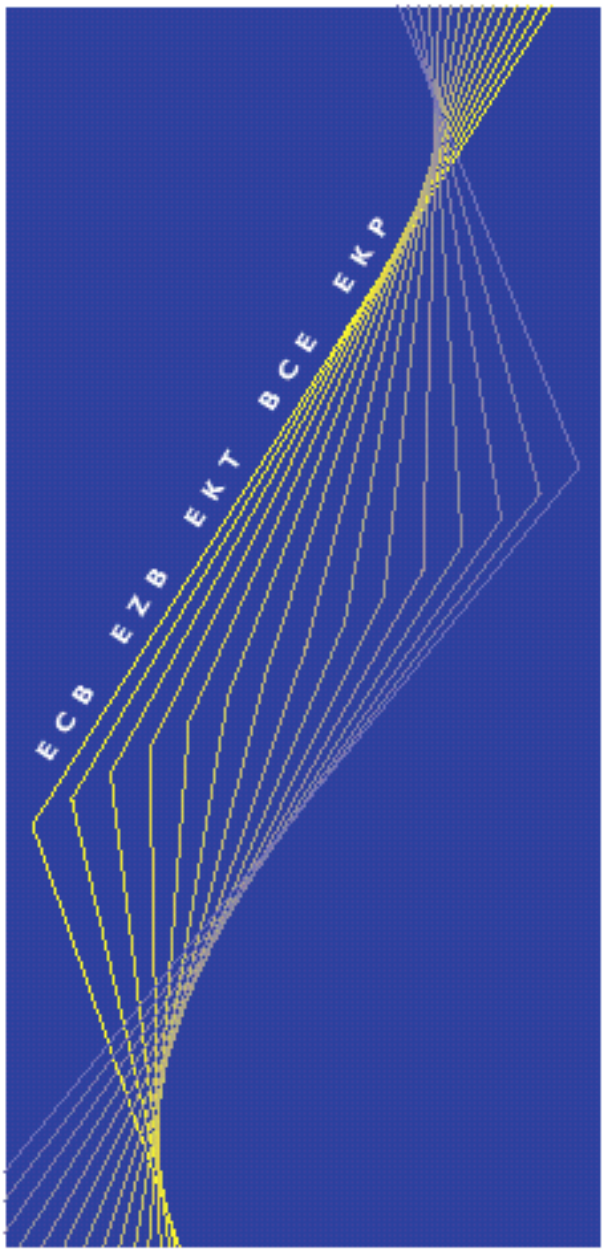
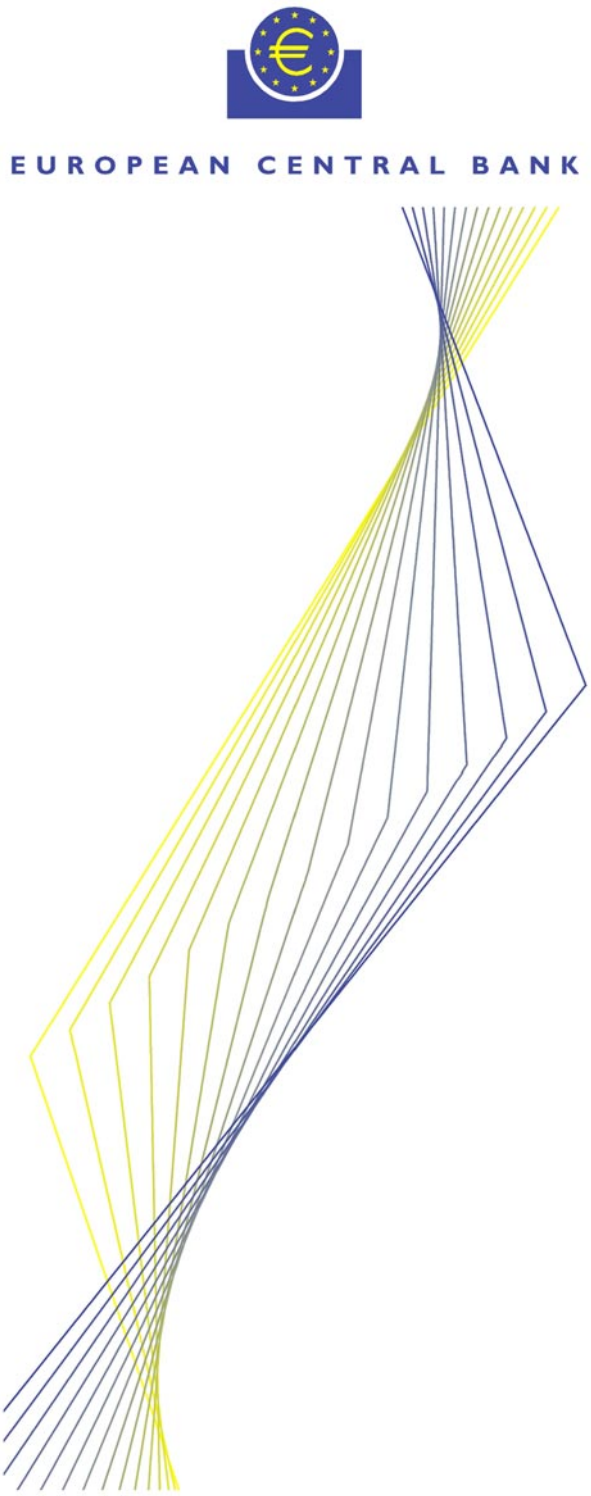
EUROPEAN CENTRAL BANK




# ASSET PRICES AND BANKING STABILITY

APRIL 2000




# ASSET PRICES AND BANKING STABILITY

APRIL 2000

| | |
|---|---|
| **Address** | **Kaiserstrasse 29** |
| | **D-60311 Frankfurt am Main** |
| | **Germany** |
| **Postal address** | **Postfach 16 03 19** |
| | **D-60066 Frankfurt am Main** |
| | **Germany** |
| **Telephone** | **+49 69 1344 0** |
| **Internet** | **http://www.ecb.int** |
| **Fax** | **+49 69 1344 6000** |
| **Telex** | **411 144 ecb d** |

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## Abbreviations[1]

| | |
|---|---|
| BE | Belgium |
| DK | Denmark |
| DE | Germany |
| GR | Greece |
| ES | Spain |
| FR | France |
| IE | Ireland |
| IT | Italy |
| LU | Luxembourg |
| NL | Netherlands |
| AT | Austria |
| PT | Portugal |
| FI | Finland |
| SE | Sweden |
| UK | United Kingdom |
| US | United States |

1 *In accordance with Community practice, the EU countries are listed in alphabetical order, as indicated by the country names in the national languages.*

## Executive summary

The Banking Supervision Committee – in the context of the Eurosystem's task of contributing to the smooth conduct of national policies in prudential supervision and financial stability – carried out an assessment of possible implications for the EU banking sector in the event of asset prices falling significantly. This was considered appropriate in the light of the observation that historically many banking problems have been caused by a sharp fall in asset prices. The sources of these fluctuations, which are, however, not addressed in this report, may be manifold, including shifts in interest rate expectations, changes in domestic macroeconomic developments, swings in market sentiment or spillover effects as a result of movements in external asset markets.

Some of the EU stock markets have risen to quite high levels, compared with historical valuation standards, although in most cases to a lesser degree than the US stock markets. The developments in real estate prices have clearly been country-specific. As usual, where real estate prices have risen significantly, related bank lending has also grown. While price increases in the commercial and residential property markets have been similar, the commercial real estate market has generally been more volatile. However, since there is a high degree of uncertainty when identifying the factors that determine the "fundamental" value of an asset, or measuring the importance of various factors, all asset price valuation models tend to be uncertain and inconclusive with regard to the appropriateness of any particular asset price level. Nor do public authorities have superior information on the appropriate development or level of asset prices.

The purpose of this report is to investigate the robustness of the EU banking system, should asset prices fall. In this respect, it should be borne in mind that it is the responsibility of the competent authorities to make sure that the banking and financial systems are as resilient as possible to sudden changes in asset prices. The report focuses on three main aspects.

First, the report identifies the main *channels* through which banks would be affected by a sharp fall in stock and real estate prices (i.e. credit risk, market risk, reduction in commission income, re-capitalisation of subsidiaries and the "second round" effects through the impact on the macroeconomic environment and banks' funding conditions). It would appear that the major current risk for EU banks potentially lies in the real estate sector, should a sharp decline in asset prices occur. However, no major threat to systemic stability has been identified. This is also based on the fact that, on average, the burden of debt servicing has not risen significantly, contrary to the leverage of households and firms, owing to the low interest rate level. This does not necessarily hold for the last entrants ("marginal investors") in the real estate market. Moreover, with regard to the commercial property market, there seems to be greater variation in market practices (foremost in loan-to-value ratios) than is the case for the residential market, which possibly affects banks' risks in this area.

As to banks' current stock market exposures, neither the direct exposure through market risk, income sensitivity or capitalisation need for subsidiaries, nor the credit exposure through the financing of stock investments, appear very relevant. Hence, if stock prices were generally to fall in isolation, major difficulties would not be expected for EU banks. In a more extreme case scenario, however, a sharp stock market fall could affect banks through the "second round" effects, were it to lead to a deepening of a recession. However, given the lack of comprehensive data and the limited analysis, it is difficult to assess the extent of these effects.

Second, the report examines *lending practices* and their effect on the *risk profile* of banks. In this respect, an important factor is the tightening of competition in the real estate-related lending activities of banks. Narrowing lending margins have been observed in many countries (BE, FR, ES,

IE, NL, AT, FI, SE and the UK). Rising loan-to-value ratios (LTV) are also reported for a number of countries, while there is no apparent slackening of other credit standards. The use of market value when determining the value of the collateral, accompanied by a high LTV, could constitute a very high risk to mortgage lenders in the face of a downward trend in prices.

Finally, the report considers the *policies* pursued recently by the supervisory authorities (central banks or other authorities). In general, supervisory authorities closely monitor the changes in real estate and stock prices and their impact on the banks' risk profile. In addition, in those countries in which concerns have increased regarding the possible risks for the banking sector, supervisory authorities have responded in various ways to ensure prudent lending practices by banks. These supervisory actions include: (i) public communication of concerns; (ii) direct contacts with bank management; (iii) specific examinations of banks' real estate lending practices; (iv) specific measures in order to address the ability of banks to withstand significant real estate price reversals (sensitivity analyses); and (v) changes in risk provisioning and/or asset valuation rules. A review of asset price developments from the point of view of banking stability will be carried out on a periodic basis by the Banking Supervision Committee.

## Introduction

This report, prepared by the Banking Supervision Committee (BSC), examines price developments in the EU stock and real estate markets and assesses the possible impact on the banking sector in the event of prices in the two markets falling significantly. This work has been carried out in the context of the Eurosystem's task of contributing to the smooth conduct of policies pursued by the competent national authorities relating to the supervision of credit institutions and to the stability of the financial system (Article 105 (5) of the Treaty establishing the European Community).

Past incidences of severe banking problems demonstrate the relevance of stock and real estate markets for the banking sector and, hence, also for banking supervisors. A sharp decline in asset prices can generate systemic concerns, especially when the relevant institutions are exposed to a market where prices decline sharply. Therefore, supervisory authorities need to monitor the resilience of the banking and financial system in the event of a fall in asset prices.

The report is structured as follows. Section 1 provides a background analysis of the recent stock and real estate market developments. Section 2 presents and evaluates the channels through which a reversal in asset prices would affect the EU banking sector. Section 3 discusses the actions taken by the EU supervisory authorities (central banks or separate authorities). In addition an annex presents a brief review of literature on asset price cycles and their link to the vulnerability of the banking sector. The report is based on the contributions from the EU supervisory authorities during the last quarter of 1999.

## 1 Recent developments in stock and real estate markets

This section reviews the increases in stock and real estate prices in EU countries. It is intended to set the stage for the analysis of banks' exposures; it does not aim to make an assessment of the sustainability of asset prices. Price increases are also evaluated with reference to the dynamics of real estate lending in order to assess the role of banks' lending policies.

### 1.1 Developments in stock prices

There was a long trend to record highs in the US and EU stock markets (with the exception of the quite stable AT market) until mid-1998 (Chart 1). In most markets, the upward trend was then interrupted by concerns about the effects of the emerging market crisis on corporate profits and by the "flight-to-quality" phenomenon. The fall in prices was especially severe in continental Europe and largely reflected, particularly for bank shares, exposures to Russia. Especially until August 1999, the recovery in stock markets was fast, and new record highs were reached in many markets. Prices are now at least twice as high as, say, six years ago. There can, however, be significant divergences between different sectors. For instance, shares in the broad area of computing and communications technology have spectacularly out-performed the rest of the market.

The rapid growth and the possibility of a stock market decline in the US is recognised by many observers, as in the IMF Capital Market Report, as a potential source of instability. The risk of spillover effects from the US to the EU markets is due to similar movements in investor behaviour and confidence, e.g. as the same investors can be present in many markets at one time.

Looking at the EU markets, the growth in stock prices has been particularly influential in GR and FI. The GR market, the growth of which was sustained by the massive entry of households into equity investments, experienced a significant downward correction in mid-September. The trend has been reversed since then, but the market has been highly volatile. The FI market has been driven significantly by "technology stocks".[2] Stock price growth has been quite rapid in ES, FR, IE, NL, SE and the UK as well; other countries have exhibited more moderate developments.

The major EU stock markets of DE, FR, IT and the UK are closely linked to one another and to the US market, which is the dominant market in the world with about a 60% share in the market capitalisation. Developments in the smaller markets in the EU also seem to be influenced by the major markets, but they feature more idiosyncratic developments due, among other things, to lower liquidity. The first group is composed of BE, GR, AT and PT with significantly idiosyncratic price changes. The second group, namely the DK, ES, IE, NL, FI and SE markets, seems to exhibit broadly the same sequence of events as the major markets.

Low *dividend yields* (the latest dividend per current stock valuation), high *price/earnings* (P/E) ratios (current share price per current earnings per share) and high *implicit future earnings growth* implied in the current stock price valuation are traditional stock price valuation standards. In general, these indicators have reached levels that are above historical standards for the US and also for most EU markets (see Table 1).[3] This implies expected above-historical-average growth in corporate earnings in the future. Or, equally, a significant increase in future dividends would be required to justify the present low level of dividend yields. It is important to note that these simple indicators are, at best very approximate, or indicative, as it is very difficult to determine the appropriate benchmarks (i.e. "fundamental" asset values) and to take into account all relevant factors, such as the effect of share buy-backs on the dividend yield. The assessment of the valuation depends greatly on the assumptions regarding the appropriate equity premium[4] and the discount rate, although the use of too low an discount rate or equity premium assumptions could be regarded as indicating a lack of caution by stock market investors. Influences which give rise to structural shifts in pricing patterns are also difficult to account for. For example, it has been claimed that the anticipation of future earnings growth is justified, since the rapid adoption of technology has enhanced business efficiency and resulted in accelerating productivity growth.

Finally, the dip in the stock markets between mid-July and mid-August 1999, and again in early October 1999 along with the recent increases in the stock price volatility suggest that an increase in market uncertainty is emerging. This volatility has not, however, reached the high levels experienced in the mid-1998 turbulence. This increased uncertainty has been reflected in the prices of options written on the stock index, giving rise to a higher "implied probability" of larger market movements.

### 1.2 Developments in real estate prices and lending

This section focuses on the developments in residential and commercial real estate prices and lending based on available statistics and contributions from the EU banking supervisors. The available statistics are quite patchy, and are not available for all EU countries, especially for commercial real estate, which prevents systematic comparison across countries and calls for

2 *This holds particularly true of a single firm, Nokia, which represents more than 50% of the total FI market capitalisation.*

3 *These results are confirmed by e.g. calculations shown in the BIS 69th Annual Report, for the March 1999 situation.*

4 *The equity premium is the extra return required by investors to compensate for the higher risk involved in stock investment. Improved management of fiscal and monetary policies and, hence, reduced risk of severe recessions have been used to explain the apparently reduced equity premium.*

caution when interpreting the statistics.[5] As for stock prices, the report does not attempt to look into the size of price misalignments in real estate markets. Any such analysis would be highly complicated and also, to a great extent, country-specific.

### *1.2.1 Developments in real estate prices*

In many EU countries real estate prices have recorded significant gains over the past two years or so. However, these price developments have been clearly country-specific. Nevertheless, *three clusters of countries* seem to emerge. First, significant price increases, explained by heavy demand (relative to sticky supply) and fuelled by favourable income and employment trends and lending growth, are observed for IE and NL. Second, signs of rapid recent growth are indicated for ES, PT, FI and the UK, predominantly together with significant increases in lending. Third, in BE, DK, FR, GR, LU and SE real estate prices have recently risen (especially, since 1997, commercial real estate in FR), but at a slower pace, while in DE and AT the real estate markets have been stable. In IT real estate prices seem to have been sluggish throughout most of the 1990s, but started to pick-up in 1998.

Looking more closely at the countries with significant price increases, IE and NL prices have benefited from a long rising trend. Price increases in IE have been particularly spectacular, as residential real estate prices have increased by 80% from 1993 to 1998 and the rate of growth has recently accelerated. Commercial real estate prices have increased even faster. Price developments have been less accentuated in NL.

In FI a long and sustained price increase gave way to a sharp reversal between 1989 and 1993 and prices have been recovering since then, with both commercial and residential real estate prices having now nearly reached their previous peak levels. SE also experienced a rapid asset price increase prior to 1991, which was subsequently reversed and, in particular, commercial prices have gained significantly since then. In the UK residential real estate prices rose around 10% a year in 1997 and 1998. As regards ES, commercial real estate prices have increased by 29% over the two-year period 1997-98. In PT as well, real estate prices have recently been registering significant gains.

Basic price trends have, by and large, been equally distributed between the residential and commercial real estate markets (Tables 2.a and b and Tables 3.a and b). However, residential real estate prices have not been as volatile as commercial real estate prices. In addition, there has been some correlation between commercial real estate prices and stock prices, while the correlation has not been as marked between residential real estate prices and stock prices.

### *1.2.2 Developments in real estate lending*

Real estate lending includes loans secured by a residential or commercial mortgage on the underlying property and other loans granted for property acquisition purposes.[6] It should be

5 *The commercial real estate prices in Tables 3. a and b only refer to the major cities. These prices could be more volatile than the prices in the respective countries as a whole.*

6 *Two international statistical sources are available at present: (1) the statistics collected by the European Mortgage Federation (EMF), referring only to mortgage loans (separating residential and commercial components) and including all financial institutions operating in the field (credit institutions, insurance companies and pension funds); (2) the MFI (Monetary Financial Institutions) statistics of the ESCB, referring to both mortgage loans and other loans granted for housing purposes, but collected (at present) only for the household sector and for the euro area. At this stage, the EMF figures present the most comprehensive long-term source, but the timeliness and comprehensiveness of the statistics are limited. EMF data do not comprehensively cover all EU countries. For some countries (e.g. NL), the inclusion of institutions other than credit institutions is relevant as these other institutions have significant mortgage lending activities. The MFI statistics on lending for housing purchases are of high frequency, are not restricted to mortgages and refer to the MFI sector (by and large credit institutions). However, they have only been collected since 1998.*

noted that the real estate credit markets are still quite segmented in the EU. In particular, contractual and institutional features are still largely country-specific and there are large differences in the levels of outstanding credit with respect to GDP (Tables 4.a and 5.a). High ratios of credit to the GDP might indicate a greater burden for bank customers, but obviously other factors need to be taken into account (see Section 2.1 below).

According to data collected by the European Mortgage Federation (EMF), increases in lending and prices have evolved in a largely similar fashion in several countries (Tables 4.a and b, Tables 5.a and b). Based on the MFI statistics, the rate of lending growth for housing purposes has generally been sustained in 1999 in the euro area.

As is the case with real estate price increases, mortgage lending growth rates have been high for IE and NL. Also in ES growth has been brisk, and like in PT (as well as in IT) lending has increased faster than prices, possibly reflecting a low initial level of outstanding debt. Some other countries exhibit faster recent growth rates as well. Household mortgages clearly seem to exceed commercial mortgages in volume, but the latter have typically entailed more credit risk, owing to the higher volatility of prices.

## 2 Risks for banks

This section aims to review the main *channels* through which banks would be affected should stock and real estate prices experience a sharp fall. In particular, the risks to EU banks are assessed by distinguishing five possible sources of distress:

*(a)* *credit risk*, i.e. the risk of a severe reduction in collateral values and of increasing defaults of customers who have taken leveraged positions in the two markets concerned;

*(b)* *market risk*, i.e. the risk banks incur as direct investors in the real estate and stock markets;

*(c)* *reduction in profitability*, i.e. the risk of an abrupt reduction in overall returns from banking activity as the fall in traditional income is no longer compensated for by an adequate flow of fees and commissions from trading, investment banking and asset management services;

*(d)* *re-capitalisation of subsidiaries*, i.e. the risk that banks are caught in the difficulties of specialised non-bank subsidiaries or connected entities deeply involved in the real estate or securities dealing businesses;

*(e)* *"second round" effects*, i.e. the risks related to adverse changes in the macroeconomic and financial environment that could be linked to a period of declining asset prices.

The credit risk channel is likely to be the most important source of concern for banks. Prima facie, it seems that the major risk lies in a real estate market slump, since neither the direct exposure of banks to stock market developments nor the indirect exposure through the financing of stock investments is currently considered to be very large in EU countries. It could be that a stock market correction would largely affect banks through the indirect effects on overall economic performance and customer wealth. Because of incomplete empirical evidence on the credit risk *vis-à-vis* stock markets and on the relevance of the "second round" effects, one should not rule out the relevance of the risks banks currently face.[7]

7 *An adverse impact on banks' reputations could additionally follow if banks have actively marketed investment products causing significant losses for customers.*

### 2.1 Credit risk channel

As evidenced by some past incidences of banking crises, banks can be at the centre of the process of rapid declines in asset prices. Bank loans are generally the most prominent source of finance for households and also often for firms investing in the stock exchange and in the real estate market. Therefore, as asset prices begin to decline, borrowers become increasingly unable to meet their obligations and start going bankrupt, so that the quality of loan books rapidly deteriorates. As the share of non-performing assets and provisioning needs increase, the coverage supplied by collateral would diminish. Furthermore, when collateral is excessively supplied to the market, its price can fall further, in particular, in local and fragmented markets and banks' chances of repayment therefore weaken. Hence, asset price deflation can be seen as the major aggravating factor for credit risk. However, in order to appreciate the exposure to credit risk in the event of a sharp reversal of prices, it is useful to examine the main aspects of credit risk in further detail.

**(1) Amount of credit extended.** It is important to gain understanding of the role bank loans have played in sustaining price rises. Increased asset prices, when related to fundamental improvements in the economic outlook or declines in real interest rates, can lead to increased borrowing. However, bank lending may also cause upward pressures on asset prices, in particular if banks relax their lending standards. For example, the Scandinavian and Japanese crises (Boxes 1 and 2) were preceded by spectacular double-digit nominal and even real growth rates in lending, resulting from, inter alia, excessively relaxed lending standards.[8] In particular, the build-up of exposures towards counterparts deeply involved in investing in the stock exchange and in real estate (securities dealers, building contractors) could serve as leading indicators of potential distress.

Unfortunately, while the distinct features of mortgage loans usually allow the amount and the rate of growth of loans financing real estate investments to be identified, little information exists as to the role of bank loans in contributing to price growth in the stock market. Generally speaking, it is quite common for an upward trend in credit aggregates to precede, or at least accompany, a surge in stock prices. However, available supervisory data generally do not allow the nature of the relation and the relevance of credit risk to be quantified in a more precise manner. On the other hand, in most EU countries supervisors' perception is that stock investments only rely on bank financing to a limited extent. In the UK there is different evidence of loans to securities dealers, which amounted to around 10% of total loans at the end of June 1999. Even though the amount is not comparable with the relevance of real estate lending, it still signals that a possible effect on banks cannot be ruled out. In SE, however, the corresponding figure is less than 1%, for example.

8 *In Finland there was a close 1:1 relationship between individual banks' lending growth and subsequent non-performing assets, according to Vihriälä (1997).*

## Box 1

### Banking crises in Norway and Sweden

Finland, Norway and Sweden experienced severe banking crises, which culminated in 1992 and 1993. The Norwegian and Swedish crises were more clearly related to a real estate market bubble than the Finnish crisis, which was caused more by a very rapid accumulation of debt in the corporate sector, especially foreign currency-denominated debt, and was prompted by the deep recession in Finland and the severe depreciation of the Finnish markka.

The ex post reviews of the Norwegian and Swedish crises have concluded that credit deregulation in conjunction with low or even negative real after-tax interest rates resulted in a heavy increase in bank lending, leading to an upward spiral in real estate prices.[9] Improved access to borrowing led to increased demand and prices for real estate, which, in turn, raised collateral values and gave rise to even more borrowing. In the case of Norway, this primarily concerned the residential market and household loans, while in Sweden more problems arose on the commercial side. In Sweden the weighted average of nominal residential and commercial real estate prices more than doubled from 1980 to 1990, while in Norway the rise in the residential prices alone was more than 300% over the same period. Herring and Wachter (1999) noted that, after the liberalisation measures of 1985, Swedish banks started to compete heavily with finance companies already involved in real estate lending, and, consequently, property prices began to rise much more rapidly. Finance companies were not as tightly regulated as banks and made riskier loans than banks. Consequently, there was a significant surge of more than 60% in real estate prices from 1987 to 1990. As an additional aspect, it seems that lending decisions were based more on the collateral value than on borrowers' income flows.

The cycle took place somewhat earlier in Norway, where nominal bank credit grew at annual rates of 16% to 32% from 1981 to 1987. In Sweden the annual credit growth rates were 15% to 34% from 1986 to 1990. Substantial investments in real estate were reflected in plummeting household savings' ratios (on average, -5% in Norway from 1986 to 1988 and -3% in Sweden from 1987 to 1990) and a deteriorating private sector financial balance (reaching a deficit of 8% of GDP in Sweden in 1990). Hence, the indebtedness in the economy heavily increased and financial fragility became much more widespread. In Sweden the total private credit to GDP ratio rose from 0.9 to 1.5 from 1980 to 1990.

Step by step, the two economies became increasingly vulnerable to shocks to the real estate price development. The booms ended abruptly in both countries with the beginning of an economic slowdown, tax reforms and a rise in real interest rates. The ability of the fragile customers to service their debt decreased substantially and increased loan losses were an inevitable consequence for banks. Since the nominal real estate price falls were of the order of magnitude of 20% to 30% in the two countries over two years respectively, collateral did not provide even close to full protection, particularly since in inflation-adjusted terms the price falls were much greater. In Sweden inflation-adjusted prices collapsed to a level just below that achieved in 1982. The impact through the "credit risk channel" was heightened by the fact that many loans were collateralised by real estate, as encouraged by the history of low associated risk, even if granted for other purposes. Furthermore, in Sweden banks were exposed to the real estate markets via finance companies.

The bad loan provisions rose to annually 2% to 3% of total assets in Norway from 1988 to 1992 and to 2% to 5% in Sweden from 1991 to 1993. In Norway the three largest commercial banks had to make provisions that wiped out their capital and the government took control of these banks. In Sweden the crisis began when one finance company had to suspend its payments following major losses on its real estate loans and shares in real estate holding companies. Consequently, the Swedish Parliament was forced to issue an early emergency degree in order to maintain financial stability, guaranteeing that banks and certain other credit institutions would always meet their commitments. Subsequently, three banks received some form of government support.

9 *See Berg (1998) and Bäckström (1998). The figures mentioned in Box 1 are also from these two sources.*

As far as the real estate market is concerned, countries where prices have grown most rapidly (IE and NL) have experienced rapid nominal growth in lending to this sector. In IE the impressive increase in mortgage lending (more than 20% in 1997 and 1998) has been coupled with an increased share of loans to construction companies, hotels and restaurants, which generally carry greater risks. But the pace of growth of loans to the real estate sector has recently also accelerated in a number of other EU countries.

The market environment seems to be characterised by tightening competition, also in countries where the degree of banking concentration is particularly high. Accordingly, the acceleration in lending has driven a marked fall in interest rates charged on new lending operations, sometimes much larger than the decrease in overall rates earned on loan stocks. A significant reduction in banks' lending margins was reported for BE, FR, ES, IE, NL, AT, FI, SE (referring to the entire credit market) and the UK.[10] New entry is regarded as one significant determinant for the increase in competition for IE and the UK.

Real estate lending shows significantly lower rates of growth in countries where property prices maintain more stable dynamics (AT, DE), indicating the relevance of the credit risk channel when a reversal in prices occurs.

**Box 2**

### Banking crisis in Japan

There was a period of spectacular real estate price growth in Japan starting around the mid-1970s. For instance, commercial property prices in Tokyo recorded a threefold increase between 1980 and 1990. The inflated value of collateral also induced a further extension of credit in Japan. Confident that the trend of increasing prices would continue into the future, banks did not put in place serious credit assessment procedures. As a result, direct lending to property and construction reached nearly 15% of the aggregated balance sheet total of banks in 1991, as compared with 9% ten years earlier. This direct exposure was reinforced by an indirect exposure through the "Jusen" institutions. The Jusen institutions were subsidiaries of banks set up in the 1970s to conduct mortgage credit activities deemed too risky for banks.[11]

The counterpart of this evolution took place in the financial position of companies. As indicated by Davis (1995), the ratio of corporate debt to GDP reached 136% in 1990. Moreover, the financial balance of firms was negative by 9% of GDP. The financial position of households deteriorated as well. Whereas the net saving of households reached 11% of GDP in 1979, the corresponding 1989 figure was only 3% of GDP.

The asset price bubble began to deflate in 1990, which was reinforced by the onset of a recession in 1991. Given the initial financial fragility of the corporate and, to a lesser extent, the household sector, this adverse environment produced a sharp increase in the rate of customer defaults. According to the BIS, problem loans, i.e. non-performing loans and restructured loans, reached 40% of banks' Tier 1 capital at the end of 1992. As real estate prices depreciated by 24% from 1990 to 1992, collateral did not provide an effective cushion against those developments. Consequently, banks' post-tax profit declined from 0.24% of assets in 1989 to 0.11% in 1992.

This impact via the credit risk channel was reinforced by the decline in stock prices. Residential and commercial real estate prices in Japan continued to decline throughout the 1990s, thereby contributing to a long lasting banking crisis in Japan.

*10 In NL the margins widened again in 1997-98.*
*11 See Davis (1995), Latter (1997), Cargill et. al. (1998) and Herring and Wachter (1999).*

**(2) Fragility of customers.** In itself, growth in lending activity is not worrying if it is not coupled with an increased risk of customer defaults. If available and timely, information on the fragility of banks' counterparts in the related lending can prove very helpful for a proper understanding of credit risks incurred by banks. The most meaningful indicators are those measuring the *debt service capability* and the *leverage* of the customers.[12] A distinction between different counterparts is necessary, since the household side is generally less risky than the corporate side. The high level of leverage of property developers or owners has, in the past, been a major factor determining huge losses for banks in the event of a real estate crisis.[13]

At present the debt servicing capabilities of households and firms do not provide evident signs of fragility. The significant decrease in interest rates has generally balanced the increase in *debt burden*, so that the proportion of interest expenditure in households' disposable income or in firms' operating profits has not increased in line with the increases in lending (actually, declining values can be observed in a number of countries). The average interest burden of both households and firms is lower than the peak levels registered in the past in all EU countries, reflecting historically low levels of nominal interest rates during the first half of 1999.[14] Fiscal incentives or financial innovations, aimed at fully exploiting the tax deductibility of mortgage interests have contributed in IE and NL, inter alia, to avoiding a major deterioration in debt servicing capabilities.

Other indicators of financing difficulties experienced by customers, such as the ratio of arrears for both mortgages and other loans, have not shown any tendency to increase either, and are at historically low levels. However, the lack of debt servicing problems should not be taken as a leading indicator of fragility, since as long as real estate prices are increasing and the economy is recovering the burden of debt is usually sustainable. Problems usually arise when interest rates rise and borrowers start to enter into a distressed situation, which is likely to occur at once if they have entered into floating rate contracts or after a while if the rate is fixed for a predetermined period of time. Therefore, a better indicator of customers' fragility is provided by the "marginal" interest burden, an issue that is addressed below.

Nonetheless, some signs of increased fragility can be seen by looking at the degree of *leverage* (e.g. debt-to-income ratios). In particular, household sector leverage has increased in countries which have witnessed strong growth in credit demand. Since indebtedness of both households and firms was at relatively low levels before the recent increase in borrowing, relatively low levels of leverage still characterise bank customers in IE. The ratio of debt to disposable income also appears to have risen in ES, NL, PT and to a lesser extent in the UK, also reflecting – in PT – catching-up in terms of the household debt level (the household debt to disposable income ratio increased from 20% in 1990 to 65% in 1998). Finally, in FI the declining trend in the degree of indebtedness of households has stopped. The available indicators of corporate leverage (ES, PT, FI, SE and the UK) seem to be favourable, as at least no substantial negative developments are evident. Again, available data on household and corporate leverage do not cause serious concern, but average figures can obscure a deterioration in the financial situation of more fragile customers.

12 *When possible, aggregate information from national financial accounts should be supplemented with micro data from balance sheet or credit register sources, in order to focus the attention on the tail-end of distribution, where the probability of default is higher.*

13 *On the basis of detailed 1976-91 data transmitted by a UK bank, Davis (1993) broke down provisions according to the economic sector of the borrower. In this analysis, he showed that the more risky sectors, by far, were property companies and non-insurance financial companies.*

14 *In IE, for example, the average mortgage repayment burden (interest and principal) has risen from 17% to 22% of households' disposable income from 1994 to 1998, while still remaining below the peak values. In ES the proportion of interest payments in households' disposable income decreased from 5.4% in 1993 to 3.5% in 1998, while in the UK it has declined from an average of 7.5% since the 1980s to 5.2%. The interests paid by FR households amounted to 3.6% of disposable income in 1998, compared with 4.9% in 1992.*

**(3) Distribution of borrowers.** Assessing average credit quality alone is not sufficient, since banks may have borrowers that are highly exposed to an asset price decline. There is a particular problem related to *"marginal" borrowers*. Even though a bank has sufficient risk coverage on average, the latest entrants in the real estate or stock markets are especially vulnerable, since they have borrowed when prices were close to the peak and possibly expected that state of affairs to continue. These borrowers would experience the largest capital losses and the largest threat of default. Once these borrowers face the possibility of default, they are also likely to take increasing risks (moral hazard). This would lead to a deterioration in the (average) loan quality once the peak of the asset price cycle is being approached. A deterioration in loan quality may also result, as the top of the cycle is being approached, if increasingly worse projects become financed as sound productive investment opportunities have already received financing (adverse selection).

There exists some evidence pointing to a higher fragility of the last entrants. In NL the ratio of households' newly negotiated mortgage loans to disposable income increased to 26% in 1998, a relatively high level compared with 1993 (11%) and with a relatively stable value of the ratio in the period from 1982 to 1992 (7%). In the UK the current average initial payment as a percentage of personal income for first-time buyers is significantly higher than that for other customers (14%), even though it is still below the long-term average. In GR a deterioration in financial conditions of households has emerged as well, since marginal investors, entering the stock market recently, seem to operate with a higher debt-to-wealth ratio.

**(4) Practices concerning collateral.** Mortgage loans constitute the primary class of collateralised lending, the acquired property serving as the collateral for the loan extended for this purpose. Shares can also serve as collateral for banks, for instance when financing investments in the stock market or buy-outs, but banks generally consider them too volatile for this purpose. In the EU banking system the use of shares as collateral seems to be either non-existent or irrelevant at present.

Banks usually grant mortgage loans subject to a *loan-to-value-ratio (LTV)* which is significantly smaller than one, to allow for the risk of a fall in real estate prices and to cover the costs generated when the lender has to sell the collateral. Based on experience of the past crises, this ratio plays a pivotal role in the development of banking problems. If the applied ratios are sufficiently low, the cost of customer defaults could remain quite subdued. If the applied ratios are high, banks could incur losses even if the asset price decline was moderate. The magnitude of banks' losses in the case of customer defaults is equal to the difference between the amount of the loan and the value of the underlying assets.

The evaluation of the applied LTVs is far from straightforward. This concerns both the size of the LTVs and the valuation procedure applied. It appears that practices are highly country-specific in both respects and, because of the different valuation criteria, the LTVs cannot be compared directly across countries, unless the specifics of valuation procedures are also addressed.

*First, the size of LTVs* (see Exhibit below for a brief overview). There is anecdotal evidence that increased competition has recently driven up the LTV ratios in a number of EU countries. In IE lenders are prepared to lend up to a maximum of 90% to 95% of the value of the property and, even though the average LTV still amounts to around 60%, there are signs of a relaxation in standards. In NL, too, recent growth of real estate lending seems to be concentrated in the segment in which more than 75% of the value of the property is financed. UK institutions apply an average 83% ratio to first-time buyers in the mortgage market, while according to a recent academic survey, in the commercial property segment 80% of lenders in 1998-99 applied LTVs between 80% and 94%, as compared with 40% of lenders in 1997. A separate private sector

survey suggests that LTVs applied to higher-risk speculative developments are around 55% in the UK. Competition has also driven LTVs in FR towards high values. In certain countries regulations impose maximum LTVs if mortgage lending is financed by issuing securities. DE banks seem to stick to very prudent practices, because regulations impose a maximum LTV of 60% when mortgage bonds ("Pfandbriefe") are to be issued, and because it is also usual in bank practices to apply significant "haircuts" to the value of the property.[15]

It should be noted that even prudent LTVs may not shelter banks from loan losses if the reversal of the asset prices is particularly large. Even ratios considered as conservative at the time of higher asset price levels may turn out to be insufficient if prices decline sharply. In fact, the fundamental difference between *ex ante* assessments and *ex post* consequences explains the vulnerability of banks to pronounced price cycles.[16]

**Exhibit**

**Usually applied loan-to-value ratios, percentages**

| | DK | DE | ES | FR | IE | LU | AT | PT | FI | SE | UK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Residential property | 80* | | 80* | | | 75-80 | 70-80 | Higher | | | 83** |
| Commercial property | 40-70* | | 70* | | | 60-70 | 30-60 | 50-60 | | | 80-94*** |
| All property (no split provided) | | 60* | | 80 | 60 (up to 90-95) | | | | 70 | 60-75 | |

* *Requirement when mortgage-backed securities are issued; ** first-time buyers; *** the source is an academic survey rather than official UK data. This information refers to the present practices concerning LTVs in real estate lending provided by the EU supervisory authorities.*
*Source: The EU supervisory authorities.*

*Second, the valuation procedures*. The European Mortgage Federation (EMF, 1998) has identified two key types of valuation procedures whose alternative approaches cover, to a greater or lesser extent, the main philosophies within the EU:

1. **mortgage lending value** is used in DE, DK, LU and AT, for instance. The mortgage lending value for a property is the value, as determined on the basis of experience derived from long-term market trends at the time of valuation, which can be expected with a high degree of certainty to indicate the realisable value of the property at a future point in time. The approach is designed to arrive at a valuation which is sustainable in the longer term;

2. **(open) market value** is used in IE and the UK, for instance.[17] The market value is the estimated amount for which an asset would be exchanged on the date of valuation between a willing buyer and a willing seller in an arm's-length transaction after proper marketing wherein the parties had each acted knowledgeably, prudently and without compulsion.

15 *In some countries mortgage lending secured by commercial property, when the LTV is limited to 60%, attracts a preferential weighting when setting the capital adequacy standards (50%).*

16 *Lewis (1994) considered that an LTV of 50% should have been applied to shelter banks from the asset price declines in the UK 1990-93. This finding is confirmed by a survey carried out in 1992 by the FDIC's Division of Liquidation on the basis of 224 non-performing commercial real estate loans. This analysis revealed that commercial property underlying these loans had lost 46% of their initial valuation at that time.*

17 *The market valuation method also prevails in BE, GR, ES, FR, NL and SE. Valuation methods are often subject to legal requirements governing the provision of standard reports, the licensing of expert valuers and the valuation methods themselves. These requirements are especially binding in DE, DK, ES, IT, LU and AT.*

Since market practices are developing, the above distinction may be becoming more blurred. Developments may also be driven by the increasing significance of cross-border mortgage operations (already observed in LU), which are expected to gain momentum in the future.

The use of the market value, accompanied by a high LTV, could be of very high risk to mortgage lenders in the case of a downward trend in prices. However other specific factors (such as insurance arrangements), which may have the opposite effects on credit risk, also need to be taken into account to monitor correctly the credit risk for lenders. Some additional prudential rules may also be applied, e.g. the notion of "careful assessment" in NL and AT.

All in all, supervisors need to understand and monitor closely the basis upon which banks are valuing their collateral, including whether sufficient account is taken of varying market-specific and regional factors. One example is the present oversupply of rental property in London which has resulted in downward pressure on rents. If the prices of these properties were to follow, a number of highly leveraged investors might be affected.

**(5) Other aspects related to lending practices.** Lax lending conditions and practices can be a major factor contributing to the build-up of asset price inflation and, hence, banks' credit risk exposures. This includes pricing (margins), internal norms and standards and practices related to credit risk evaluation and monitoring. National supervisory authorities closely monitor credit standards. According to the information in the possession of the supervisors, apart from the widespread narrowing of lending margins, there is no easing of credit standards.[18] In many cases, banks seem to have improved their credit risk assessment skills, portfolio techniques and loan documentation. However, this has been achieved in a favourable environment. In the event of a downturn, there could be a shortage of skills and experience in terms of staff employed on loan work-out arrangements.

**(6) Concentration of credit risk in the banking system.** Past episodes emphasise the potential fragility of banks specialised in real estate lending (e.g. the US thrift institutions and the Japanese "Jusen"). This concentration on one specific activity may stem from regulatory constraints or from strategies pursued by the banks themselves. However, the progressive deregulation of the real estate lending activity in Europe has eased this problem.

In the UK, for instance, nearly 40 property-lending banks have more than 25% of their commercial loan facilities concentrated in real estate lending. Building societies in IE and savings banks and small, specialised mortgage institutions in ES are also more exposed to risks of downward correction to real estate prices than other banks, even though they do not seem a likely source of systemic concern. In DK and SE mortgage institutions present a high sectoral concentration of lending and are particularly sensitive to market developments. However, these institutions may actually be owned by major banks with a far more diversified portfolio and generally constitute low-risk institutions. In PT and DE specialised institutions also generally form part of larger, well-diversified banking groups, which are under the scrutiny of consolidated supervision.

18 *However, NL reported a number of signs of eased credit standards: taking account of second income by banks when granting loans, loans to households without permanent employment, a large amount of re-negotiated mortgage loans to take advantage of lower interest rates, lowered risk premium embedded in the mortgage rate. For IE, new entry to the market was indicated as possibly leading to a relaxation of standards as banks attempt to retain market shares.*

### 2.2 Market risk channel

Banks are becoming more frequently involved in the securities business and may, therefore, be directly affected by large movements in stock prices (equity price risk). However, the general picture has been, on the basis of the amount of capital required to cover market risks (as set out in the Capital Adequacy Directive), that the market risk in the trading book has still been of limited significance for banks' overall solvency. In comparison with the relevance of requirements generated by the loan book, the share of capital needed to cover all market risks is quite small on an aggregated basis, ranging from below 1% of the total capital requirement in SE to a maximum value of approximately 7% in FR, UK and IE and 8% in DE. While small on an aggregated basis, market risk can nevertheless be a major problem for individual banks or other institutions, as has been demonstrated by the Long-Term Capital Management (LTCM) incident, for instance.

Furthermore, since the stock investments of banks are quite limited in comparison with investments in debt securities, only a fraction of the capital requirement usually stems from the equity price risk.[19] Due to the dominance of bond investments, a fall in stock prices may also have a neutral or even positive effect on the exposure to market risk, insofar as it is associated with a flight to quality towards Treasury bills and other types of bonds banks have in their trading portfolio. Generally speaking, the risk of a sharp fall in real estate prices having significant direct effects on the banks' balance sheet is very low, since most of the property in the banks' books is acquired for business purposes. An exception to this rule exists in FI banks, which ended up – in the aftermath of the severe crisis of the early 1990s – holding substantial amounts of the real estate that had been posted as collateral for failed loans. Even though "bridge banks" were created to deal with banks' bad assets, including the real estate assets, direct exposure to movements in real estate prices remains significant.

### 2.3 Commission income channel

While increased competition has resulted in a shrinking of margins on traditional banking activity, this fall has been compensated for in most countries by growth in non-interest income. Asset price deflation would affect banks' commission income, both because the capital gains from securities trading would turn into losses and because the fees gained by supplying (directly or through subsidiaries) asset management services and selling insurance and investment products would diminish. Of course, banks may also earn commissions in a bear market, since the run to sell assets increases the volumes of trading. Nonetheless, this constitutes a one-shot wave of profits, while the fees collected on the amount of assets managed, which seems to represent the bulk of earnings from banks' involvement in the securities business, would settle at significantly lower levels for a much longer time-span. Some specific fees also disappear in less buoyant stock markets, such as fees for initial public offerings, mergers and acquisitions.

All in all, the relevance of this channel seems strictly dependent on the extent of the correction to prices and on the length of the period in which investors withdraw their savings from the stock market. For example in BE losses in sales and commissions income are regarded as one of the major consequences of a major correction to market prices.

19 *For instance, equities represent only 2% of the total investments in securities by BE banks. In DK their share is around 2% of total assets, in ES around 5% (only a fraction on the trading book), in IE around 7% and in LU and FI close to 1%. In DE and BE the equity price risk accounts for only about 6% of the total market risk. In the UK, equity investments account for 13% of banks' investments in securities.*

At first glance, this channel does not seem of paramount importance either, even though capital gains realised in the trading book and incomes from services related to securities trading and asset management contributed considerably to the improvement in bank returns in most EU countries. A precise assessment of the role of these sources of bank profits is impaired by differences in the breakdown of non-interest income at the national level.

### 2.4 Subsidiaries re-capitalisation channel

Even though banks may be less involved directly in the securities or real estate businesses, a sharp decline in prices can affect them indirectly through the difficulties incurred by subsidiaries or companies in which they have relevant stakes. These companies usually rely on their parent bank for liquidity needs arising, for example, from margin calls on derivatives markets, and in the event of major problems they will need fresh capital, transferring the strain on parent banks. The associated vulnerability could be exacerbated by shortcomings in the internal control system accounting for the risks arising from different parts of the group. The severe crisis experienced by the Japanese "Jusen", i.e. subsidiaries of banks specialised in the provision of mortgage credit, in the first half of the 1990s provides an example associated with adverse developments on real estate markets.

The possibility in the EU of turbulence triggered by a reversal of asset prices manifesting itself through specialised subsidiaries cannot be ruled out, due to the more complex organisational structure of major banking groups. However, this channel does not seem to account for significant additional risk, since the risks discussed so far are mainly related to the exposures of banking groups which are supervised on a consolidated basis. The subsidiary channel may be relevant in another respect only insofar as consolidated supervision does not prove to be effective and major risk exposures build up without being captured by centralised risk control systems and supervisory monitoring.

### 2.5 "Second round" channels

Apart from direct effects on banks' balance sheets and on the ability of borrowers to meet their obligations, asset price declines may lead to a weakening of banks' stability as it usually goes hand in hand with a deterioration in general financial and macroeconomic conditions. In a sense, if more emphasis were put on the real source of financial crises, as is argued in some well-founded strands of theoretical and empirical research, these "second round" effects could be seen as the root of the problem. However, even though these effects would need to be regarded as triggering events, their effects on banks' stability would be increased by the presence of the fragilities discussed in previous paragraphs.

**(1) Macroeconomic effects.** Higher asset values in some countries may have caused excessive consumption through wealth effects, as is reflected in the decreased propensity to save and in increased indebtedness. Hence, a large decline in asset prices may reverse this tendency,[20] slowing down economic activity, business investment and the purchase of new property by households among others, and therefore triggering the classic debt-deflation problem. The deterioration in macroeconomic conditions increases, in general, banks' credit risks and leads to income losses.

20 *The sensitivity of households' consumption to stock price developments has been addressed in literature. For instance, according to Crockett (1997), the cumulated impact of the 1987 stock exchange crash on US industrial output was confined to 0.5% of GDP. A fall in the ratio between the price of shares or of existing houses and the replacement cost of capital or the price of new houses may have a potentially greater effect on economic activity; e.g. for one EU country econometric simulations imply that a 20% fall in real estate prices would have a cumulative negative impact of 1% on real GDP via consumption and housing investment. If the fall in prices is coupled with higher interest rates, an additional negative effect on exports and domestic spending has to be taken into account*

The increased stock holdings of households could propagate the importance of this channel. Equity holdings by households still differ sharply across EU countries: for instance, both in AT and in DE shares represent a limited portion of households' investments. Nonetheless, if indirect holdings, mainly through mutual funds, are taken into account, a trend towards an increased importance of equity investments in households' portfolios is apparent throughout the EU. The larger part of household's wealth is still likely, however, to be invested in real estate. In any case, capital adequacy can prove crucial for sheltering the impact of a deterioration in macroeconomic performance on banks, and current figures seem to be reassuring in this respect.

**(2) Banks' funding possibilities and conditions.** Over the past few years the buoyant stock market has favoured the increased capitalisation of banks and an intense wave of mergers and acquisitions. Asset price declines would probably hinder or halt the restructuring of the banking industry. Furthermore, banks needing fresh capital might find it difficult and costly to tap it in the stock or bond markets if they are very close to the minimum regulatory requirements. This would also put a strain on the future development of banks' business activities. The funding problems probably do not constitute a primary channel through which the strain spreads from the stock or real estate markets to the banking system, but may exacerbate banks' difficulties if they arise.

**(3) Solving banking problems.** Should severe banking problems arise, they would also be more difficult to resolve in depressed market conditions. For instance, it might be difficult to organise brokered solutions or mergers. In the past, for instance, brokered solutions to crises have proved to be an effective way to cope with distressed situations triggered by asset price decline: the 1973 lifeboat in the UK can be taken as a benchmark for this type of operation. Nonetheless, depressed stock markets, together with the structural changes that have taken place in the competitive environment, may affect the willingness of banks to participate in such operations.

### 2.6 Overall assessment

All in all, the credit risk channel, especially through bank exposures *vis-à-vis* the real estate sector, appears to be the most prominent source of concern for banking stability, should a major decline in asset prices occur. However, even in countries where real estate prices have climbed farthest (IE and NL) no major systemic threat was identified. Nonetheless, the exposures of the last entrants in the real estate market can be very significant. Some other countries have also recently experienced expansive real estate markets (ES, PT, FI and the UK). IT banks are in a quite different phase. The decrease in real estate prices until 1998, in particular, caused a deterioration in the quality of bank lending to the real estate sector and a reduction in the value of collateral (total expected losses amounting to some 10% of the total supervisory capital requirement). However, the ratio of bad debts to total collateralised bank loans has recently decreased (from around 9% to 8% between June 1998 and June 1999) due to the pick-up in the real estate markets.

What seems potentially worrying is the concurrent tightening of competition in the related lending activities of banks. Narrowing margins, which confirm this development, have been observed in many countries. Rising LTVs were also reported for a number of countries, while there has not been any apparent slackening of the other credit standards.

Less information is available on the credit risk exposure in respect of stock market investments, but – with all due caution – the existing evidence does not look very alarming. Direct holdings of shares or real estate by banks are not very worrying either, with the only exception of FI banks' exposure in real estate.

The effects on banks' income and the "second round" effects through the impact on macroeconomic conditions and banks' funding possibilities are only likely to give rise to serious concern in the event of a severe and prolonged fall in asset prices, accompanied by a serious recession. In this scenario the debt servicing capabilities of banks' clients would deteriorate significantly.

Even though overall concerns are not heightened, it is essential that supervisory authorities have the proper monitoring devices in place and pay great attention to the risks incurred by institutions under their responsibility in the event of a sharp reversal of real estate prices.

## 3 Actions taken by supervisory authorities

In those countries where possible risks for the banking sector of sharp changes in real estate prices have surfaced, supervisory authorities (central banks or separate authorities) have already taken a number of actions for the benefit of preserving financial stability in order to ensure prudent lending practices by banks. These actions can be grouped into the following five categories:

- public communication of concerns;
- direct contacts with bank management;
- specific (on-site) examinations of banks' real estate lending practices;
- specific supervisory measures to address the ability of banks to withstand significant real estate price reversals (sensitivity analyses); and
- regulatory measures.

The measures taken are briefly described below.

**(1) Public communication of concerns.** The Central Bank of Ireland, De Nederlandsche Bank, the Banco de Portugal, and Suomen Pankki have published articles on the real estate market and lending developments. The Central Bank of Ireland has expressed repeated unease about the high levels of growth in prices and lending. De Nederlandsche Bank started voicing its concerns in September 1997, pointing out the risks for both banks and households. The Financial Supervision Authority of Finland has expressed concerns about the significant real estate holdings of the Finnish banks as a result of the banking crisis in its Annual Report and other public statements. Suomen Pankki has also recently started to raise public awareness of the dangers of too rapid lending growth. The Commission bancaire has also published articles and, especially, expressed some concerns about the buoyant commercial real estate sector in France. The Banco de España's Governor has made several references to this issue in his speeches. The Chairman of the UK Financial Services Authority has called on mortgage lenders to review their lending practices and, in particular, to retain strong tests of debt-servicing capacity and prudent lending concentration risk limits.

**(2) Meetings with bank management.** The Central Bank of Ireland has conveyed its concerns in contacts with bank management, emphasising the need for maintaining good credit standards. Similarly, De Nederlandsche Bank has had regular meetings at the board level. The French supervisory authorities conduct regular meetings with bank management on the real estate sector prospects.

**(3) Specific (on-site) examinations of banks' lending practises.** The Financial Supervision Authority of Finland has conducted a specific examination of real estate lending practices and found a significant reduction in banks' interest margins. The Financial Supervision Authority of Sweden has made a specific study of banks' lending practices and conditions, but found no evidence of more lax lending terms. De Nederlandsche Bank has recently conducted an in-depth study of banks' credit management processes and practices.

**(4) Sensitivity analyses.** The Central Bank of Ireland has required banks to conduct sensitivity analyses in relation to adverse events, such as a real estate price fall or a sizeable increase in interest rates. In France, the 97-02 regulation on internal control systems requires credit institutions, in particular, to develop credit risk selection procedures. The monitoring must apply to each counterpart, as well as being conducted by economic sector, geographic zone and level of risk. Banks are required to update their cost of risk, and to do so at least on a quarterly basis for the most significant loans. Sensitivity analyses, co-ordinated by the supervisory authority, are also conducted in the UK with the intention of encouraging more forward-looking risk assessment. The Financial Services Authority has made explicit proposals that all UK banks should, for instance, document their strategy and risk management practices and consider the external factors that might affect their business. De Nederlandsche Bank, the Banco de España and the Financial Supervision Authority of Finland have assessed the losses for the banking sector under stress scenarios concerning asset price developments.

**(5) Regulatory measures.** ES has set up a new solvency provision, which covers the latent insolvency and which is additional to the current provisions on impaired assets. This new provision aims to mitigate the effect of the economic cycle on the accounts of the banks. In IE, banks have been requested to adhere to prudent norms with respect to LTVs and accepted income multiples in lending. IE is also considering whether institutions should review their existing provisioning policies to reflect the difficulties which may arise under more difficult economic circumstances. Twice a year, the French supervisory authorities conduct a specific survey on the commercial real estate sector. An official letter was also recently sent by the French supervisory authorities to the French association of credit institutions to underline the necessity for caution in granting loans to the expansive commercial real estate sector. Banco de Portugal has also considered increasing provisioning requirements. In FI the supervisory authority has requested banks to devise a plan to reduce their real estate holdings significantly and to adjust the book values if these are too high compared with the expected market returns on real estate investments. Moreover, banks have been requested to provide adequate public information on their real estate holdings.

# ANNEX

## ASSET PRICES AND BANKING FRAGILITY

This Annex is intended to address the literature concerning the possible relationship between asset price cycles and banking fragility. The survey is meant to give an idea of the main arguments in the literature. It should not be regarded as a comprehensive account of the literature on this topic. There is much literature on why a financial crisis could have detrimental effects on macroeconomic developments, or how falling asset prices could affect the macroeconomy through various channels. There are different views on these issues, and one theory argues that even severe asset price falls, causing difficulties for banks, need not have strong repercussions on the macroeconomy (e.g. Schwartz 1986). These issues are not, however, addressed in this survey.

Evidence from past financial crises shows that in a number of instances large asset price cycles have preceded severe banking problems for both industrial and emerging countries (e.g. Kaminsky and Reinhart 1996, Herring and Wachter 1999). While it is true that sharp asset price falls may not always trigger banking crises and that banking crises can occur without significant asset price cycles, the two developments have often been correlated. The explanations given in the literature should encourage supervisors to think about banks as key economic agents susceptible to the danger of underestimating the impact of an asset price decline on their performance.

Following Fisher's (1932, 1933) analysis of the Great Depression, many authors have suggested that the basic reason for the connection between asset price cycles and banking problems is the over-expansion of bank credit (relaxed lending standards) fuelling the build-up of asset prices and increasing banks' credit risks.[21] The problem is seen to develop in *stages,* with increasing financial fragility in the household and corporate sectors and a heightening vulnerability of banks.[22] The start of the "*asset price-debt cycle"* can be any exogenous event, such as technological progress or a change in the institutional environment or deregulation.[23] The subsequent acceleration of economic growth and asset prices triggers "euphoria" as households and firms anticipate further asset price rises and increase their willingness to engage in debt-financed investment in these assets. A *self-sustaining process* is then started: the increased collateral values enhance clients' ability to accumulate debt and the increasing value of bank capital enhances banks' ability to extend credit.

Once the peak of the cycle is being approached, asset prices become increasingly disconnected from their "fundamental values" and vulnerable vis-à-vis exogenous shocks. The shock can be an unanticipated change in the overall economic or corporate sector performance. This event destroys market confidence and causes a flight away from the respective assets. The price collapse can be heightened substantially by forced sales of assets. The difficulties experienced by borrowers are transmitted to banks. Banks' bad loan and capital adequacy problems may lead to tightening lending standards and credit rationing, thereby aggravating customers' difficulties further. In the

21 *Minsky (1972, 1977, 1991), Kindleberger (1978), Eichengreen and Portes (1987) and Allen and Gale (1998).*

22 *Minsky describes the changing nature of debt in the process. First, there is only "hedged debt", which can be repaid with the gains from the operations financed by it. At some point, it gives way to "speculative finance", which compels borrowers to sell some of their assets in order to pay back the principal. The last step is called "Ponzi finance", which occurs when new debt is contracted only to meet the obligations arising from previously acquired debt. During this process, the share of short-term debt increases as the creditworthiness of the borrowers decreases and the financial fragility of the borrowers increases.*

23 *For instance, Davis (1995) points out that deregulation, especially if carried out during an economic boom, can significantly foster the asset price cycle, since it increases banking competition and heightens the boom in the economy as a whole.*

most severe cases, confidence problems in respect of the soundness of banks lead to runs on bank deposits (a "real financial crisis" in the terminology of Schwartz 1986).

Empirical evidence in favour of the causal links in the Fisher-Minsky-Kindleberger theory is somewhat mixed.[24] However, the tests on the direction of causality and the origins of instability do not cast doubt on the main point, i.e. the *strict link* between a sharp reversal of prices in the stock or real estate market and the spreading of instability in the banking sector.

Some elements of *undesirable bank behaviour*, namely a lack of prudence and excessively loose credit standards, could heighten the asset price-debt cycle. This can take place especially in the event of banks engaging in sharp market share competition over the expanding credit market. The first possible explanation for this kind of behaviour is that an underestimation of the probability of low-frequency shocks ("disaster myopia") leads bankers to downplay the risk of a large asset price decline. In addition, banking can appear misleadingly profitable during the upswing.[25]

The second possible explanation is related to the existence of asymmetric information, which has the benefit of not requiring a form of irrational behaviour by bank management. There is abundant literature on these issues, focusing, first, on the biased incentives of the managers and owners of banks due to the public safety net, foremost deposit insurance (*moral hazard of excessive risk taking*).[26] Especially when the bubble begins to burst and risks start to materialise in the loan books, banks might exploit the opaqueness of their behaviour to increase their risk exposure, in an extreme attempt to "gamble for resurrection". Second, the general principal-agent problems in banking can give rise to the moral hazard effect even without the safety net (e.g. Dewatripont and Tirole 1993).[27] The explanations drawing on the asymmetric information may be more meaningful for the late stages of the asset cycle, when managers of troubled institutions face the incentive to gamble on further rises in asset prices.

Finally, there is some literature on the reasons why the market price of an asset can overshoot the value justified by the "fundamental value", which is determined by the discounted earnings potential (cash flow) of the asset in question. However, it is always very difficult to assert empirically that asset prices are overvalued compared with the "fundamental value", since the determination of the latter is a complex task and requires many sensitive assumptions to be taken into account (expected cash flow of the asset in question, interest rate used for discounting, and relevant risk premium, etc.).

A *fixed supply* of an asset in the short run and *uncertainty* regarding the determination of its value and risk are the theoretical preconditions for a price above the "fundamental value". In particular,

24 *For instance, Eisenbeis (1997) suggests that the data available are not consistent with the sequence of events put forward by Minsky. There are also authors, such as Benston and Kaufman (1995), who argue that the major disturbances in banking arise from the real economy rather than from the inherent features of the banking system.*

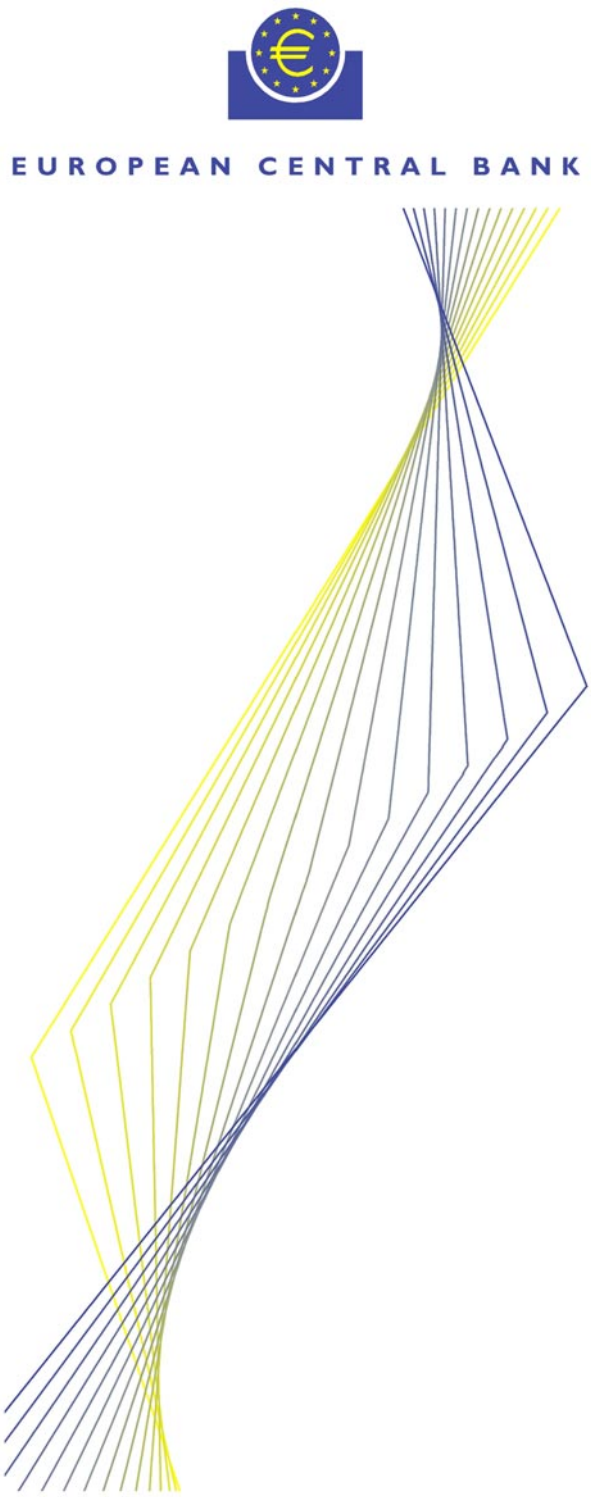
25 *Kindleberger (1978) and Guttentag and Herring (1986) argue that, in most instances of real estate price crashes, prices had dimbed upwards for a very long period of time. Consequently, the repayment record of the real estate loans was good in comparison with other types of lending, resulting in "myopic" bank behaviour.*

26 *One section of the literature argues that deposit insurance enhances stability by reducing the probability of self-fulfilling (Diamond and Dybvig 1983) bank runs. As long as the deposit insurance is credible and guarantees depositors' funds effectively bank runs should not materialise. On the other hand, deposit insurance may decrease stability by encouraging risk taking by banks and, hence, increase the probability of bank insolvency. In an underpriced (fixed-priced, risk insensitive) deposit insurance system, banks' cost of funds does not reflect the risk of their asset portfolio. Hence, banks have an incentive to maximise the value of the public subsidy component by taking on more risk (originally Merton 1977). Extensive coverage of the literature and references can be found e.g. in Davis (1995) (Chapter 5).*

27 *Dewatripont and Tirole argue that the fragmented nature of banks' deposit base always limits the governance by the debt holders, since the obvious free-rider problems prevent the emergence of active monitoring of banks' risk taking by depositors.*

these two factors can lead to an array of prices, different people, ranging from "optimists" to "pessimists", would be willing to pay for the asset in question (see e.g. Herring and Wachter 1999). The "optimists" would strongly influence the market price, which would end up above the "fundamental value", as they would become the owners of the scarce asset. The "optimists" would remain in the business as long as the upward trend in the price continues, and they would be able to borrow against their capital gains as long as lenders value their asset at market prices when determining the collateral value. As shown by Allen and Gale (1998), the inability of lenders to observe how risky borrowers' investments are can lead to risk-shifting behaviour and cause the asset in fixed supply to be bid up further by the borrowers. Note that this does not, in theory, require irrational investors.

An obvious example of an asset that is in fixed supply in the short term is real estate. Stocks can also be thought to be in fixed supply in the short run since it takes time to identify profitable opportunities and expand the supply of stocks. However, the theory is maybe more readily applicable to real estate than stock markets. Shleifer and Vishny (1997), for example, claim that limitations to short selling or some other limits to arbitrage are also needed for a bubble to exist. Hence, it has also been claimed that some behaviour of "*irrational exuberance*" on the part of investors is needed to drive stock prices above the "fundamental value", as determined by the discounted dividend stream. *Herd behaviour*, in the sense that investors copy each others' actions because they think others have superior information, is one possible explanation for the building-up of a bubble (e.g. Lagunoff and Schreft 1998). In this case, stock prices become dependent on the ongoing confidence of these investors to keep their assets in the stock market.




**Tables and charts**

## Table 1

### Valuation indicators for stock markets, as of 31 October 1999

| | United States | | Germany | | France | | United Kingdom | |
|---|---|---|---|---|---|---|---|---|
| | Current | Historical average | Current | Historical average | Current | Historical average | Current | Historical average |
| Dividend yield | 1.3% | 3.6% | 1.7% | 2.0% | 2.1% | 4.0% | 2.6% | 4.7% |
| PE-ratio | 32 | 14 | 21 | 17 | 21 | 12 | 24 | 12 |
| Implicit earnings growth | 6.9% | | 7.6% | | 7.1% | | 6.7% | |

| | Belgium | | Denmark | | Spain | | Ireland | |
|---|---|---|---|---|---|---|---|---|
| | Current | Historical average | Current | Historical average | Current | Historical average | Current | Historical average |
| Dividend yield | 1.8% | 4.2% | 1.6% | 1.5% | 2.0% | 3.5% | 2.3% | 3.0% |
| PE-ratio | 20 | 13 | 19 | 18 | 21 | 14 | 19 | 15 |
| Implicit earnings growth | 7.2% | | 6.1% | | 5.7% | | 6.5% | |

| | Italy | | Netherlands | | Austria | | Finland | |
|---|---|---|---|---|---|---|---|---|
| | Current | Historical average | Current | Historical average | Current | Historical average | Current | Historical average |
| Dividend yield | 2.3% | 2.4% | 2.0% | 4.7% | 2.1% | 1.9% | 1.4% | 2.2% |
| PE-ratio | 24 | 18 | 29 | 12 | 13 | 19 | 33 | 12 |
| Implicit earnings growth | 6.2% | | 6.2% | | 7.5% | | 7.3% | |

| | Sweden | | Greece | | Portugal | | Luxembourg | |
|---|---|---|---|---|---|---|---|---|
| | Current | Historical average | Current | Historical average | Current | Historical average | Current | Historical average |
| Dividend yield | 1.7% | 2.4% | 1.3% | 2.8% | 2.4% | 3.0% | 3.1% | 2.3% |
| PE-ratio | 19 | 18 | 34 | 16 | 21 | 18 | 14 | 17 |
| Implicit earnings growth | 7.5% | | n.a. | | n.a. | | 5.2% | |

*Source: Datastream.*
***Implicit (future) earnings growth** rates are defined on a real basis as of 30 September 1999 for all countries except Germany, Belgium and the Netherlands, where they refer to October. They are computed according to the "dividend discount model" assuming the equity risk premium of 5% (historical average), and the present dividend yield and long-term interest rates (yields of 10-year benchmark government bonds).*
***Historical averages** are generally calculated from 1987 onwards. However, for the United States, France, the United Kingdom, Belgium, the Netherlands and Japan they are computed from 1973, whereas the beginning of the calculation period is 1992 for Luxembourg, 1990 for Greece and Portugal and 1988 for Finland.*

## Table 2.a

### Residential real estate prices

*Indexes 1994=100*

| | Belgium | Denmark | Germany | Spain | France | Ireland | Italy | Netherlands | Luxembourg | Austria | Finland | Sweden | UK | Japan | US |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1987 | 59 | 98 | 66 | 50 | 72 | 66 | 58 | 67 | 68 | 47 | 94 | 73 | 69 | 87 | 79 |
| 1988 | 63 | 101 | 70 | 62 | 69 | 72 | 53 | 70 | 73 | 54 | 126 | 84 | 88 | 96 | 83 |
| 1989 | 70 | 101 | 73 | 77 | 78 | 80 | 69 | 75 | 77 | 63 | 154 | 99 | 106 | 112 | 87 |
| 1990 | 76 | 93 | 74 | 88 | 90 | 90 | 86 | 76 | 82 | 81 | 145 | 111 | 105 | 123 | 88 |
| 1991 | 80 | 94 | 80 | 101 | 84 | 92 | 97 | 79 | 87 | 85 | 125 | 119 | 104 | 117 | 94 |
| 1992 | 87 | 88 | 85 | 100 | 89 | 95 | 103 | 85 | 94 | 90 | 102 | 108 | 100 | 107 | 96 |
| 1993 | 93 | 94 | 90 | 99 | 93 | 95 | 103 | 93 | 95 | 95 | 94 | 96 | 98 | 101 | 99 |
| 1994 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| 1995 | 105 | 100 | 98 | 104 | 95 | 106 | 102 | 105 | 99 | 103 | 97 | 101 | 100 | 98 | 102 |
| 1996 | 109 | 109 | 98 | 106 | 97 | 120 | 102 | 115 | 102 | 105 | 101 | 101 | 104 | 97 | 107 |
| 1997 | 111 | 119 | 98 | 107 | 98 | 139 | 97 | 124 | | 107 | 119 | 109 | 114 | 95 | 114 |
| 1998 | 114 | 124 | 101 | 112 | 101 | 171 | 98 | 138 | | 108 | 132 | 119 | 126 | 92 | 120 |

*Sources: European Mortgage Federation (Hypostat 1988-1998, November 1999), Bank for International Settlements, Statec (Luxembourg).*

## Table 2.b

### Residential real estate prices

*Annual percentage changes*

| | Belgium | Denmark | Germany | Spain | France | Ireland | Italy | Netherlands | Luxembourg | Austria | Finland | Sweden | UK | Japan | US |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1988 | 6.6 | 3.0 | 5.1 | 23.9 | -4.1 | 9.2 | -9.3 | 4.8 | 7.4 | 15.6 | 34.1 | 15.6 | 28.1 | 10.3 | 5.5 |
| 1989 | 12.0 | 0.0 | 4.7 | 24.3 | 14.1 | 11.3 | 31.1 | 6.5 | 5.5 | 17.3 | 21.8 | 17.1 | 20.2 | 17.1 | 4.7 |
| 1990 | 7.5 | -8.3 | 1.0 | 14.9 | 14.8 | 12.4 | 25.0 | 2.0 | 6.5 | 27.3 | -5.7 | 12.4 | -1.0 | 9.8 | 0.9 |
| 1991 | 6.0 | 1.0 | 9.0 | 14.0 | -6.5 | 2.0 | 12.0 | 3.0 | 6.1 | 5.0 | -14.0 | 7.0 | -1.0 | -5.0 | 7.4 |
| 1992 | 8.5 | -5.9 | 5.5 | -0.9 | 5.7 | 2.9 | 6.3 | 8.7 | 8.0 | 5.7 | -18.2 | -9.3 | -4.0 | -8.5 | 2.2 |
| 1993 | 7.0 | 6.3 | 7.0 | -0.9 | 4.3 | 1.0 | 0.8 | 8.9 | 1.1 | 6.3 | -7.6 | -11.3 | -2.1 | -5.3 | 2.3 |
| 1994 | 7.3 | 6.9 | 10.6 | 0.9 | 7.8 | 4.7 | -3.3 | 7.4 | 5.3 | 5.1 | 6.2 | 4.7 | 2.2 | -1.4 | 1.4 |
| 1995 | 4.5 | 0.0 | -2.2 | 3.5 | -5.4 | 6.3 | 1.7 | 4.6 | -1.0 | 3.2 | -2.9 | 1.1 | 0.0 | -2.0 | 1.9 |
| 1996 | 4.3 | 9.3 | 0.0 | 2.6 | 2.9 | 12.7 | 0.0 | 10.2 | 3.0 | 1.6 | 4.5 | 0.0 | 4.2 | -1.0 | 5.0 |
| 1997 | 1.4 | 8.5 | 0.0 | 0.8 | 1.0 | 15.8 | -5.1 | 7.9 | | 2.3 | 17.1 | 7.7 | 9.1 | -2.1 | 6.6 |
| 1998 | 2.7 | 4.7 | 3.0 | 5.0 | 2.9 | 23.4 | 1.1 | 11.0 | | 0.8 | 11.0 | 9.2 | 11.1 | -3.2 | 5.3 |

*Sources: European Mortgage Federation (Hypostat 1988-1998, November 1999), Bank for International Settlements, Statec (Luxembourg).*

## Table 3.a

### Commercial real estate prices (major cities)

*Indexes 1994=100*

| | Belgium | Germany | Spain | France | Ireland | Italy | Netherlands | Finland | Sweden | UK | Japan | US |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1986 | | 60 | 88 | 101 | | 69 | | 74 | 124 | 109 | 107 | 157 |
| 1987 | | 75 | 132 | 111 | | 72 | | 102 | 167 | 152 | 172 | 165 |
| 1988 | | 85 | 179 | 119 | | 92 | | 129 | 201 | 179 | 177 | 168 |
| 1989 | | 116 | 257 | 146 | | 115 | | 170 | 228 | 174 | 186 | 170 |
| 1990 | | 141 | 288 | 171 | | 175 | | 136 | 235 | 149 | 193 | 158 |
| 1991 | 128 | 158 | 215 | 147 | | 161 | | 113 | 133 | 108 | 180 | 130 |
| 1992 | 123 | 120 | 155 | 121 | | 139 | | 90 | 117 | 75 | 146 | 113 |
| 1993 | 107 | 110 | 98 | 106 | | 117 | | 87 | 94 | 79 | 119 | 105 |
| 1994 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| 1995 | 100 | 98 | 99 | 89 | 112 | 100 | 109 | 105 | 130 | 107 | 82 | 100 |
| 1996 | 106 | 98 | 98 | 83 | 134 | 91 | 118 | 107 | 138 | 112 | 71 | 109 |
| 1997 | 109 | 98 | 117 | 88 | 169 | 88 | 128 | 111 | 164 | 128 | 65 | 125 |
| 1998 | 109 | 106 | 126 | 102 | 241 | 111 | 156 | 121 | 186 | 132 | 58 | 150 |

*Source: Bank for International Settlements Annual Reports.*

## Table 3.b

### Commercial real estate prices (major cities)

*Annual percentage changes*

| | Belgium | Germany | Spain | France | Ireland | Italy | Netherlands | Finland | Sweden | UK | Japan | US |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1987 | | 25.0 | 50.0 | 10.0 | | 4.0 | | 37.0 | 35.0 | 40.0 | 61.0 | 5.0 |
| 1988 | | 12.9 | 35.9 | 6.9 | | 27.5 | | 27.0 | 20.2 | 17.5 | 3.0 | 2.0 |
| 1989 | | 37.3 | 43.6 | 22.6 | | 26.1 | | 32.0 | 13.3 | -2.8 | 4.8 | 0.8 |
| 1990 | | 21.0 | 12.0 | 17.0 | | 52.0 | | -20.0 | 3.0 | -13.9 | 4.0 | -6.8 |
| 1991 | | 12.1 | -25.3 | -13.5 | | -8.0 | | -17.0 | -43.2 | -28.0 | -6.9 | -18.0 |
| 1992 | -4.0 | -24.1 | -27.8 | -17.8 | | -14.1 | | -20.1 | -12.0 | -30.3 | -18.9 | -13.3 |
| 1993 | -13.3 | -8.5 | -36.7 | -12.5 | | -15.4 | | -3.3 | -20.0 | 5.7 | -18.3 | -6.9 |
| 1994 | -6.3 | -8.8 | 1.7 | -5.7 | | -14.7 | | 14.5 | 6.5 | 26.0 | -16.0 | -4.5 |
| 1995 | 0.0 | -2.3 | -1.0 | -10.6 | 12.2 | 0.0 | 9.1 | 5.3 | 29.8 | 7.2 | -17.8 | 0.0 |
| 1996 | 6.0 | 0.0 | -1.0 | -6.7 | 19.6 | -9.0 | 8.3 | 1.9 | 6.2 | 4.7 | -13.3 | 9.0 |
| 1997 | 2.8 | 0.0 | 19.6 | 6.0 | 26.1 | -3.3 | 8.5 | 3.7 | 19.0 | 14.3 | -8.3 | 14.7 |
| 1998 | 0.0 | 8.2 | 7.8 | 15.9 | 42.6 | 26.1 | 21.9 | 9.0 | 13.5 | 3.1 | -10.6 | 20.0 |

*Source: Bank for International Settlements Annual Reports.*

## Table 4.a

### Outstanding residential mortgage credit

*As a percentage of GDP*

| | Belgium | Denmark | Germany | Spain | France | Ireland | Italy | Netherlands | Austria | Finland | Sweden | UK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1987 | 18.5 | | 46.3 | 10.2 | 21.9 | | 3.9 | 38.2 | 4.2 | 27.6 | | 45.3 |
| 1988 | 19.0 | | 44.7 | 11.9 | 22.7 | | 4.3 | 39.7 | 4.2 | 31.2 | | 50.0 |
| 1989 | 20.0 | | 45.0 | 12.9 | 23.6 | | 4.7 | 41.3 | 4.4 | 31.2 | | 46.4 |
| 1990 | 20.3 | | 42.5 | 14.2 | 23.8 | 18.9 | 5.0 | 40.0 | 4.4 | 31.7 | 47.3 | 54.5 |
| 1991 | 20.6 | | 40.4 | 14.8 | 24.1 | 20.2 | 5.4 | 41.0 | 4.4 | 32.0 | 53.4 | 54.7 |
| 1992 | 20.5 | 63.3 | 41.0 | 14.9 | 23.0 | 21.6 | 5.3 | 43.2 | 5.5 | 33.9 | 50.8 | 52.8 |
| 1993 | 21.0 | 60.1 | 42.6 | 13.8 | 21.7 | 22.2 | 6.1 | 45.8 | 5.3 | 38.1 | 60.6 | 59.0 |
| 1994 | 21.4 | 60.8 | 45.0 | 16.5 | 21.1 | 22.8 | 6.1 | 48.3 | 5.3 | 37.0 | 59.0 | 55.9 |
| 1995 | 21.1 | 58.9 | 46.2 | 17.6 | 20.9 | 23.0 | 7.6 | 50.1 | 5.2 | 32.6 | 60.2 | 54.6 |
| 1996 | 21.6 | 58.7 | 48.6 | 18.5 | 20.4 | 26.6 | 7.5 | 54.2 | 5.1 | 31.2 | 55.3 | 60.9 |
| 1997 | 23.2 | 66.5 | 51.1 | 21.5 | 20.5 | 25.8 | 7.4 | 60.0 | 5.1 | 29.4 | 53.6 | 56.8 |
| 1998 | 24.8 | 69.4 | 53.0 | 24.1 | 20.6 | 27.5 | 7.8 | 65.4 | 5.0 | 30.1 | 48.8 | 53.1 |

*Source: European Mortgage Federation (Hypostat 1988-1998, November 1999).*

## Table 4.b

### Outstanding residential mortgage credit

*Annual percentage changes*

| | Belgium | Denmark | Germany | Spain | France | Ireland | Italy | Netherlands | Austria | Finland | Sweden | UK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1988 | 8.5 | | 1.4 | 37.2 | 9.4 | | 18.5 | 7.8 | 4.7 | 30.0 | | 21.8 |
| 1989 | 14.5 | | 7.2 | 28.1 | 12.0 | | 21.0 | 10.0 | 12.3 | 17.6 | | 15.2 |
| 1990 | 10.0 | | 3.9 | 23.0 | 8.2 | | 15.2 | 4.6 | 9.1 | 4.6 | | 14.0 |
| 1991 | 7.4 | | 11.7 | 15.1 | 4.4 | | 16.9 | 7.3 | 7.4 | -6.7 | 17.2 | 8.8 |
| 1992 | 6.4 | | 11.1 | 4.4 | 0.3 | 16.5 | -1.1 | 11.6 | 34.1 | -11.5 | 8.2 | 6.2 |
| 1993 | 7.6 | -0.2 | 11.6 | -15.0 | -1.6 | 5.8 | 3.5 | 13.9 | 3.9 | -1.5 | 8.0 | 5.2 |
| 1994 | 9.3 | 8.2 | 11.7 | 19.3 | 2.4 | 13.5 | 1.7 | 11.7 | 6.0 | 11.9 | 0.2 | 5.1 |
| 1995 | 4.9 | 4.2 | 9.0 | 12.6 | 3.5 | 9.7 | 21.7 | 11.6 | 5.0 | 1.6 | 2.4 | 3.9 |
| 1996 | 3.2 | 4.5 | 5.6 | 12.6 | 0.7 | 31.9 | 12.8 | 10.9 | 0.0 | -1.9 | 2.6 | 4.9 |
| 1997 | 9.0 | 17.4 | 5.3 | 18.7 | 2.0 | 15.9 | 4.5 | 13.5 | 0.9 | 2.0 | -0.8 | 5.4 |
| 1998 | 11.9 | 9.5 | 7.4 | 18.2 | 4.4 | 19.0 | 8.9 | 15.3 | 1.4 | 8.2 | 0.0 | 5.8 |

*Source: European Mortgage Federation (Hypostat 1988-1998, November 1999).*

## Table 5.a

### Outstanding commercial mortgage credit [1)]

*As a percentage of GDP*

| | Belgium | Denmark | Germany | Spain | Ireland | Italy | Netherlands |
|---|---|---|---|---|---|---|---|
| 1987 | 4.5 | | 6.9 | 3.4 | | 0.9 | 19.9 |
| 1988 | 4.7 | | 7.1 | 3.8 | | 1.0 | 20.6 |
| 1989 | 5.0 | | 7.3 | 4.1 | | 1.0 | 21.4 |
| 1990 | 5.2 | | 6.9 | 4.6 | | 1.1 | 21.2 |
| 1991 | 2.3 | | 6.4 | 4.9 | 2.8 | 1.2 | 21.6 |
| 1992 | 2.5 | 30.5 | 7.3 | 5.0 | 3.4 | 1.2 | 22.6 |
| 1993 | 2.6 | 27.4 | 8.3 | 7.5 | 3.8 | 1.4 | 22.6 |
| 1994 | 3.2 | 25.2 | 9.1 | 7.6 | 4.0 | 1.5 | 19.6 |
| 1995 | 2.8 | 23.0 | 9.2 | 8.3 | 4.2 | 4.2 | 20.4 |
| 1996 | 2.8 | 22.5 | 9.7 | 8.2 | 4.6 | 4.0 | 22.3 |
| 1997 | 3.0 | 22.6 | 10.0 | 8.9 | 4.6 | 3.9 | 22.9 |
| 1998 | | 22.6 | 10.4 | 10.9 | 4.7 | | 23.7 |

*Source: European Mortgage Federation (Hypostat 1988-1998, November 1999).*

[1)] *Lines inserted in the series of table 5.a. indicate breaks in the statistics, as reported by the EMF. The break is particularly pronounced for Italy, where other credit institutions than specialised mortgage institutions where not entitled to grant mortgage credit before 1993. Although they are allowed to do so since then, the legal change was not recorded in the Italian statistics before 1995.*

## Table 5.b

### Outstanding commercial mortgage credit

*Annual percentage changes*

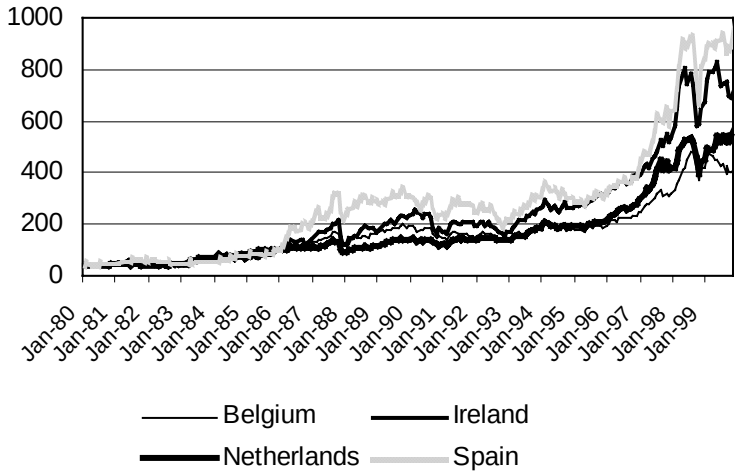
| | Belgium | Denmark | Germany | Spain | Ireland | Italy | Netherlands |
|---|---|---|---|---|---|---|---|
| 1988 | 9.5 | | 6.8 | 27.9 | | 16.2 | 7.8 |
| 1989 | 16.6 | | 9.5 | 28.1 | | 8.9 | 10.0 |
| 1990 | 12.5 | | 5.1 | 26.1 | | 21.3 | 6.8 |
| 1991 | | | 8.7 | 18.2 | | 21.3 | 6.7 |
| 1992 | 15.6 | | 24.1 | 4.9 | 29.3 | -3.9 | 11.2 |
| 1993 | 11.6 | -5.6 | 22.4 | | 22.1 | 8.5 | 9.7 |
| 1994 | 30.8 | -2.2 | 16.6 | 2.3 | 14.7 | 4.2 | |
| 1995 | -5.6 | -1.6 | 7.5 | 15.1 | 16.7 | | 11.3 |
| 1996 | 1.0 | 1.7 | 5.9 | 3.8 | 21.1 | 9.8 | 12.3 |
| 1997 | 7.0 | 4.5 | 3.4 | 12.0 | 9.3 | 1.0 | 4.5 |
| 1998 | | 4.9 | 7.0 | 29.8 | 18.2 | | 9.2 |

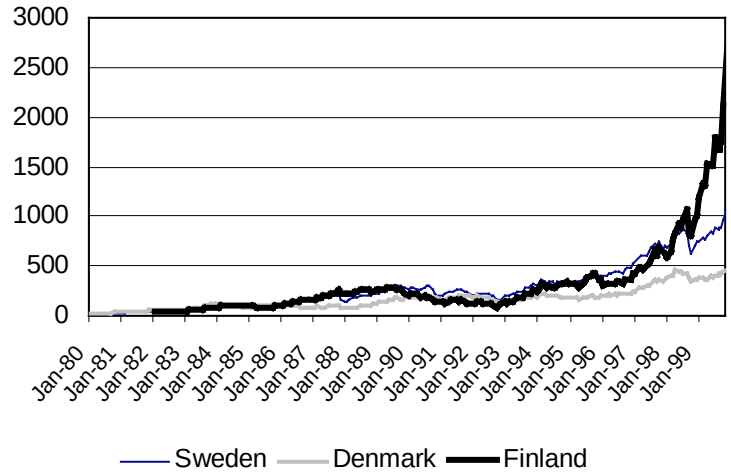
*Source: European Mortgage Federation (Hypostat 1988-1998, November 1999).*

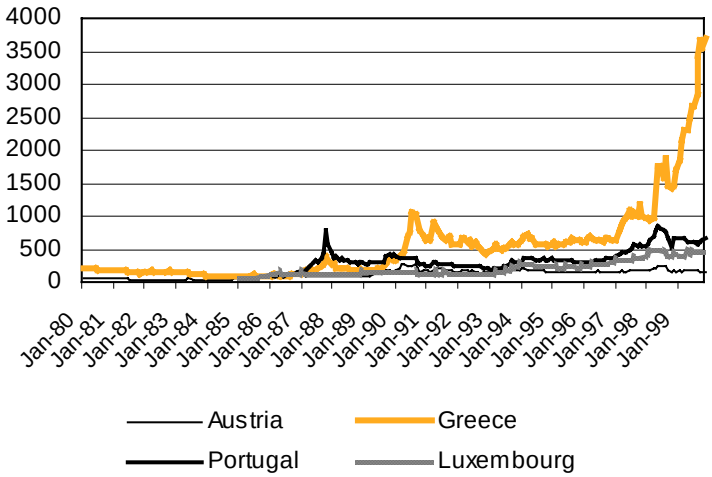
## Chart 1

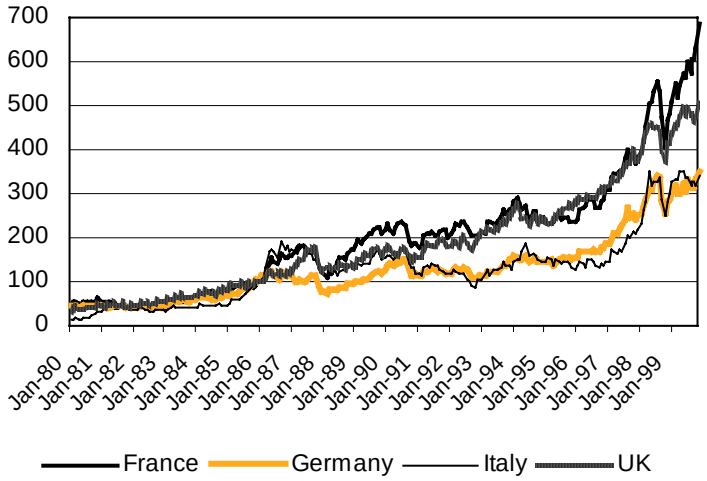
### Stock prices (General indexes, January 1980–November 1999)

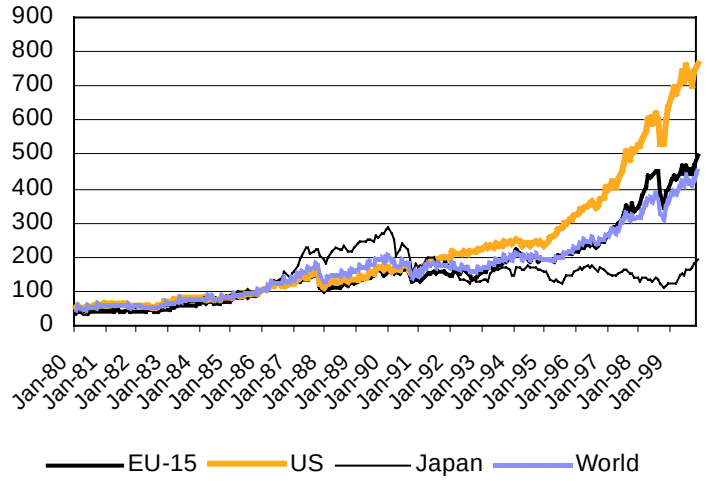
*Indexes December 1985=100, end of month data*






*Source: Datastream.*

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