that the commercial property market had reached its peak, and there were reports of difficulties in finding tenants at current rent levels. The stock market reacted rapidly and from its peak on 16 August 1989, the construction and real estate stock price index fell by 25 per cent in a year, compared with 11 per cent for the general index. By the end of 1990 the real estate index had fallen by 52 per cent (against 37 per cent for the general index) from the peak level. Now one also started to see some indications of potential credit losses among the finance companies, but nothing signalled expectations of a widespread financial crisis. Prices of banking stocks fell only slightly more than stock prices in general, a decrease by 41 per cent from the peak to the end of 1990.

Simultaneously, the Swedish economy was subjected to sharply increasing interest rates. We can see from Figure 2 that the real after-tax interest rate jumped from –1 per cent in 1989 to + 5 per cent in 1991. This is the result of at least three different impulses. First, international interest rates increased, following the German reunification. Second, domestic macro policies finally changed. In February 1990 the Finance Minister resigned over lack of support within the government for a more restrictive fiscal policy. This prompted the Riksbank to raise the interest rate, and gradually it became clear that macroeconomic priorities were changing to focus more on inflation than before. Third, the marginal tax on capital income and interest deductions was reduced from 50 per cent for most taxpayers to a flat 30 per cent as part of a major tax reform becoming effective in 1991.[16]

In September 1990 one of the finance companies Nyckeln (‘the Key’), with heavy exposure to real estate, found itself unable to roll over maturing *marknadsbevis.* This was a sort of ‘run’; rather than actively running to the bank and withdrawing deposits, previous holders of *marknadsbevis,* otherwise routinely reinvesting, now refused renewed funding, in order to secure their investment in the face of an imminent bankruptcy. The crisis spread to the whole market for *marknadsbevis,* which dried up in a couple of days. Surviving finance companies had to resort to bank loans. The crisis also spread to other parts of the money market with sharply increasing margins between Treasury Bills

[16] See Agell *et al*. (1998) for an analysis of the tax reform.

Figure 6
Bank Profits and Credit Losses, 1990–9
(billion SEK, 12-month moving average)



and certificates of deposit. In the next few months a number of other finance companies also went into bankruptcy.[17]

Banks were competitors to the finance companies. But they were also doing business with them—lending that had been profitable in the short term, but that now proved to be high risk. In December 1990 lending to finance companies accounted for 5 per cent of all bank lending compared with 1 per cent in December 1983. Owing to the close competition between banks and finance companies for the same customers, banks had very incomplete information about the credit portfolios of the finance companies. Later, the banks would, in many cases, find borrowers that they themselves had earlier turned down for loans now showing up in their books as credit losses in the portfolios of bankrupted finance companies.

The crisis now spread rapidly to the banks. By the end of 1990 reported credit losses had increased to around 1 per cent of lending, two to three times as much as during earlier years. But, as is seen in Figure 6, this was just the beginning. By the end of 1991 losses were running at 3.5 per cent of lending and at the peak of the crisis in the final quarter of 1992 at 7.5 per cent of lending, about twice the operating profits of the banking sector. Over the period 1990–3, accumulated losses came to a total of nearly 17 per cent of lending.[18]

The crisis coincided with a sharp downturn of the real estate market, with prices in downtown Stockholm falling by 35 per cent in 1991 and by another 15 per cent next year. These are particularly uncertain estimates as the market dried up with very few transactions, making the empirical ground for the appraised values thinner than usual. Lending 'related to real estate'[19] accounted for between 40 and 50 per cent of all losses, but only 10–15 per cent of all lending. Table 1 summarizes the experience of the six major bank groups. It indicates a positive

[17] This crisis bears some similarities to the crisis for the British 'secondary banks' in 1973. Like the finance companies, they had thrived owing to regulation and were put under competitive pressure when the operations of banks were deregulated (see Davis, 1992, pp. 152–3).

[18] These numbers include reservations for future losses for loans that were still performing.

[19] See Wallander (1994, Tables 4 and 5). The concept was defined by the Finance Supervision Board and includes loans to the real estate and construction industries, but also some other loans against real estate collateral.

Table 1
The Experience of Major Banks During the Banking Crisis

	Total lending in 1985 (billion SEK)	Losses in % of lending	Increase in lending, 1985–8 (%)	Real estate lending 1990 (%)	Development
SE-banken	65.6	11.7	76	12	New capital from owners in 1993
Handelsbanken	73.1	9.5	38	9	Survived, met capital requirements without new capital
Nordbanken	84.2	21.4	78	12	New capital from owner (state). Non-performing loans separated in Securum
Gota	29.8	37.3	102	16	Bankrupt. Bought by the state, merged with Nordbanken. Non-performing loans into Securum
Sparbanken Sverige	78.3	17.6	88	14	One billion SEK loan from government, new capital from owners.
Föreningsbanken	23.1	16.6	67	10	Received 'capital requirement guarantee', that was never used
Total		16.8	77	12	

Source: Wallander (1994).

correlation between credit losses and expansion in previous years, and a positive correlation between credit losses and the fraction of lending going into real estate. Handelsbanken, the only major bank to go through the crisis without need for government support,[20] had the lowest rate of expansion and the lowest fraction of real-estate loans, whereas Gota, with by far the largest losses, is on the other end of the scale.

The first signs that the losses caused solvency problems among the banks came in the autumn of 1991, when it became clear that two of the six major banks, Första Sparbanken and Nordbanken, needed new capital to fulfil their capital requirements. Being the major owner, the state injected new equity into Nordbanken. It also issued a guarantee to the owners of Första Sparbanken—a foundation—for a loan that enabled the bank to fulfil its capital requirement. Problems returned for these two banks during the spring of 1992, leading the government to issue a new guarantee to Första Sparbanken. The earlier guarantee was transformed into a subsidized loan at a cost of 1.3 billion SEK. During the spring, problems also surfaced in Gota Bank, the bank that in the end turned out to have made the largest losses. In April the bank's private owners put up new capital, but this lasted only a few months and on 9 September 1992 Gota went bankrupt.

It was only at this stage that it was dealt with as a systemic crisis.[21] Sweden had no formal deposit insurance at the time, but now the government immediately announced that it guaranteed Gota's obligations, except its equity. The guarantee, which included all forms of bank debt, not only deposits,

[20] SE-banken entered discussions with the Bank Support Agency, but they never resulted in any direct support. The private owners invested new equity capital in the bank to ensure that capital requirements were fulfilled.

[21] See Ingves and Lind (1997) for an insider account of how the crisis was handled.

Table 2
Bank Support Payments

Date	Event	Value (billion SEK)
1991	Nordbanken, new equity	4.2
1992	Nordbanken, bail out old shareholders	2.1
	Nordbanken, new equity	10.0
	Securum, equity	24.0
1993	Gota new equity	25.1
1994	Första Sparbanken, interest subsidy	1.0

was extended to all other banks a few weeks later. The private minority owners were bailed out of Nordbanken, at a cost of 2 billion SEK, and the bank was reconstructed in the summer of 1992. A 'bad bank', Securum, was founded and a quarter of Nordbanken's credit stock, at an original book value of 67 billion SEK, was transferred to Securum. Subsequently, the state took over Gota (at the price of one krona) and Gota's non-performing loans were later transferred to Securum. Government payments to the banks are summarized in Table 2. Out of a total of 65 billion SEK, only 3.1 billion went to the old bank owners—1 billion in interest subsidies to Första Sparbanken, and 2 billion in buying out the old owners of Nordbanken. By and large, the government followed the principle of saving the banks but not the owners of the banks.

In May 1993 a government agency *Bankstödsnämnden* (the Bank Support Agency) was formally created. Aided by international consulting teams, it conducted in-depth analysis of the credit portfolios and future prospects of individual banks (all major banks except Handelsbanken). It resulted in a special agreement with one of the remaining banks, Föreningsbanken, about a 'capital requirement guarantee', where the state promised to invest in new equity should the capital requirement ratio fall below 9 per cent. This was to be combined with an option for other shareholders to repurchase the shares before 1998. The guarantee was never used.

In characterizing the government 'emergency treatment', two things should be emphasized. The first factor is the decisiveness and broad political support once action was taken. The government made it clear that it guaranteed Gota's obligations on the very day of the bankruptcy. The announcement of the general bank guarantee came only 2 weeks later, with the support of all parties except a small right-wing populist party (*Ny demokrati*). Broad political support was particularly important since, at this stage, the bank guarantee was just an announcement of a forthcoming bill to parliament; the formal decision in parliament came 3 months later. The second factor is that there was, in principle, no direct compensation given to shareholders of the failed banks. Of course, the general bank guarantee was a valuable asset provided free of charge. In fact, its existence probably saved one or more of the surviving banks from bankruptcy, and thereby indirectly part of the wealth of the shareholders. But the guiding principle was to rescue the financial system with a minimum of wealth transfer to the original shareholders.

VII. THE CURRENCY CRISIS

The banking crisis coincides in time with the European exchange-rate mechanism (ERM) crisis. The unrest on the European currency markets during the summer of 1992 spilled over to Sweden, not surprisingly given the Swedish legacy of high inflation and recurring devaluations. The result was further interest increases; the Riksbank raised the overnight interest rate to 12 per cent in July and to 13 and 16 per cent in August. This deepened problems for many bank customers and threatened to have an adverse effect on Swedish banks' international funding. With more than 40 per cent of their lending in foreign currency, banks were heavily dependent on access to international financial markets, and, with increasing signs of crisis, loan maturities shortened. In early September the pound and lira touched the lower limits of their currency bands, and on 8

September the Finnish markka started floating. This led to speculations against the krona and on 9 September (the day of the Gota bankruptcy) the overnight rate was raised to 75 per cent. On 16 and 17 September, the UK and Italy left the ERM and the Riksbank now had to increase the overnight rate to 500 per cent to defend the krona. In this situation, the general bank guarantee played an important role in securing continued international funding for the Swedish banks. Also, the Riksbank provided liquidity by depositing a part of the foreign exchange reserves in the banks, thereby insuring bank liquidity against problems with international funding. During the autumn the Swedish government presented some fiscal measures, and it was possible to lower the overnight interest rate gradually to 11.5 per cent. But this was only temporary, and in November speculation against the krona resumed. On 19 November the krona was left to float, leading to an immediate depreciation the next day by 9 per cent and by 20 per cent by the turn of the year.

The interaction between the currency crisis and the banking crisis is complex. During the 1980s the Swedish private sector had built up a large stock of foreign currency debt. According to unpublished calculations done within the Riksbank, the private sector outside the banks had a debt of 541 billion SEK in September 1992 (35 per cent of GDP). Most of this was intermediated by the banking sector, whose net position in foreign currency was essentially balanced. The spot position was positive (20 billion SEK), but the position on the forward market was minus 65 billion SEK.[22] This situation involved two risk elements. One was the liquidity risk faced by banks. Even if they did not directly take excessive exchange risk, they faced the risk of foreign lenders refusing to roll over short-term credit lines. This mechanism contributed to deepening many other banking and currency crises (see, for example, Mishkin (1999) on Mexico, and Corsetti *et al*. (1998) on Asia). The liquidity support provided by the Riksbank played an important role in avoiding this risk.

Whereas the banks themselves had a balanced position, many of their customers were heavily exposed in foreign currency. Indeed, profiting from the gap between domestic and foreign interest rates had been the main purpose of much of the borrowing. In the aggregate, however, the private sector held foreign currency assets to offset the debt. Financial assets in foreign currency amounted to 174 billion SEK, making the net financial position in foreign currency minus 367 billion SEK in September 1992. Adding direct investments abroad and holdings of foreign shares made the total net position a trivial minus 13 billion SEK, i.e. the balance sheet of the aggregate private sector was not very vulnerable to a Swedish devaluation. But of course the average hid an uneven distribution, with some small and medium-sized bank customers heavily exposed to a devaluation. It is not known to what extent currency positions were hedged, but it is believed only to have been a minor fraction.

The fact that the banking crisis started at least a year before the currency crisis, with credit losses culminating in the autumn of 1992, just before the fixed rate was abandoned, indicates that there was no strong *direct* link from currency losses to the banking crisis. On the other hand, there was clearly an *indirect* link with the defence of the krona by high interest rates causing credit losses and deepening the banking crisis. Further, there was a clear interaction between the two crises, with the banking crisis reinforcing the currency crisis. As the precarious situation of the Swedish banking sector became recognized internationally during 1992, it also became clear that the banks and many of their customers would not be able to survive an extended period of very high interest rates. This improved the odds of speculating against the Swedish krona, thereby leading to further interest increases.

Could another exchange regime, where the krona was left to float at an earlier stage, have eased the banking crisis? The answer is not as obvious as it may appear with hindsight. First, the vigorous, if short-lived, defence of the krona during 1992 left borrowers some time to hedge or get out of their currency positions, thereby avoiding even more serious losses when the devaluation finally occurred. Between August and November 1992 the stock of foreign currency loans was amortized by 73 billion SEK (i.e. 14 per cent of the stock in September). In the end, currency losses in the private sector seem to have been rather small. Only one or two of

[22] I am grateful to Anders Lindström and Kerstin Mitlid at the Riksbank for making these numbers available to me.

the companies quoted on the Stockholm stock exchange reported major currency losses for 1992. Second, a Swedish devaluation before the ERM crisis and at a time when the Swedish anti-inflation stance was weak might have triggered quite different exchange-rate dynamics, with potentially equally serious consequences for the banking sector.

VIII. THE SALVAGE

With the general bank guarantee in the background, there was no need for more direct government intervention in individual banks. As it turned out, the banking system outside of Nordbanken and Gota recovered, partly with new equity from their owners. The Swedish economy went into a major recession, with GDP falling for three consecutive years, a total of –5.1 per cent in 1991–3, and private investment plummeting by 35 per cent during the same period. While the banking crisis was aggravated by the macroeconomic crisis, it was eased by interest rates coming down as the krona was allowed to float. At the end of 1993 the overnight interest rate was 7.75 per cent, the lowest rate in over a decade.

On 1 January 1993, Securum started operating as an independent company. It was owned by the government to 100 per cent, i.e. not a subsidiary of Nordbanken, and run by a professional management that was given substantial independence by the owner. Its assets were a portfolio of non-performing loans and the primary initial task was to rescue whatever economic values these contained. In the first phase this involved taking decisions on whether to have the debtors file for bankruptcy or not. In most cases bankruptcy turned out to be the solution, and Securum took over the collateral assets. The company then faced the task of disposing of these assets. This involved first ensuring that the underlying economic activities were run efficiently, second repackaging the assets in such a way that the potential market value was maximized, and third selling them at the best possible price. This had to be done with an eye to the development of the real estate market. Securum was the owner of around 2,500 properties with an estimated market value of 15–20 billion SEK, corresponding to between 1and 2 per cent of all commercial real estate in Sweden. It was believed that putting all of this on the market immediately, e.g. by auctions, would have led to large losses and depressed the real estate market even further.

Assets were sold in three ways: initial public offerings (IPOs) on the Stockholm stock exchange; corporate transactions outside the stock exchange; and transactions involving individual properties. Securum was capitalized in order to be able to operate for at least a decade. Most of the sales were made in 1995 and 1996, when the real estate market had started to recover, but when prices still were low by historical standards. As it turned out, the process was much faster than originally envisaged and Securum was dissolved at the end of 1997. Jennergren and Näslund (1997) have calculated the result, *ex post*, from the perspective of the shareholder. The total investment by the state was 71 billion SEK, including the items listed in Table 2 and the value of the shares in Nordbanken when the crisis started (taken to be January 1991). On the income side are dividends from Nordbanken, proceeds from the partial privatization of Nordbanken in 1995, the market value of the remaining state-owned shares in Nordbanken in 1997, and the estimated market value of remaining Securum assets including the proceeds of asset sales. Transforming these cash flows into current values in July 1997 Jennergren and Näslund calculate the final bill to the taxpayer to be 35 billion SEK, 2.1 per cent of GDP in that year.

IX. SOCIAL COSTS OF THE CRISIS

The conclusion that the cost of the banking crisis was 2 per cent of GDP is limited to the direct impact on the taxpayers. Even from that perspective it disregards any indirect effects, e.g. on the tax base. To assess the wider social costs and benefits, one has to ask how the ability of the banking sector to fulfil its key functions in the economy was affected by the crisis. I take the traditional view that banks have two key functions. First, tied to the liability side of the balance sheet, they provide liquidity and payments services. Second, tied to the asset side, they give information-sensitive credits to households and firms that do not have easy access to markets for traded financial assets. The latter function involves screening customers before granting a loan and monitoring them after the loan is given.

The ability of the banks to provide liquidity services was unimpaired throughout the crisis, but it was in jeopardy at the time of the Gota bankruptcy in the autumn of 1992. At that stage a guarantee encompassing all banks and all liabilities was probably necessary, in order not to risk some form of bank run. In fact, Gota had already encountered a small run in April 1992 (Urwitz, 1998). A statement indicating uncertainty about the main owner's willingness to support Gota with new equity initiated withdrawals of 5 per cent of deposits within a week. But, as the finance company crisis illustrates, it may be more likely that a major run would have come from the financial markets, where the crisis had already forced Gota, and other banks, to turn to shorter-term funding. From that perspective the liquidity support given by the Riksbank in the autumn of 1992 also played a decisive role.

The second major task of banks is the provision of credit to small and medium-sized business. The wave of bankruptcies that followed on the banking crises bears witness that the banks had failed in their function of monitoring their clients. This had social costs before the crisis by facilitating projects with negative present value, and it had social costs after the crisis in the form of interrupted production processes and underutilized resources. Further, the crisis left the banks poorly capitalized and, temporarily, less well equipped to take on new loans than under normal circumstances. Between 1990 and 1993 bank lending decreased by 21 per cent in current prices and the margin between the money market rate and the average bank lending rate reached a high of more than 5 per cent in 1992. This may be taken as evidence of a credit crunch, i.e. that shortage of capital had shifted the supply curve for borrowed funds. However, it could also reflect that balance sheets of households and corporations were weakened by falling collateral values, thereby increasing the fraction of potential borrowers that even under normal conditions would be denied a bank loan. Further, the uncertainty in society increased, stimulating savings and hampering investment demand. All these shocks are related to the banking crisis, but it is difficult to disentangle what fraction of the fall in lending depends on the credit crunch, the collateral squeeze, and the savings shock.[23]

In several respects the effects of the crisis on the banking sector appear to have been short-lived. Already in 1994, various performance indicators were back at pre-crisis levels. The margin between deposit and loan interest rates was down from 6.4 per cent in December 1992 to 4.4 per cent in December 1994, and the rate of return on equity before tax was up at 15 per cent. Subsequently, interest margins have come down further to little more than 3 per cent and the return on equity has increased to above 20 per cent.[24] On the other hand, it took until 1998 before bank lending reached 1992 levels in nominal terms, but this is more likely to be the result of lack of demand than of supply restrictions. All in all, credit-crunch effects on the private sector appear to have been short lived.

X. LESSONS

Much has been made of the 1985 deregulation as the key explanation for the crisis. As the discussion above has indicated, that view may be too simplistic. One has to distinguish the different stages that led to the crisis. In the first stage, deregulation probably only played a minor part in triggering the general macroeconomic boom in the late 1980s. Rather, the boom should be explained by the interaction of an overly expansionary fiscal policy, a monetary policy that was constrained by the fixed exchange rate, and a tax system that transmitted constant pre-tax real interest rates into falling post-tax interest rates in an environment of increasing inflation. At a later stage the boom was amplified by excessive lending, where deregulation obviously played an important role. In particular, one should stress that deregulation stimulated competition between different financial institutions, where the upside potential from rapid expansion was given too much weight relative to the long-term risks.

[23] These three different shocks are identified in the model of Holmström and Tirole (1997), where collateral is needed for borrowing and banks need a capital base for lending. In their model both a savings shock and a credit crunch decrease the risk-free market rate and increase the bank lending rate. A collateral squeeze decreases both rates. Given that we saw both interest rates going down, but the market rate more than the lending rate, the Holmström–Tirole model suggests that a collateral squeeze was an important part of what was going on.

[24] Sveriges Riksbank, *Financial Markets Report* (1998:2, Figures 8 and 10).

The next question is why the boom was broken and turned into such a deep crisis. Again one can point to a combination of factors. Some are endogenous consequences of the boom itself. First, inflated asset prices induced over-building, which at some point led to vacancies and commercial rents falling short of expectations. This started a downward spiral of asset prices. The Swedish real estate cycle bears strong resemblance to those in London, Sydney, and elsewhere (see Hendershott (1996) and Hendershott *et al*. (1999) for an analysis of these two cities, and Grenadier (1995) for a theoretical analysis). The price fall was clearly aggravated by distressed sales resulting from low equity in the real estate sector made possible by the lending spree following on the deregulation. Second, the boom led to high inflation and continued real appreciation which reduced credibility of the fixed exchange rate. This made Sweden a natural target for international speculators and forced the Riksbank to hike up interest rates. Third, the currency crisis that followed had a direct impact on fiscal policy, which in 1992 finally turned contractionary. To these endogenous mechanisms should be added two exogenous factors. One was due to domestic policy, the 1990–1 tax reform with its strong impact on post-tax interest rates. The other was external, the high international interest rates and the ERM crisis. The combined effect of all this was a strong 'real interest shock'. It hit both the cash flow of bank customers and the value of their collateral. Low solidity turned into negative equity, and non-performing loans into bankruptcies.

This interpretation assigns most of the blame to the combined effect of different aspects of domestic economic policy, where deregulation was only one of several factors. It was less important in the early stages of the boom, but through its impact on bad banking practices it gained in importance over time and contributed to letting the boom go on so long and reach such heights and to making the crisis so deep.

What could have been done differently? It might have been better understood that the deregulation, combined with the rapid development of financial markets both domestically and internationally, opened up a new world for the financial sector. The banks now entered into uncharted territory, where good risk analysis and accurate screening and monitoring were more important than before. This represented a challenge that both the banks themselves and government financial supervision failed to meet. The many instances of 'bad banking' can probably be ascribed to a combination of three factors. First, bankers were not prepared or trained for the new environment. For one thing, the banks did not have information systems capable of handling the new situation with rapidly expanding credit portfolios. In many cases, banks lacked an overview over their credit portfolios, and did not have a clear picture, for example, of the fraction of the total stock going to a single borrower. The large share of lending to finance companies added to the information problem, since borrowers denied credits over a certain limit in banks often had loans with the finance company. Second, the rate of expansion and the apparent profitability of new lending created a difficult problem in allocating scarce human resources between credit evaluation and credit expansion. With hindsight it is easy to see that it paid to be cautious, but the verdict could have been different under other macroeconomic circumstances. Third, it is conceivable that banks and finance companies close to insolvency realized that pay-offs were asymmetric and gave incentives for increased risk-taking.

Another possible lesson relates to the exchange-rate policy. The commitment to a fixed rate proved very costly in the end, since it failed to restrict wage and price formation and only produced high interest rates. Possibly an earlier move to a flexible exchange rate could have eased the banking crisis, but as touched upon earlier this may not have been a real opportunity. Further, the timing of the tax reform was unfortunate. First-best would have been to have implemented it earlier, and second-best might have been to have postponed it for some time.

All of this is said with the benefit of hindsight. Perhaps the clearest general lesson to be drawn is that policy choices become very difficult at a stage when the need for major structural reforms has built up for too long. The deregulation and the tax reform were long overdue once they occurred. Both could be, and have been, praised and criticized for doing the right thing at the wrong point in time. But criticizing the timing is a rather cheap point given the major difficulties in getting political consensus around these reforms.

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