EUROPÄISCHE ZENTRALBANK

3. April 2000

Sperrfrist:
Montag, 3. April 2000, 18.00 Uhr EZB-Zeit (MEZ)

PRESSEMITTEILUNG

„DIE ERTRAGSSTRUKTUR DER BANKEN IN DER EU" – „PREISE FÜR VERMÖGENSWERTE UND STABILITÄT DES BANKENSEKTORS"

Die Europäische Zentralbank veröffentlicht zwei vom Ausschuss für Bankenaufsicht erstellte Berichte mit dem Titel „EU banks' income structure" (Die Ertragsstruktur der Banken in der EU) und „Asset prices and banking stability" (Preise für Vermögenswerte und Stabilität des Bankensektors). Diese Berichte wurden der Presse von Herrn Tommaso Padoa-Schioppa, Direktoriumsmitglied der Europäischen Zentralbank, und Herrn Edgar Meister, Direktoriumsmitglied der Deutschen Bundesbank und Vorsitzender des Ausschusses für Bankenaufsicht, vorgestellt.

Bericht über die Ertragsstruktur der Banken in der EU

Gestützt auf eine Umfrage unter Bankenaufsichtsorganen in der EU bekräftigt dieser Bericht die erhöhte Bedeutung zinsunabhängiger Einnahmen (Gebühren, Provisionen sowie die Gewinne aus Finanzgeschäften und Wertpapier-Portefeuilles) für die Banken in der EU. Die dem Bericht zu Grunde liegenden umfassenden Daten decken den Zeitraum von 1989 bis 1998 ab. Die wichtigsten Ergebnisse des Berichts – die sowohl für Banken als auch für die öffentlichen Finanzmarktaufsichtsorgane von Nutzen sein dürften – lassen sich wie folgt zusammenfassen:

1. ***Die Zusammensetzung der zinsunabhängigen Einnahmen ist recht heterogen.*** Gebühren und Provisionen stellen den Löwenanteil dieser Einnahmen (im Jahr 1998 entfielen auf sie im Schnitt 54 % der gesamten zinsunabhängigen Einnahmen der EU-Banken). Die nationalen Zahlen liegen zwischen 35 % und 72 %. Allerdings verringerte sich der Anteil von Gebühren und Provisionen an

den gesamten zinsunabhängigen Einnahmen zwischen 1994 und 1998. Die drei anderen Hauptkomponenten der zinsunabhängigen Einnahmen sind: (i) der Nettogewinn aus Finanzgeschäften (der 1998 rund 19 % der gesamten zinsunabhängigen Einnahmen in der EU ausmachte), (ii) die Einnahmen aus Wertpapieren (deren Anteil knapp 17 % beträgt und eine steigende Tendenz aufweist) und (iii) sonstige betriebliche Erträge (rund 10 %). Hinter diesen Durchschnittswerten können sich jedoch beträchtliche Unterschiede zwischen den einzelnen Ländern und Banken verbergen.

2. ***Die zinsunabhängigen Einnahmen haben im Vergleich zu den Nettozinseinkünften an Bedeutung gewonnen.*** Der Anteil der zinsunabhängigen Einnahmen (in Prozent der gesamten betrieblichen Erträge) in der EU erhöhte sich während des gesamten Betrachtungszeitraums. In den letzten Jahren ist er deutlich von 32 % (1995) auf 41 % (1998) gestiegen. Ausschlaggebend für diese Entwicklung waren sowohl eine Zunahme der zinsunabhängigen Einnahmen als auch ein kontinuierlicher Rückgang der Zinseinkünfte.

3. ***Die Zunahme der zinsunabhängigen Einnahmen hat offenbar positive Auswirkungen auf die Ertragslage der Banken gehabt.*** Das Ausmaß dieser positiven Auswirkung auf die Gewinnentwicklung wurde jedoch durch die mit dem Aufbau des zinsunabhängigen Geschäfts verbundenen höheren Betriebskosten begrenzt. Die Ertragslage verbesserte sich auch durch andere Faktoren, wie zum Beispiel ein besseres Kostenmanagement und einen effizienteren Kapitaleinsatz.

4. ***In mehreren EU-Ländern scheint eine negative Korrelation zwischen den zinsabhängigen und den zinsunabhängigen Einnahmen zu bestehen, die allerdings unterschiedlich stark ausgeprägt ist.*** Dies scheint darauf hinzudeuten, dass Schwankungen in der einen Einnahmequelle die Schwankungen in der anderen bis zu einem gewissen Grad ausgleichen könnten. Die Ergebnisse sollten jedoch mit Vorsicht interpretiert werden, vor allem deshalb, weil die Zusammensetzung der zinsunabhängigen Einnahmen Änderungen unterworfen war.

5. ***Die zinsunabhängigen Einnahmen scheinen insgesamt nicht schwankungsanfälliger zu sein als die Nettozinseinkünfte.*** So waren insbesondere die zinsunabhängigen Einnahmen, nach Abzug der Rückstellungen für Kreditausfälle, in den meisten EU-Ländern keinen größeren Schwankungen unterworfen als die Nettozinseinkünfte. Dies bedeutet, dass die gegenwärtigen Veränderungen in der Geschäftstätigkeit der Banken nicht zwangsläufig zu einer erhöhten Volatilität ihrer Erträge führen. Zwar wiesen die Gewinne aus Finanzgeschäften und, zu einem geringeren Grad, auch die

Einnahmen aus Wertpapiergeschäften einen hohen Grad an Schwankungsanfälligkeit auf, doch waren die Gebühren und Provisionen in der Regel recht stabil.

6. ***Die zunehmende Bedeutung zinsunabhängiger Geschäfte scheint zu einer Erhöhung der operationalen und strategischen Risiken sowie des Reputationsrisikos der Banken geführt zu haben.*** Die größere Bedeutung dieser Risikokategorien erhöht die Komplexität des Risikomanagements der Banken und damit der Aufgaben der Bankenaufsichtsbehörden und erfordert eine größere Wachsamkeit gegenüber diesen „sonstigen" Risikokategorien. Im Hinblick auf die gegenwärtige Überprüfung der Eigenkapitalvorschriften unterstützt diese Entwicklung die Argumentation für gesonderte Eigenkapitalanforderungen für nicht kredit- oder marktbezogene Risiken.

Bericht über Preise für Vermögenswerte und Stabilität des Bankensektors

Dieser Bericht untersucht die Beziehung zwischen der Bilanzstruktur der Banken und den Preisen einer Reihe von Vermögenswerten und arbeitet dabei die wichtigsten Kanäle heraus, über die ein Einbruch dieser Preise die Banken erreichen würde, nämlich Kreditrisiko, Marktrisiko, Verringerung der Provisionseinnahmen, Rekapitalisierung von Tochtergesellschaften und „Zweitrundeneffekte" infolge der Auswirkungen auf das gesamtwirtschaftliche Umfeld und die Refinanzierungsbedingungen für die Banken.

Das wichtigste Ergebnis dieses Berichts ist, dass eine Abwärtsbewegung bei den Immobilienpreisen ein höheres Risiko für die Banken birgt als ein Rückgang der Aktienkurse. Allerdings konnten die Aufsichtsorgane in der EU keine größere Gefährdung der Finanzmarktstabilität erkennen.

Selbst die hypothetische Situation einer unvermittelten und umfangreichen Kurskorrektur an den Aktienmärkten würde sich wahrscheinlich nur in begrenztem Ausmaß direkt auf die Ertragslage und Zahlungsfähigkeit der Banken auswirken, da die Banken selbst nur in sehr geringem Umfang in Aktien investiert haben und sich die Aktivitäten der auf Börsengeschäfte spezialisierten Töchter insgesamt in einem engen Rahmen halten. Das Kreditrisiko der Banken durch die Finanzierung von Aktienengagements scheint keine nennenswerte Rolle zu spielen. Allerdings sollte man die Bedeutung des aktienmarktbedingten Risikos nicht außer Acht lassen, da die Zweitrundeneffekte nicht umfassend untersucht wurden.

Das Immobilienmarktrisiko für Banken ist dagegen von größerer Bedeutung, da Grundpfandrechte die gebräuchlichste Form der von Banken hereingenommenen Sicherheiten darstellen und Wohnungsbaukredite den weitaus größten Teil des Darlehensgeschäfts von Banken und anderen Kreditinstituten ausmachen (nämlich 62% der gesamten Kreditgewährung an private Haushalte und

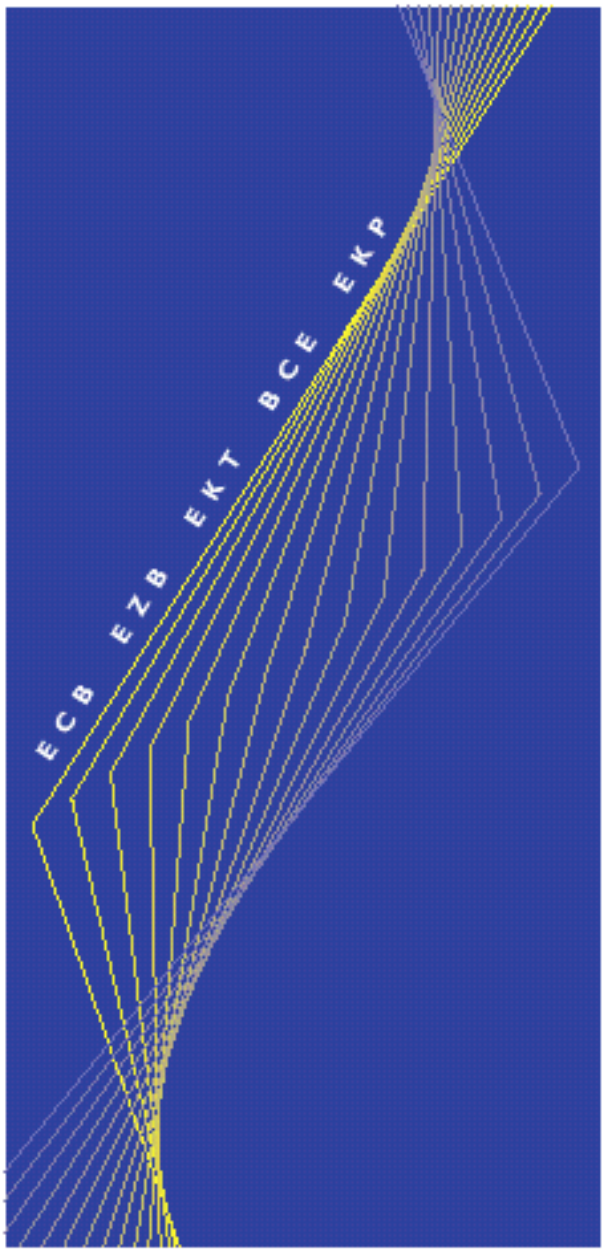
32 % der gesamten Darlehensvergabe im Eurogebiet per Ende Juni 1999). Die mit einem Rückgang der Immobilienpreise einhergehenden Risiken für die Banken schwanken erheblich von Land zu Land, nicht nur wegen der divergierenden Entwicklungen dieser Preise, sondern auch wegen der unterschiedlichen Methoden der Beleihungswertermittlung und anderen Kreditvergabe-gepflogenheiten. In vielen Ländern haben sich die Margen der Banken verringert, und in einer Reihe von Staaten wird ein Anstieg der Beleihungsgrenzen verzeichnet, während bei den anderen Kreditvergabekriterien keine Anzeichen einer Aufweichung festzustellen sind. Die Besorgnisse der Aufsichtsbehörden werden dadurch gemildert, dass auf Grund des niedrigen Zinsniveaus ein Anstieg der Schuldendienstlast insgesamt parallel zu der verstärkten Kreditaufnahme zur Finanzierung von Immobilieninvestitionen ausgeblieben ist. Allerdings könnte die finanzielle Lage der zuletzt hinzugekommenen Marktteilnehmer recht instabil sein.

Angesichts ihrer Bedeutung verfolgen die Bankenaufsichtsorgane die Immobilienmarktrisiken für Banken insbesondere in den Ländern, in denen die Preise kräftig angezogen haben, sehr genau. Die Zentralbanken und andere Bankenaufsichtsbehörden haben bereits zielgerichtete Maßnahmen ergriffen, um das Risikobewusstsein zu erhöhen und sicherzustellen, dass die Banken keine zu hohen Risiken eingehen. Zu diesen Maßnahmen zählen die öffentliche Äußerung von Bedenken, direkte Kontakte mit der Bankleitung, Überprüfungen der Kreditvergabegepflogenheiten der Banken sowie spezifische bankaufsichtliche Maßnahmen (Sensitivitätsanalysen) zur Feststellung, ob die Banken erhebliche Schwankungen der Immobilienpreise verkraften können. In einigen Ländern wurden weiter gehende bankaufsichtliche Maßnahmen ergriffen, wie z. B. neue Solvabilitätsvorschriften zur Abdeckung des Risikos latent gegebener Zahlungsunfähigkeit – zusätzlich zu den gegenwärtigen Bestimmungen für den Wertverfall von Aktiva –, Forderungen der Bankenaufsichtsorgane, die bankaufsichtlichen Kriterien für die Beleihungswertermittlung einzuhalten, oder gar die an Banken gerichtete Forderung, das Immobilienengagement zu verringern bzw. Buchwertanpassungen vorzunehmen. Drastischere Bankenaufsichtsmaßnahmen, wie verstärkte „Ex-ante"-Rücklagen, wurden auf EU-Ebene jedoch nicht als angemessen betrachtet.

Die Berichte sind von der Internetseite der EZB (http://www.ecb.int) abrufbar und können bei der Pressestelle der EZB unter der folgenden Adresse angefordert werden:

Europäische Zentralbank
Presseabteilung
Kaiserstraße 29, D-60311 Frankfurt am Main
Tel.: +49 (69) 1344-7455, Fax: +49 (69) 1344-7404
Internet: http://www.ecb.int

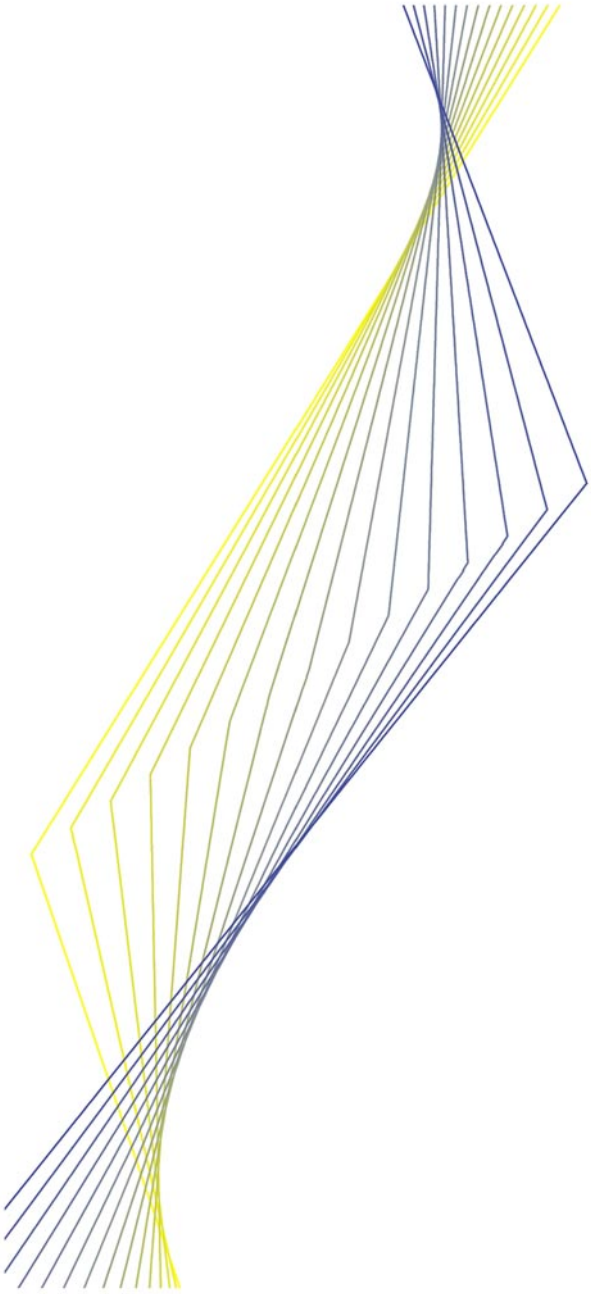
EUROPEAN CENTRAL BANK



EU BANKS' INCOME STRUCTURE

APRIL 2000

EUROPEAN CENTRAL BANK



EU BANKS' INCOME STRUCTURE

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**

ISBN 92-9181-057-6

Contents

Executive summary

This report, prepared by the Banking Supervision Committee (BSC), examines the impact of past and current developments in banking business on the income structure of EU banks. In particular, it focuses on the analysis of the increased incidence and main features of non-interest income. It also touches upon the implications of these developments for the risk profile of banks and for prudential supervision.

The EU banking systems are facing major changes in the form of increased competition, concentration and restructuring. These changes are triggered by a number of factors including technological change, financial liberalisation and internationalisation. Economic and Monetary Union (EMU) is expected to reinforce these trends. In this context, the phenomenon of banking disintermediation has been in evidence. The EU banking systems have been losing their relative share of financial intermediation to institutional investors (investment funds, insurance companies and pension funds). It is in the collection of savings, with the growing importance of institutional investors that this process has been the most pronounced. The assets side of banks' balance sheets has remained comparatively less affected.

Although the trend towards disintermediation is expected to continue in the future as institutional investors will, probably, continue to grow, mainly on account of demographic and social changes, besides legal and fiscal reasons, a Darwinian-type pattern of evolution leading to a progressive reduction of the banking sector is not anticipated. This is mainly due to the fact that banks have reacted to the new environment by adopting a proactive strategy. On the liabilities side, in several EU countries most of the institutional investors are included in banking groups and operate with the same corporate strategy. In this context, banking groups can offer to their clients traditional deposits, investment funds and pension funds as alternatives, depending on the specific market, legal or fiscal situations. Therefore, the income structure could be modified within the banking group without changes in its overall market position. On the assets side, they complement their natural advantage in the financing of households and small and medium-sized enterprises (SMEs), by offering services such as backup lines, underwriting facilities and treasury management to large corporations or by developing trading activities and securitisation operations. The effects of these responses are mainly reflected in changes in the structure of bank income and, in particular, in the increasing incidence of non-interest income. It is also reflected in the increasing size of off-balance-sheet items in the banks' financial accounts.

In order to assess the relevant developments in the structure of bank income, a specific survey has been conducted across the EU countries. The available data referring to the period 1989-98 should be considered with due caution for two reasons. First, the data on past years' trends (1989-95) and those referring to more recent years (1995-98) are not directly comparable as they stem from different sources (OECD in the first case and central banks/supervisory authorities in the second). The use of two data sets stems from the fact that data provided by the national authorities were not sufficient enough to capture past years' trends in income structure and volatility of income sources. Second, different approaches may exist across the different countries to accounting procedures and supervisory reporting schemes limiting the effectiveness of cross-country comparisons. Moreover, it should be noted that the reference period (1993-1998), for which a more detailed description of the components of non-interest income is available, has been characterised by specific market conditions (decrease of interest rates and a generally favourable financial climate for high level profits on financial operations).

The main findings of the survey on non-interest income can be summarised as follows***. First, the composition of non-interest income is rather heterogeneous.*** Fees and commissions are the

main component and in 1998 represented, on average, around 54 % of total non-interest income for EU banks (50 % for the euro area) with national figures ranging from 72 % to 35 %. However, a declining trend was observed in the relative importance of fees and commissions as a source of non-interest income for the EU banks in recent years (1994-1998).

Fees and commissions can in turn be divided into various sub-components, such as net commissions on payment transactions, on securities transactions, for guarantees, for safe custody and for foreign exchange transactions. The three other main components of non-interest income are: (i) net profit on financial operations (accounting for nearly 19 % of non-interest income in the EU in 1998); (ii) income from -variable yield- securities (nearly 17 %) showed a steadily increasing trend in terms of its relative importance as a source of non-interest income over the last years of the observation period (1995-1998); and (iii) other operating income (around 10 %). These averages, however, conceal important differences between countries.

Second, non-interest income has been the most dynamic component in the bank income structure in recent years. The relative importance of non-interest income (as a percentage of total operating income) increased in the EU throughout the observation period. With regard to the more recent years, there has been a noteworthy increase from 32 % in 1995 to 41 % in 1998. The increase in its relative importance could, however, signal either the intrinsic dynamism of non-interest income or an ongoing reduction in interest income. In fact, both patterns are at work. Net interest income as a percentage of total assets (the interest margin) continuously declined, as an EU average, over the 1989-98 period. This decline is particularly evident in the period 1995-98 in which the ratio decreased from 1.96 % to 1.63 % in 1998. By contrast, during the same period (1989-98), an increasing trend can be observed for the non-interest income to assets ratio (from 0.94 % to 1.15 % in the period 1995-98). As a result of these patterns, the operating income of EU banks as a percentage of total assets decreased from 2.90 % in 1995 to 2.79 % in 1998.

Third, the increase in non-interest income seems to have had a positive effect on banks' profitability in recent years. It should be mentioned, however, that the extension of the positive impact of the non-interest income on profitability has been contained by the increased costs associated with the development of non-interest income activities. Improved profitability has also been the result of other factors such as better cost control and more efficient use of banks' capital. Moreover, the positive impact on banks' profitability has been supported by the favourable conditions prevailing in the stock markets in recent years, which may not be permanent.
Generally speaking, the relationship between profitability and activities generating non-interest income is not straightforward as the latter may entail significant costs for banks. The growth of non-interest income could, in fact, fail to lead to higher profits if a relatively large part of the "additional" non-interest income is absorbed by increased costs. Growth on the cost side of fees payable could result from growth on the revenue side (e.g. if the development of asset management fees coincides with increased fees paid to financial advisors). Moreover, the development of some fee generating activities could entail higher personnel or administrative costs. Increased costs could be one possible reason why banks which are more specialised in non-interest activities do not seem to be necessarily more profitable than others which are less specialised. This cost dimension probably supports the general view that size is an advantage when developing non-interest activities. Large banks, international groups and financial conglomerates seem to be at a competitive advantage in developing many non-interest income generating activities, as the large scale of operations would appear to offer increased opportunities for more rapidly achieving a critical mass through economies of scale and scope. Moreover, large institutions are probably more able to attract and retain the highly qualified personnel needed to develop new and more sophisticated products.

Fourth, in several EU countries an inverse correlation between interest and non-interest income seems to exist, although to a varying degree. This would indicate that fluctuation in one source of income could, to a certain extent, offset fluctuation in the other. However, the results should be interpreted with caution, mainly due to the fact that the composition of non-interest income has not remained stable during the period under observation. Moreover, the composition of non-interest income could be influenced by pricing policy or commercial factors. In this respect, in pricing their services, banks are increasingly switching from an interest margin to a system of fees. Many banks are also offering credit on very strict conditions, thus reducing their interest margin in the hope of developing a regular flow of non-interest income.

Finally, non-interest income as a whole does not seem to be less volatile than interest income. Empirical evidence showed a rather mixed picture with regard to the volatility of non-interest income vis-à-vis interest income, since net interest income was found to be more volatile in eight EU countries, whereas non-interest income was a more volatile source for seven EU countries. However, net interest income after the deduction of provisioning becomes a more volatile source of income for most of the EU countries. This could be a sign that banks moving into non-interest income activities do not necessarily move into areas of greater volatility. The aggregate result of non-interest income volatility is, however, the outcome of two different patterns. On the one hand, profits on financial operations and, to a lesser extent, income from (variable yield) securities present high volatility, on the other hand, fees and commissions are significantly less volatile sources of non-interest income. However, the various categories of fees and commissions are themselves quite heterogeneous in terms of their volatility. Fees and commissions charged for services relating to typical banking activities (e.g. payment transactions, safe custody and account administration, correspondent banking) are, in general, less volatile than fees and commissions charged on activities which are affected by economic and cyclical developments (e.g. underwriting activities, brokerage services, treasury management, transactions on derivatives, private banking, credit card business). Moreover, the part of non-interest income stemming from the institutional investors belonging to the same banking group could be quite stable and, to the extent that within the group the financial products offered by these institutional investors replace traditional deposits, can be regarded as rather similar to interest income.

The increased incidence of activities generating non-interest income has, in the first instance, implications for the risk profile of banks. The main aspect is that the importance of some categories of risks, including operational, reputation and strategic risks, has increased. However, to the extent that the development of non-interest income is accompanied by a relative reduction in the classical intermediation activity of banks, it could lead to some reduction of credit risks. These factors are likely to contribute more to changing the mix of risks than to reducing their total amount. In any case, this development is expected to make the management of banking activity more complex. In the second instance, the changes in banks' activity and income structure also have implications for prudential supervision. First, the developments in question seem to support the intention – in the context of the current review of the capital adequacy regime for credit risk being undertaken in the main international supervisory forums – to lay down specific capital requirements for risks other than credit and market risks. Second, they make the monitoring activity of banking supervisors more complex.

Introduction

The present report has been prepared by the Banking Supervision Committee (BSC) in the context of the tasks of the Eurosystem to contribute to the smooth conduct of policies pursued by the competent authorities relating to prudential supervision of credit institutions and the stability of the financial system (Article 105 (5) of the Treaty establishing the European Community). Last year the BSC prepared two other reports, namely the one on the "Possible effects of EMU on the EU banking systems in the medium to long term" and that on "The effects of technology on the EU banking systems" published in February and July 1999 respectively.

This report concentrates on the changes in banks' income structure, notably the substitution of non-interest income for interest income resulting from the changing nature of the financial environment. To this end, an empirical and qualitative analysis of the income structure and the components of the non-interest income has been carried out. In addition, the potential changes in the inherent level of risk in banking and financial services groups as a result of changes in the banks' income structure is also discussed.

The report is structured as follows: **Section 1** touches upon the main elements characterising the changing nature of banking and financial services and focuses on those factors which have a direct impact on the structure and degree of risk of banks' income. Furthermore, banks' responses to the changing nature of financial systems are briefly considered. **Section 2** contains an empirical investigation and a qualitative analysis of the different components of the non-interest income of the EU banking system covering the period from 1993 to 1998. Data collected by national authorities are used in this section because they provide more detailed analysis of the non-interest income sub-components vis-à-vis other sources (e.g. the OECD) and also cover a more recent time period (i.e. 1998 data). **Section 3** analyses in greater detail the main features of non-interest income. More specifically, it examines the extent of the substitution of non-interest for interest income, the effects of non-interest income on banks' profitability and the sensitivity of non-interest income to the size of banks. It also looks at the possible correlation between interest and non-interest income and examines the degree of volatility of the various non-interest income components. The empirical investigation of structural developments over past years (1989-95) is based on the OECD database as it provides a calculation of averages for the EU and euro area banking systems, whereas more recent developments (in the period 1995-98) are analysed mainly on the basis of data provided by national authorities (national central banks and supervisory authorities). **Section 4** addresses the implications of changes in the nature of banking and in sources of banks' income in terms of banking risks and some related supervisory issues.

1 Structural changes in EU financial systems

1.1 Developments in the financial systems

Among the many structural developments which have affected the banking sector, disintermediation assumes particular importance. Disintermediation has been favoured by the introduction of new technologies, financial liberalisation and European Economic and Monetary Union (EMU), which allow new market participants to perform tasks previously largely reserved for banks. The disintermediation process has been more intense with regard to the diversification of savings, financial intermediaries other than banks (investment funds, insurance companies and pension funds) having grown considerably in relative importance in all EU countries. As far as the latest developments are concerned (see Table 1), there has been a continuous increase in the relative importance of other financial intermediaries and especially of investment funds as opposed

to credit institutions. A key aspect of the growing importance of financial intermediaries other than banks is the price effect induced by a booming stock market. However, credit institutions are still predominant in the EU financial systems, as their assets exceed the assets of non-bank intermediaries in all EU countries.

The impact of disintermediation so far seems to remain weaker on the assets side of credit institutions. While the total volume of bonds now exceeds that of banks' loans in several EU countries (Table 2), the EU bond market is largely dominated by government bonds with bank bonds ranking second in terms of their importance (Table 3). The corporate bond market is not very highly developed in the majority of EU countries. The same can be said for the commercial paper market (Table 2), which is still at an early stage of development in many EU countries.

Drawing on the assessment of the EU supervisory authorities, disintermediation is expected to make further advances, driven by competitive forces and IT developments. The relative importance of institutional investors and pension funds is expected to increase further as long as household wealth continues to be managed with an increasing degree of sophistication and, in parallel, public social security systems operating on a pay-as-you-go basis are expected to face problems in the funding of pensions. The changing behaviour of households will be further stimulated by the current low prevailing level of interest rates and by a stable macroeconomic environment, as is envisaged following the introduction of the euro.

Money and capital markets will become deeper and more liquid owing to the euro which, in turn, will create more opportunities for issuers and investors in the euro capital and money markets. This development will probably lead to an increase in the relative importance of market funding vis-à-vis bank funding. Another expected structural change in capital markets relates to the decline in the relative importance of government securities, owing to the reduction of public debt. A growing use of commercial paper is also forecast, but to a lesser degree. To summarise the various changes affecting the financial system, it has often been referred to in the relevant literature as a move from a bank-oriented to a market-oriented environment. In a bank-oriented environment, banks predominate as financial intermediaries by collecting savings (through deposits) and providing the bulk of external funding to the non-financial sector. The dominant position occupied by banks in a bank-oriented system is also characterised by access to information in order to evaluate, price and manage the risks of prospective fund users. In a market-oriented environment, banks face competition from other financial and non-financial intermediaries (e.g. insurance companies, open and closed-ended investment funds), and market funding constitutes a significant source of funds for non-financial firms. In this respect, a large portion of banks' income stems from trading and underwriting, thereby raising the level of information sharing for the benefit of other financial intermediaries.

This distinction between these two phases – bank-oriented and market-oriented – can be useful as a simple illustration of the two poles between which different banking systems can be classified. It should not, however, be forgotten that the situation, in reality, is more complex. There remain many other sources of structural differences between countries, which are often complemented by differences within countries. Indeed, different banks belonging to one national financial system could follow various strategies, deciding to concentrate on traditional banking activities or to move towards market-oriented axes.

It is anticipated that differences in structure between the EU financial systems will continue to prevail in the medium term for a variety of reasons (structural as well as cyclical). In this respect, diverse fiscal treatments at a national level could favour or divert financial intermediation. In Finland, for instance, the tax system favours bank intermediation, since most of the bank accounts

held by individuals are tax exempt. Conversely, different tax treatments (e.g. in Belgium where capital gains are tax exempt) have stimulated a significant growth in undertakings engaging in collective investment in transferable securities (UCITS) and investment funds.

1.2 Banks' responses

Recourse to a classification involving two phases (i.e. a bank-oriented and a market-oriented phase) in order to describe the disintermediation process has another shortcoming. It could convey the image of a banking sector inevitably shrinking by way of a sort of Darwinian process in which markets will slowly absorb all functions at present carried out by banks. It is true that banks could lose some of their "specificity" in their core or "traditional" activities. In this context, alternatives for loans can now be provided by non-bank competitors as part of the disintermediation process and the volume of deposits is declining as a result of the continuous increase in products offered by institutional investors which are considered as close substitutes for banks' deposits. The function of banks as providers of payment and settlement services could also be challenged by non-bank financial institutions.

However, such developments represent only one aspect of the evolution of the financial system. The other important aspect is that banks are responding to the changing environment. Those responses can be summarised as follows. On the liabilities side of their balance-sheets, banks respond to the competitive environment as far as deposit-taking is concerned, either by offering further (balance-sheet) products such as bank bonds, certificates of deposit, etc. or by expanding in types of business such as the selling of mutual funds and life insurance. In this respect, banks have also engaged in this business by establishing special financial subsidiaries or entering into co-operative agreements with other financial undertakings, such as insurance companies. Many EU countries have seen the development of "contract banking", with banks offering a wide range of products and services relying on a set of contracts with a range of internal and external suppliers of the components of these ultimate products and services. The value added brought by the bank-contractor is the management of these contracts.[1] An increased degree of subsidiarisation and conglomeration has been reported for all the EU banking systems. In addition, EU banks are actively involved in the disintermediation process. In that context, in the majority of Member States more than 80 % of undertakings for collective investments in transferable securities (UCITS) are controlled by banks[2] (Table 4).

On the assets side, the dominant role of banks as credit providers is, to a large extent, expected to continue in the coming years, extending the growing trend, as a percentage of GDP, which was recorded in previous years (see Table 5) for the following reasons.
For households, bank credit remains a main source of finance in relation to other competitors offering credit facilities (e.g. insurance companies and other non-bank financial intermediaries and enterprises). Moreover, part of household debt takes the form of credit card financing, which is also channelled through the banking system.

For small and medium-sized enterprises (SMEs) whose access to alternative sources of finance is limited or non-existent in most of the EU countries, bank credit, largely based on a close customer relationship, is expected to remain predominant in the years ahead. The main reasons for this could be the asymmetry of information and lack of access to the capital markets for SMEs and the need for close evaluation and monitoring.

1 *D. T. Llewellyn, "Banking in the 21st Century: The transformation of an industry", taken from "The Future of the Financial System, Proceedings of a Conference", Economic Group Reserve Bank of Australia, page 172.*
2 *BSC report entitled "Possible effects of EMU on the EU banking systems in the medium to long term", February 1999, page 17.*

For large corporations, and mainly for those with a significant international presence, the disintermediation process achieved by bypassing the traditional banking system via financial markets will be reinforced. However, at least four considerations should be mentioned which could ease this process. First, large corporations will continue to demand credit from banks, because bank borrowing could be used as a signal for the capital markets of their creditworthiness (i.e. banks as lenders have evaluated them before undertaking credit risks). Second, credit facilities could be used as an alternative source of financing in the event of market downturns affecting access to the capital markets. Third, market funding could be combined with the use of banks' services in the form of backup lines, syndicated loans, guarantees, underwriting facilities, treasury management, etc. Fourth, large corporations may have a greater degree of flexibility to negotiate the terms and conditions of a bank loan rather than those of a bond issuance.

Finally, banks are not only adapting to a more market-oriented financial structure, but are also contributing to the general development of such a structure through their trading activities or by initiating securitisation operations. Over recent years the value of banks' trading books has increased in almost all EU countries.

1.3 Effects on banks' income structure

Banks responses to the changing financial systems have been most clearly visible in their financial accounts. They are first reflected in their off-balance-sheet activities. These activities increase as banks diversify their product range in order to maintain their degree of competitiveness and to increase their customer base and their fee income. Major off-balance-sheet items are related to traditional types of business (loan commitments, guarantees, etc.) and derivative activities.
Off-balance-sheet activities have been growing at remarkably high rates in many EU countries. The derivatives business also has a quite different degree of relative importance across the EU countries. Information on the development of over-the-counter (OTC) derivatives and FX activities from a global perspective is provided in Tables 6 and 7.

The other noticeable change in banks' financial accounts concerns the development of non-interest income. The competition from non-bank financial institutions and the resulting pressure on intermediation margins has led banks to offset the decrease in their interest income by shifting to other sources of income such as fees and commissions.

The analysis of this shift is not only important in order to understand the various forms of disintermediation. It also provides key information for evaluating the extent to which this process could affect banks' profitability. Indeed, the degree of disintermediation is not expected to be equally shared among the different banks and different banking systems; there will be losers and winners as a result of the changing nature of banking activities. Income might be reallocated both across banking systems as well as from banks to non-banks, whether as a result of the increase of competition within the euro area or by non-euro/non-EU area competitors.

2 Non-interest income components

Non-interest income is a mixture of heterogeneous components that differ in terms of their relative importance (i.e. their share in banks' non-interest income). Therefore an empirical investigation of the sub-components of non-interest income was carried out for the period 1993

to 1998 and the empirical findings are shown in Tables 8 to 17. The breakdown was based on the layout provided by the Banking Accounts Directive (BAD).[3]

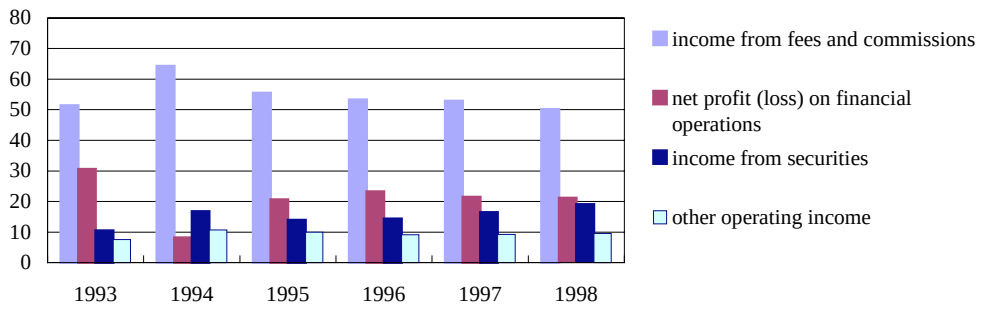
It should be noted that the data collected for this fact-finding exercise must be considered with caution. Comparisons between countries can be affected not only by structural differences, but also by divergences in the accounting treatment of the various sources of income, by differences in the reporting schemes or by variations in the bank samples used for the purposes of the analysis. Although these factors should not, in principle, affect the comparison of data relating to the same country over time, such a trend analysis is sensitive to the cyclical evolution or to the lack of long series of data. In several countries there is also a tendency for banks to entrust some of their non-interest activities (such as private banking and corporate banking) to subsidiaries specifically created for that purpose. This could determine an additional bias as the only data available for this report were provided on an unconsolidated basis. It should be noted, however, that income from banks' subsidiaries or affiliates of the same financial group is also captured on an unconsolidated basis in an indirect way, as it is recorded as income from participating interests and income from shares in affiliated undertakings which are sub-components of income from securities, one of the non-interest income components.

Non-interest income[4] was calculated as the sum of net fees and commissions (fees and commissions receivable less fees and commissions payable), income from securities and the net profit (loss) on financial operations and other operating income. The following charts show developments in terms of relative importance for each of the main components of non-interest income as a percentage of total non-interest income for the EU and euro area banking systems[5] (weighted averages) and for the period 1993-98:[6]

Chart 1

Components of non-interest income

(percentage points; euro area weighted average)



3 *The Banking Accounts Directive (BAD) is Council Directive 86/635/EEC of 8 December 1986 on the annual accounts and consolidated accounts of banks and other financial institutions.*

4 *According to Article 27 of the BAD income from securities corresponds to point 3 of the vertical layout, net commissions to point 4 minus 5, net profit on financial operations to point 6 and other operating income to point 7. For the purpose of the statistical exercise, other ordinary items (BAD, Article 27, points 12 and 14) and extraordinary items (Article 27, points 17 and 18) were not included.*

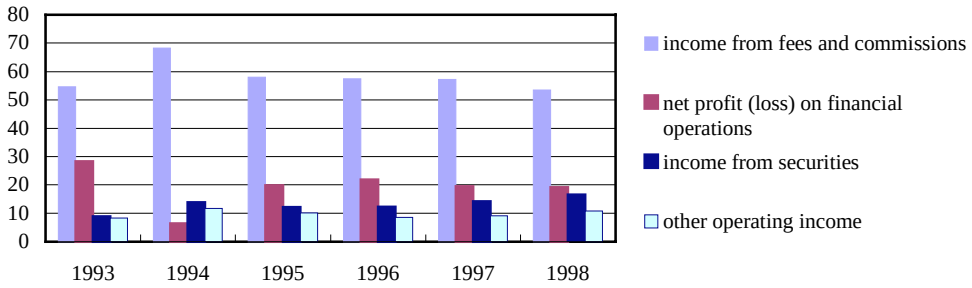
5 *The EU refers to the 15 countries comprising the European Union, whereas the euro area consists of the 11 EU countries which entered into Stage Three of Economic and Monetary Union and adopted the euro as their national currency.*

6 *In order to overcome the non-availability of data from three countries (Finland, Ireland and the United Kingdom) for the first two years of the observation period, the EU and euro area weighted averages for the years 1993 and 1994 include, as proxies, the 1995 figures for these three countries.*

Chart 2

Components of non-interest income

(percentage points; EU weighted average)



Fees and commissions

Fees and commissions represent by far the most important component, accounting for 58 % of all non-interest income (EU weighted average for the period 1993-98). The relative importance of this source of income has recorded a downward trend over the period 1994-98. The difference in levels between the EU and the euro area (the weighted average for the euro area was 55 % for 1993-98) is mainly explained by the high relative importance of fees as part of the non-interest income for the United Kingdom banks (72 % in 1998, see Table 8). At the other extreme, income from fees and commissions only represented 35 % of non-interest income in Portugal and Sweden and 36 % in Belgium in 1998.

Net result of financial operations

The *net result (profit or loss) of financial operations* (comprising net result on transactions in securities which are not held as financial assets together with value adjustments and value re-adjustments on such securities, net result on exchange activities and net result on other buying and selling operations involving financial instruments, including precious metals) constitutes the second component of non-interest income in terms of its relative importance. A notable fluctuation is apparent in the relative importance of this non-interest income source, with the ratio of net result of financial operations to non-interest income varying between 6 % and 28 % for the EU and between 8 % and 31 % for the euro area for the period 1993-98. This major fluctuation reflects the low level in the EU and euro area averages in the year 1994 with, however, significant fluctuations across the EU countries, with Denmark and, to a lesser extent, Spain appearing as outliers. (Table 9). The bond markets crisis of that year has, probably, played a significant role in this respect.

It is also worth noting that net profit on financial operations, in terms of its relative importance as a source of non-interest income, did not reach the 1993 levels for the remainder of the observation period in many of the EU countries. As evidenced by national data, this reflects lower levels of such income in eight EU countries rather than changes in the relative importance of other non-interest income components. For the last four years (1995-98) the relative importance of the net profit on financial operations as a non-interest income source has shown greater stability, ranging from 19 % to 22 % for the EU, with somewhat higher levels (from 21 % to 23 %) for the euro area. As shown in Table 9, there are marked differences between countries, the

relative importance of this source of income varying from 44 % in Belgium and 43 % in France to 6 and 8 % in Denmark and Ireland in 1998.

Income from securities

Income from securities (including shares, variable yield securities and other participating interests) accounted for 9 % to 17 % for the EU and between 10 % and 19 % for the euro area (the difference being explained by the low level of that source of income in the United Kingdom) for the observation period 1993-98. A notably lower level of this ratio was recorded in 1993; 9 % for the EU and 10 % for the euro area.

This source showed a steadily increasing trend in terms of its relative importance as a percentage of non-interest income for the period 1995-98 and, apparently, has been influenced by the generally favourable economic conditions.

Table 10 indicates that income from securities is a relatively important source of non-interest income in Sweden, Germany, Denmark, Austria and Spain (between 24 % and 35 % of non-interest income in 1998), but marginal in the United Kingdom (1 %). It should be noted that comparisons of the results of individual countries can be heavily influenced by differences in corporate structures (diversification through subsidiaries does not reach the same level of significance in the various countries).

Other operating income

Other operating income constituted, on average, around 10 % of total non-interest income for the EU and the euro area throughout the period 1994-98 (Table 11).

Main sub-components of income from fees and commissions

Tables 12 to 16 provide a breakdown[7] of the main components of income from fees and commissions for those countries for which this information is available. Owing to limited data availability, EU and euro area aggregates cannot be provided.

Commissions on *foreign exchange transactions* represented 26 % of the total income from fees and commissions in Greece and 12 % in Austria in 1998, but were of marginal importance in Italy, Spain, Finland, France and Portugal (Table 12).

The importance of commissions charged for *guarantees* (Table 13) seems to be relatively high in terms of the total income from fees and commissions in Portugal, Belgium (14 % and 11 % respectively in 1998) and Denmark (no data available in 1998), and relatively low in France and Italy (5 % or less). In general, a slight decreasing trend in terms of relative importance is observable for most of the reporting countries (with the possible exceptions of Denmark and Greece).

Commissions for *securities transactions* (Table 14) also present striking differences in terms of their relative importance, probably reflecting different financial structures; this is the case for Italy and Finland, both of which show a marginal level. Conversely, commissions for securities transactions constitute a basic source of fees and commissions in Belgium, the Netherlands, Austria, Portugal and Greece.

7 *Based on the classification provided by the BAD.*

Commissions charged for *payment transactions* (Table 15) vary significantly in terms of their relative importance, accounting, for 50 % of the total income from fees and commissions in Spain, but only 11 % in Italy in 1998. The relative importance of this source of income is showing a decreasing trend in some countries (Spain, Portugal, Austria, the Netherlands, Belgium and, possibly, Italy).

Finally, the relative importance of commissions charged for *the safe custody and administration of securities* is rather limited, except in Belgium, in France and in Finland, where these activities represented, respectively, 13 %, 10 % and 10 % in 1998 (Table 16). In some countries, this category of income is included in commissions for securities transactions.

As a summary, Table 17 illustrates the mix of non-interest income prevailing in the various EU countries (the relative importance of non-interest income and its components per country and averages for the EU and euro area in 1998 and for the period 1993-98).

As the breakdown of quantitative data does not specify all the separate categories of the non-interest income sub-components, additional information on all the important sub-components of non-interest income are provided in Annex 1, based on qualitative responses by national authorities. In terms of volume (reflecting their relative importance as non-interest income related activities), the more important activities generating fees seem to be payment transactions, securities transactions on behalf of third parties, provision of guarantees, credit card fees, proprietary trading (notably in securities and foreign exchange) and private banking.

In terms of future prospects, advisory activities, private banking, credit card fees, brokerage fees in connection with insurance contracts and derivative activities are expected to gain in importance, while less significant sources of banks' revenues would be correspondent banking, fees from foreign exchange transactions and fees from payment transactions.

3 Main features of non-interest income

This section examines in greater detail the implications for banks of the development of non-interest income by considering certain stylised facts about non-interest income:

- Is there any degree of substitution of non-interest income for interest income (Sub-section 3.1)?
- Is there a link between the relative importance of non-interest income and the overall level of profitability (Sub-section 3.2)?
- Does size facilitate the development of non-interest income (Sub-section 3.3)?
- Is there a correlation, whether positive or negative, between the respective developments in interest and non-interest income (Sub-section 3.4)?
- Is non-interest income less volatile than interest income (Sub-section 3.5)?

3.1 Substitution of non-interest income for interest income

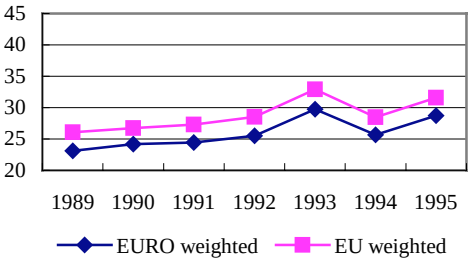
Statistical analysis supports the common perception of a progressive move from interest income to non-interest income for the EU banks. For the purpose of this analysis two sets of data have been used: the OECD database for capturing structural developments over the past years (i.e. for the 1989-95 period for which aggregate data for the EU and euro area are provided in Table 18)

and detailed data broken down by country for more recent years (1995-98) provided by the national authorities[8] (see Tables 19 to 27).

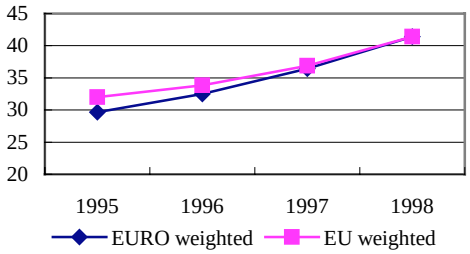
The change in the structure of income of the EU banks is confirmed by the data on non-interest income as a percentage of total gross income for the period 1989-95. For the period 1995-98 the same increasing trend is also confirmed by the ratio of non-interest income to operating income[9] for the EU and euro weighted averages (see Chart 3 below).

Chart 3

Non-interest income as a percentage of gross income
Period 1989-95



Non-interest income as a percentage of operating income
Latest developments 1995-98



A trend for an increase in non-interest income as part of total income has been confirmed by the existing data for the whole period 1989-98, which is long enough to verify a structural change in the EU banks' income composition. The latest developments in the EU banks' income structure are attracting more analytical investigation as they reflect the current situation of the EU banking system. Against this background, the contribution of non-interest income to banks' operating income increased by 9 percentage points in just three years, from 32 % in 1995 to 41 % in 1998 for the EU. For the euro area, the increase was even more noteworthy, from 30 % in 1995 to 41 % in 1998. (Table 19). Among the few exceptions, those countries where non-interest income did not show a steady pattern of increase as a percentage of operating income in 1995-98 are the United Kingdom and Greece.

Structural differences with regard to the level of non-interest income as a percentage of banks' total operating income across the EU countries can also be seen from the data in Table 19. The ratio quoted above varies from 55 % in Luxembourg and around 53 % in Sweden and France to 37 % in Denmark, 36 % in Spain and 33 % in Germany at the 1998 year-end. As such, the growing relative importance of non-interest income in total operating income does not indicate the extent to which this trend is due to the dynamism of non-interest income or to an ongoing reduction in

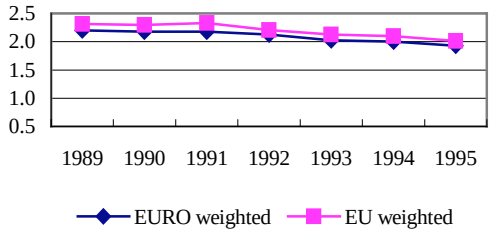
8 *Data provided by the national authorities cover the "benchmark" years 1980, 1985, 1990, 1995 and the most recent years 1995, 1996, 1997 and 1998. However, owing to the the limited availability of data, EU and euro averages are provided on the basis of this data source only for the period 1995-98.*

9 *Operating income corresponds to the sum of net interest income and non-interest income. However, in some cases slight differences have been evidenced between the sum of non-interest and interest income on the one hand and operating income on the other hand, mainly due to the non-harmonised statistical framework. Gross income (according to the OECD definition) is also the sum of net interest and non-interest income. Gross and operating income may not be fully comparable since, in the category of "other" (sub-category of non-interest income) according to the OECD definition, extraordinary or irregular categories of income may be induded. According to the data collection scheme for national data provided by national authorities, no extraordinary income has, in principle, been induded in other operating income.*

interest income. The trends in the respective developments of non-interest and interest income are, over time, more clearly evidenced on the basis of the respective ratios of non-interest income, net interest income and total operating income to total assets (Tables 20, 21, 22). Developments in the EU and the euro area for the period 1995-98 are shown in the following charts.

Chart 4

The ratio of net interest income to assets for the EU and the euro area
Period 1989-95



Latest developments 1995-98

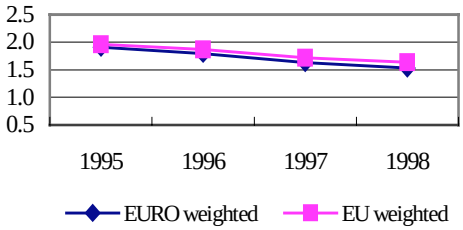
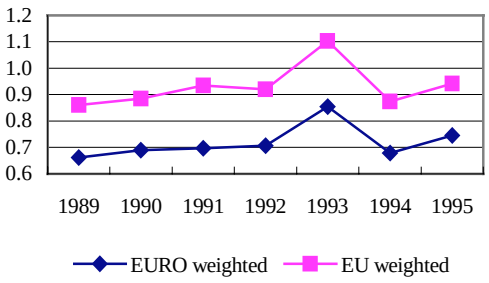


Chart 5

The ratio of non-interest income to assets for the EU and the euro area
Period 1989-95



Latest Developments 1995-98

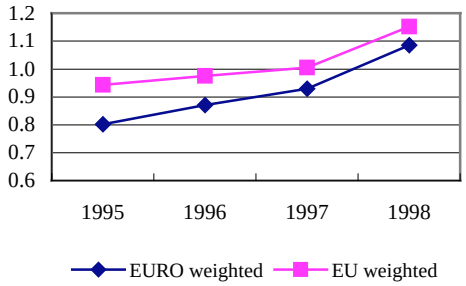
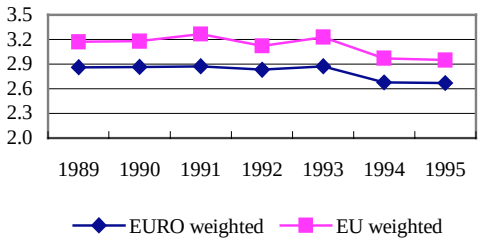


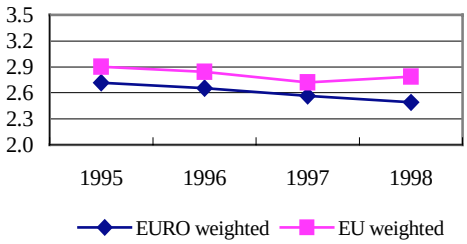
Chart 6

The ratio of gross income to assets
for the EU and the euro area

Period 1989-95



Latest developments 1995-98



As shown in Chart 5, the ratio of non-interest income to assets increased in the EU and euro area in the period from 1989-98. However, over the earlier years of the observation period (1989-95) there was not a continuous upward trend. Indeed, the non-interest income to assets ratio increased in the EU and the euro area for the period 1989-93, reaching a peak in the latter year. Over the next two years (1994 and 1995) the ratio has remained below the 1993 level.[10] With regard to last years' developments, there was a considerable increase in this ratio, which rose from 0.80 % to 1.09 % between 1995 and 1998 in the euro area and from 0.94 % to 1.15 % in the EU.

Conversely, reductions in the ratio of net interest income to assets (Chart 4) followed a clear, common and continuously declining pattern in the EU and the euro area for the period 1989-98. In the most recent years under review, a decline was recorded from 1.96 % to 1.63 % in the EU and from 1.91 % to 1.53 % in the euro area. This development reflects the decreasing interest margin throughout the EU in the last few years.

The relative importance of net interest income is also sensitive to the economic cycle, a shift in the yield curve or the realisation of capital gains in the bond portfolio at the expense of the interest margin. In fact, the first two of the above-mentioned variables have recently exerted a positive influence on interest income, as economic activity has recorded significant growth while a general, symmetrical downward trend in interest rates has temporarily boosted the income provided by maturity transformation. The fact that interest rate margins recorded a reduction despite those positive factors seems to be a clear indication of the strong competitive pressure faced by banks in their classical intermediation activities.

As shown in Chart 6, this decrease in net interest income (as a percentage to assets) has not been fully offset by the increase in non-interest income (ratio of non-interest income to assets). Indeed, over the past few years (1993 being an exception), the gross income to assets ratio showed a declining profile in both the EU and the euro area. For the last four years of the observation period, the same trend has been observed in the development of the operating income to assets ratio, which decreased between 1995 and 1998 from 2.72 % to 2.49 % in the euro area and from 2.90 % to 2.79 % in the EU.

10 The two "extreme" values of the ratio of non-interest income to assets in 1993 and 1994 seem to have been influenced by the abrupt changes in the relative importance of the "profit on financial operations" sub-component of non-interest income (Table 9).

It is notable that operating income as a percentage of total assets rose in all the non-participating countries in 1998, and, as a result of this, the EU average also increased as compared with the 1997 figure. By contrast, the respective ratio for the euro area showed a steady decline for the whole period 1993-98.

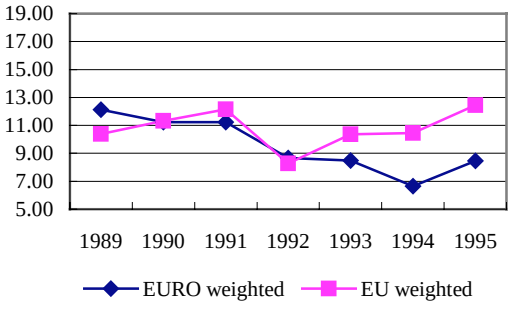
3.2 The relation between non-interest income and profitability

As structural changes and competitive pressures are expected to squeeze traditional interest margins further, it is important to consider whether the development of non-interest income offers banks an acceptable alternative by which they can safeguard their overall profitability.

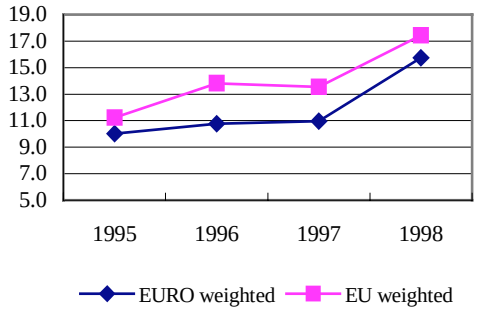
As already shown, the rise in non-interest income did not fully offset the reduction in the interest margin, as the aggregate ratio of operating income to total assets has, in general, declined. With regard to developments in profitability, the picture is varied, showing an unstable profile for the years 1989-95 (Table 18). However, during the period 1995-98 banks' profitability (return on equity, ROE)[11] in the EU and the euro area did not follow a downward trend, but remained broadly stable at a relatively higher level in 1995-97 than in the earlier period and, moreover, showed a further notable improvement in 1998 (Table 23). The same applies to the ratio of return on assets (ROA)[12] for the same period (Table 24). The weighted average for the ROE (*profits before tax to total year-end* equity) is shown in Chart 7 for the years 1995 to 1998.

Chart 7

Return on equity (weighted)
Period 1989-95



Latest developments 1995-98



This evolution may indicate that although the growth of non-interest income did not fully offset the reduction in the interest margin, this growth nevertheless helped to consolidate the banks' overall profitability at the 1995 level and, moreover, given the favourable economic conditions, to achieve a remarkable improvement in the overall profitability of the EU banking system for the last year of the observation period (1998). This average result can, however, conceal marked differences in profitability across the EU countries and across banks in every country (differences in the levels of profitability across EU countries are shown in Tables 23 and 24).

11 *The ratio of banks' profits before tax to year-end equity.*
12 *The ratio of banks' profits before tax to year-end assets.*

In order to compare the situation prevailing in the various countries, Spearman's rank correlation test was used to detect whether there was a correlation between the rankings of countries according to profitability (ROE), and their ranking according to the relative importance of non-interest income. In this respect, the EU countries were ranked in descending order according to the ratio of non-interest income to operating income and their return on equity ratio (from 1 to 15 for 1998, 1997 and 1995). For each of the above-mentioned years, Spearman's rank correlation coefficient was calculated.[13]

This test showed a relatively low negative relationship between non-interest income as a percentage of total operating income and ROE for the EU countries in 1998 and 1997, and a very low positive one in 1995 (Table 26). The mixed results and the low degree of relationship, as measured by applying the Spearman's rank correlation test, do not allow for drawing conclusions on whether a higher proportion of non-interest income corresponds to higher level of profitability across the EU. The negative relationship evidenced for the last two years is even less supportive of this working assumption.

The same method was applied to test a possible correlation between the ratio of non-interest income to operating income and the ratio of operating cost[14] to operating income (Table 27). This second test showed a rather loose positive relationship in all three years of the observation period (1998, 1997 and 1995). Although, in this case as well, the relatively low degree of correlation does not allow for drawing conclusions, the positive relationship evidenced in all the three years could imply that an increase in non-interest income is accompanied, to a certain extent, by an increase in the level of operating costs.

One conclusion stemming from these tests is that the growth of non-interest income could, indeed, fail to lead to higher profits if a relatively large part of the "additional" non-interest income is absorbed by increased costs. For instance, a growth on the cost side of fees payable could result from a growth on the revenue side, e.g. if the development of asset management fees coincides with a rise in fees paid to financial advisors employed as agents. Similarly, contract banking, which is gaining importance across the EU countries, could also be associated with an increase in brokerage fees payable.[15] The development of fee income could also entail higher labour costs in some areas which are more personnel intensive (e.g. advisory services, for which more experienced and better qualified personnel are needed). In this respect, higher administrative costs (other than personnel costs) may be associated with some activities, such as underwriting and proprietary trading.

3.3 Non-interest income and the size of banks

The relationship between the size of banks and non-interest income should indicate to what extent larger banks have more possibilities than smaller ones to generate and sustain non-interest income and to translate it into higher levels of profits and increased value for shareholders. The examination of the relation between size and non-interest income was based on qualitative information provided by the national supervisory authorities. The main finding is that large banks,

13 *Spearman's correlation test was preferred as a commonly used statistical test appropriate for ranked variables. By measuring the correlation of ranked variables, the impact of "extreme" values on the correlation measurement is diminishing. Moreover, this process of ranking variables reduces the effect of differences in those variables due to the non-harmonised database (e.g. if a country is ranked 7th according to its ratio of non-interest income to operating income, any discrepancies stemming from data accuracy or differences in calculation have no impact on the correlation measurement if they lie between the values exhibited by the countries ranked one place higher (6th) and lower (8th)).*

14 *The operating cost was calculated on a net basis, being the sum of general administrative expenses and value adjustments in respect of assets (BAD, Article 27, points 8 and 9 in the vertical layout). For the developments in the ratio of operating cost to operating income across the EU countries see Table 25.*

15 *Banks sell sophisticated products to their clients (structured products) which have been engineered by third party specialists.*

international groups and financial conglomerates seem to be at a competitive advantage as the larger scale of operations appears to offer increased opportunities for specialisation and cross-selling of products. Among the advantages are the achievement of a critical mass, economies of scale and scope, the provision of a large spectrum of products and services, increased productivity, and efficient cost, structure and risk diversification.

Matters which could be regarded as disadvantages are the potential existence of internal conflicts and culture clashes resulting from a structure supporting a high diversity of activities. This problem may be heightened by the policy of growth by acquisition followed by many of the larger banks. Other possible disadvantages could be "product cannibalisation"[16] and complexity, the latter resulting from the organisational structure where different cultures linked to the different non-interest income activities (trading, consulting, engineering, etc.) are usually more heterogeneous than in traditional intermediation activities. Problems of internal competition and difficulties of maintaining relations at arm's length have been countered in some countries by the creation of special subsidiaries (e.g. in Belgium, for private banking and the management of UCITS by separate entities).

However, small banks could also be successful in non-interest income business by operating in niche markets, such as the SME sector, or by servicing high net worth individuals offering, inter alia, private banking activities. Smaller banks may exploit localisation advantages by specialising in the distribution of services to local clients. Smaller banks also appear to be more flexible in their approach to structural change. However, the higher revenue ratios from non-interest income activities recorded by small banks often fail to carry over into profitability because they translate into a higher ratio of cost to income.

3.4 Correlation between interest income and non-interest income

If the two components of banks' income demonstrate a different cyclical behaviour, non-interest income could exert a stabilising influence on banks' results by offsetting the fluctuations in interest income. On the basis of the OECD database, an empirical search for a correlation between interest and non-interest income, both expressed as a percentage of the average balance-sheet total, for individual countries was carried out for the years 1980-97 (this being the maximum period of coverage)[17] and the findings are presented in Table 28. A correlation coefficient significantly lower than one would indicate a stabilising influence, while a negative correlation would even imply that any decreases in interest income (e.g. due to a reduction in interest margins, increased competition) could be expected to be compensated by an increase in non-interest income.[18]

16 *"Product cannibalisation" refers to the process of promoting one product against other(s) offered by the same financial institution belonging to a financial group or conglomerate (e.g. promoting mutual funds or insurance products at the expense of deposits).*

17 *The period covered differs according to the availability of data across the EU countries at the time the relevant calculations were carried out. Specific reference to the precise period covered is made in Table 28.*

18 *As values of the correlation coefficient approach –1, statistical evidence more strongly supports the view that non-interest income could compensate for a reduction in net interest income. However, such a stabilising influence occurs when the correlation coefficient is less than +1. (i.e. all that is technically required is that the two types of income be less than perfectly correlated). Considering* $y = y_1 + y_2$

where y_j *is the income earned from activity J, J= 1,2. Then, the total variance of income is:*

$$\sigma^2 = \sigma_1^2 + \sigma_2^2 + 2\sigma_{12} = \sigma_1^2 + \sigma_2^2 + 2\rho_{12}\sigma_1\sigma_2$$

where σ_j^2 *= variance of income j = 1,2*

σ_{12} *= covariance of income 1 and 2*

and ρ_{12} *= simple correlation between income 1 and 2.*

The maximum value that σ_{12} *can take is* $\sigma_1\sigma_2$*. So if* ρ_{12} *is less than 1, then diversification may offer scope to minimise the variance of income.*

With regard to the empirical evidence, it is worth mentioning that all EU countries, with the exception of Ireland[19], exhibited a correlation of net interest income with non-interest income much lower than one, and that in eight EU countries (France, Luxembourg, Spain, Belgium, Germany, the Netherlands, Austria and Portugal) a negative correlation was recorded. Only the first three of these countries recorded marked negative values, which might be a sign of a more significant inverse relationship between non-interest and interest income.

In general, the statistical results are heterogeneous and seem to indicate an inverse correlation between interest and non-interest income for several EU countries, although this varies in significance from being of limited importance to rather noteworthy. However, the results should be interpreted with caution, mainly due to the fact that the composition of non-interest income did not remain stable during this period, which could cause further difficulties in assessing the future behaviour of this source of income in cyclical downturns.

In that context, some parts of non-interest income are cyclically influenced, as is the case for income from securities, merger and acquisition activities, proprietary trading, and income from participating interests. Other parts of non-interest income (e.g. custodian services and fees on payment services) are less cyclical. Moreover, commercial reasons and the pricing policy adopted by banks could clearly influence the correlation between interest income and non-interest income. Indeed, in many cases, banks are substituting non-interest income for interest income. This substitution can be direct – e.g. when the pricing of a payment service no longer takes place through an interest margin or a system of date of value but through a fee, or indirect – e.g. when a decrease in households' investments in banks' deposits (source of interest income) is counterbalanced by the commercialisation of mutual funds (source of non-interest income). Similarly, banks may decide to provide a fee-generating product (i.e. a guarantee) instead of a credit facility.

The development of new activities is not necessarily autonomous. This development can be completely independent of previous activities, but may also be cross-subsidised by cutting back on more traditional activities. For instance, banks could offer credits with razor-thin conditions in the hope of developing a regular flow of guarantee (fee) business with their clients.

3.5 Volatility of the various sources of income

Non-interest income could contribute to stabilising banks' overall results - not only through their inverse correlation with interest income - but possibly also as a result of lower volatility. Volatility has been calculated, for interest vis-à-vis non-interest income, both expressed as a percentage of the average balance sheet total, on the basis of OECD figures. It should be noted that due to the availability of data, the period covered is not the same for each country. Cross-country comparisons are thus not very relevant, as cyclical evolution greatly influences the volatility of the various sources of income. Caution also ought to be exercised with regard to the incidence of differences in reporting schemes, accounting methods, sizes of banks' samples, etc. The realisation of capital gains could also influence the volatility of both net interest and non-interest income.

Tables 29A to 29D present the empirical findings with regard to *volatility of interest and non-interest income* for EU countries and some of the major third countries' banks (United States, Japan and Switzerland). It should be stated that for the purpose of this empirical investigation, the statistical indicator used to measure volatility is *the coefficient of variation,* notably the ratio of sample

19 OECD data are only available from Ireland for a three-year period and the results of the correlation should not be regarded as conclusive and interpreted with caution.

standard deviation to sample mean, multiplied by 100. The coefficient of variation has been considered to be an appropriate statistical indicator for measuring relative variability across samples or groups of data (e.g. across countries), since it is not influenced by the problem of the scaling of data.[20] The data used were expressed as a percentage of the average balance sheet in order to limit the impact of the trend growth in nominal value. The volatility of non-interest income was also compared with the volatility of net interest income minus provisions on loans and net interest income minus total provisions.

The results are heterogeneous for the various countries included in the sample. For the EU countries, net interest income was found to be more volatile in eight countries (Belgium, Finland, Greece, Ireland, the Netherlands, Portugal, Spain and the United Kingdom), whereas non-interest income was a more volatile source of income for seven countries (Austria, Denmark, France, Germany, Italy, Luxembourg and Sweden). For the EU and the euro area (weighted average) non-interest income was found to be more volatile than net interest income (20 % vis-à-vis 16 % for the EU and 18 % compared with 16 % for the euro area). However, after "correction" for provisions, net interest income becomes more volatile than non-interest income for most of the EU countries. Although due caution should be exercised in drawing conclusions given that differences exist across the EU countries with regard to the level and timing of provisioning on non-performing loans, this could imply that banks moving into non-interest income activities do not necessarily move into more volatile types of businesses.

Volatility of the main components of non-interest income

As evidenced above, non-interest income sources are quite heterogeneous and the overall volatility of this source of income could easily conceal quite divergent profiles for the various sub-components. Volatility has been calculated for the main components of non-interest income. As the time series is quite short, covering only a six-year period (1993-98), it should be viewed with caution.[21] Nevertheless, there is a clear indication of strong differences in the volatility of the various categories of non-interest income.

The coefficient of variation was also used as a statistical indicator for measuring the volatility of the main components of non-interest income (Table 30). However, a different approach was followed,[22] whereby the coefficient of variation was calculated on the basis of the national data for non-interest income and its components, which were converted into ECU. The short period for which data were available and in which low levels of inflation prevailed across most of the EU countries allows for the conversion of national data into ECU and the calculation of the EU average. The use of values instead of ratios may have the advantage that the result is not affected by the changes in the denominator. *Profit on financial operations (capital gains),* consisting of proprietary trading in securities and proprietary trading in foreign exchange and in derivatives, is the most volatile part of non-interest income, showing a strong sensitivity to changes in the economic or market environment. The average volatility (unweighted figure) for the 12 EU countries for which data are available recorded significantly higher levels than the overall average level of volatility for non-interest income (56 % compared with 27 %, see Table 30). It should be

20 *To illustrate, if for country A and country B the standard deviations (s.d.) are calculated as 2 and 20 respectively, then simply by comparing the s.d.s and taking into account the scaling impact we may conclude that B is more volatile. This is not true if, for example, the means are 10 and 100 respectively, in which case they both have the same volatility or variability around their mean. The coefficient of variation (i.e. s.d. divided by the mean) provides the right volatility measurement corrected for the difference in the scaling of data.*

21 *This was the longest period for which detailed data on the components of non-interest income could be provided. However, alternative data sources (e.g. OECD data) provide an analytical breakdown of the main components of non-interest income for an even shorter period for most of the EU countries.*

22 *In assessing the volatility of the components of the non-interest income, the coefficient of variation was calculated on the basis of national figures converted into ECU, whereas in assessing the volatility of non-interest vis-à-vis interest income the coefficient of variation was calculated on the basis of relevant ratios (namely, non-interest income and interest income both expressed as a percentage of average total balance sheet).*

noted, however, that this figure is largely influenced by the volatility recorded in some countries (notably in Denmark) as a result of the accounting method used in that country to evaluate banks' portfolios of securities.

Box 1

Differences in accounting principles and their implications for non-interest income and banks' profitability – the case of the Danish banking system

According to the Danish accounting system, the greater part of banks' securities and derivatives portfolios are marked-to-market in the banks' accounts and this has an important short-term impact on the income and financial results. In that context, Danish banks recorded high net capital gains[23] in 1993 which were 1.6 times higher than total net dividend and fee income for that year, while in the following year a net capital loss was recorded which, in terms of relative importance, amounted to 68 % of total dividend and fee income in 1994. In 1995 and 1996 the capital gains of Danish banks following the marked-to-market approach for their securities' portfolios were positive, estimated at 58 % and 23 % as a percentage of dividends and fee income for the respective years.

Conversely, most of the EU accounting systems are based on the LOCOM[24] principle, and the use of this method could cause potential hidden reserves when evaluating the securities portfolios (e.g. at the year-end). Moreover, it could also cause an abrupt increase in the net profit on transactions in securities when these capital gains are realised.[25]

Accounting differences and techniques such as these could be accountable for at least part of the differences observed in the empirical analysis.

Income from securities also appears to be a volatile part of non-interest income. The relatively high volatility (51 % for the 12 EU countries in the observation period, see Table 30) has, apparently, been affected by the favourable economic conditions prevailing over recent years. However, the part of this income source stemming from their subsidiaries (or from participating interests held in financial institutions) conducting fee income business is expected to show a pattern similar to that of fees and commissions.

Fees and commissions are the most stable component of non-interest income. Therefore, further development of this source of revenue, which already constitutes the largest part of non-interest income, could contribute to a further reduction in the global volatility of banks' income. However, those fees and commissions are themselves quite heterogeneous.

In general terms, fees and commissions could be divided into:

- those activities which are least affected by market and cyclical evolution. Those activities include payment transactions, safe custody and account administration, and correspondent banking;
- those activities which are, more or less, closely linked with market or cyclical evolution. This category includes underwriting activities, brokerage fees, treasury management, transactions on derivatives and credit card business. Also in this category are merger and acquisition activities, which are connected with the evolution of the financial cycle.

Moreover, the part of the non-interest income stemming from institutional investors belonging to the same banking group could be quite stable and, to the extent that these financial groups can

23 Estimated to be DKK 9.2 billion.
24 Lower of cost or market.
25 In this respect, cross-selling of securities portfolios could created unrealised gains counterbalancing other negative results.

offer to their clients investment and pension funds as alternatives to traditional deposits, is rather similar to interest income.

4 Banking risks and supervisory issues

4.1 Non-interest income

The increased incidence of activities generating non-interest income has implications for the risk profile of banks. As shown in Chapter 3 above, the overall volatility of this source of income does not seem to differ significantly from that of interest income. Indeed, some components of non-interest income, such as profits on financial operations (capital gains) have, in fact, a very high volatility. In addition, the negative correlation between interest and non-interest income is rather weak and could result partially from the commercial and pricing policies adopted by banks. In recent years the development of non-interest income activities has enabled banks to safeguard their overall profitability in an environment characterised by pressures on interest margins. However, competition is likely to increase and the extension of activities generating non-interest income often implies significant costs.

The shift from interest income to non-interest income does not allow banks to avoid risks associated with traditional activities, even if the mix or balance of the various risks could be modified. To the extent that the development of non-interest income is accompanied by a relative reduction in the classical intermediation activity of banks, it should help to reduce *credit risks* incurred by banks. However, greater reliance of the best borrowers on the securities markets may increase the concentration of borrowers classified as bearing a higher level of risk on banks' balance sheets.

In this respect, new techniques, such as credit derivatives or securitisation, enable banks to provide advisory and asset management services while transferring the credit risks to other market participants. However, this process can have both advantages and disadvantages as banks can also buy credit risks via credit derivatives. In addition, some non-interest generating products have the opposite effect as they are used by banks to assume credit risks without supplying any financing (this is the case, for example, for the provision of guarantees). Through the use of credit derivatives, banks could also achieve a better sectoral or geographical assets balance, thus mitigating the risks associated with a possible concentration on their credit activity. However, this approach relies on markets the liquidity of which could quickly dry up and does not enable banks to avoid the problem of correctly pricing their credit risks.

The development of non-interest income could lead banks to bear additional *market risks*. If this could mitigate the sensitivity of banks to the credit cycles linked to downturns in economic activities, it could, at the same time, reinforce their sensitivity to market cycles related to fluctuations in interest rates, stock exchanges or foreign exchange markets. In comparison with those credit activities which are mostly dependent on ongoing relations, market activities are more frequently linked to individual deals. These activities do not usually provide banks with the same opportunity as a credit relation to develop a thorough knowledge of their clients.

The expansion of activities generating non-interest income has also led to an increase in the importance of other categories of risks, including operational, reputation and strategic risks.

Operational risks have several facets. To develop complex new products, banks need to upgrade the level of skills of their employees. They also have to organise good follow-up of their new

activities, which necessitates an adequate internal control mechanism. This is particularly important when banks diversify their range of services and enter new geographical areas, such as emerging markets, which present political and country risks. Financial groups and conglomerates could also face a higher level of operational risks resulting from the complexity of their organisational structure. The risk of internal competition within the group or the conglomerate cannot be ruled out, together with a risk of "cultural mismatch" within the group.

A specific form of operational risk is linked to the difficulty that some banks may face in correctly measuring the cost of quite complex products. An accurate evaluation of the cost of individual products will become more necessary and cross-subsidisation will become increasingly hard to maintain in the future. Against this background, those banks that are not well prepared for the task of evaluating costs via appropriate cost accounting systems and correctly pricing their products may face increased operational risks.

Reputation risk also takes different forms. In the event of ill-advised proposals, banks could face legal disputes and be held liable, more specifically but not exclusively vis-à-vis non-professional clients. Technical errors or operational mistakes are another source of potential liabilities. Even when they are not considered legally responsible, banks could experience a sense of moral obligation to offset part of the losses incurred by their clients, if only to avoid adverse publicity and to preserve their reputation. The requirement to maintain an image of competence, professionalism and fairness is all the more crucial in that non-interest related activities rely on the ability of banks to generate new deals all the time. Reputation risks may also increase as a result of the development of contract banking. This last form of organisation, implying co-operation agreements and alliances with third parties, banks and non-banks, also increases the risks of legal disputes (legal risks).

Finally, in order to react to the changing nature of banking and financial services in an adequate way, banks have to take *strategic risks*. In particular, they have to redefine their objectives in order to safeguard a sustainable level of profitability in the future. For some banks, this will imply a greater specialisation, based on a correct assessment of their specific strength, with the risk of making wrong choices or adopting herding behaviour. Indeed, as some products (e.g. private banking and asset management) seem to be a promising area for future profits, too many banks could be tempted to focus on the same non-interest income related activities. Many banks are also diversifying their activities through mergers or acquisitions, not only in banking but also in the insurance or investment services sectors; in order to manage these more complex structures, it is necessary to establish a peaceful co-existence between sometimes quite different business cultures. In many cases, banks will also have to form strategic alliances, outsourcing part of their activities; banks adopting this approach will have, at the same time, to keep the specific value added and to maintain adequate control and a relationship at arm's length with their service providers.

4.2 Non-interest income components

Non-interest income components present great diversity particularly with regard to their volatility and, therefore, they can affect the risk profile of banks in different ways. A qualitative assessment of this aspect is included in the table provided in Annex 1, based on the contribution of national supervisors. The figures in the table should be considered as indicative and are by no means a scientific measure.

The income deriving from proprietary trading activity (capital gains on financial operations) presents the highest volatility. Banks undertaking this activity face, in addition to market and credit

risks, organisational risks associated with the setting-up and management of proprietary trading desks for complex products.

The income from securities activity also presents a relatively high degree of volatility. This component includes not only income from shares but also income from participating interests and shares in affiliated undertakings. With regard to this last category of activity, banks are confronted with strategic and organisational risks. Banks have, in fact, to determine the required degree of diversification and to make the right choices for their participation, as well as to organise an adequate management structure.

Fees and commissions activities are, on the whole, considered to be less volatile than other non-interest income components. Some activities generating fees and commissions are regarded as bearing limited risks for banks. This applies more specifically to:

- foreign exchange transactions, probably reflecting in part the low prospects for the growth of this activity;
- advisory activities, although the associated reputation and operational risks are expected to increase;
- correspondent banking, the incidence of which will probably decrease further as a consequence of developments in payment systems;
- account administration, safe custody and, in general, most activities made on behalf of third parties; and
- securitisation and private banking, as they offer banks the possibility of transferring credit and market risks to other parties.

Other categories of activities generating fees and commissions are considered to present more risks for banks. These include derivatives trading activities and the provision of guarantees – which are regarded as potentially the most risky – underwriting activities, treasury management, real estate transactions, credit card business and payment transactions.

4.3 Supervisory issues

The changes in the banks' income structure deriving from developments in the banking business also have implications for the activity of banking supervision in two respects: prudential regulation and current supervision.

With regard to *prudential regulation*, the main reference is to the capital adequacy regime. This regime, initially designed to cover credit risks on the basis of the solvency ratio, was later extended to cover market risks. As a subsequent step, the development of sophisticated risk management techniques by banks was taken into account by supervisors through the acceptance of internal risk management models to measure market risk for capital requirement purposes. The capital adequacy regime for credit risk is currently under review in the relevant institutional forums, notably the Basel Committee on Banking Supervision and the Banking Advisory Committee. One of the areas in which this process is being undertaken is the determination of specific capital requirements for categories of risks other than credit and market risk. This line of action is supported by the findings of this report, according to which the development of activities generating non-interest income determines the increased incidence of other categories of risks, including operational, reputation and strategic risks.

With regard to *current supervision*, the increased importance of activities generating non-interest income makes the work of banking supervisors to assess the risk profile of banks more complex. In general terms, banking supervisors have to ensure that all risks stemming from the changes in

the banks' income structure are properly controlled by banks. To that end, banking supervisors have already adapted or are in the process of adapting their monitoring process in order to take account of the developments in banking activities.

ANNEX 1

Qualitative analysis of non-interest income: Summary table

On the basis of qualitative assessment of the various non-interest income activities, national responses are summarised in the following table:

Classification of non-interest income activities in terms of volume, profitability and risk profile

Degrees 1 to 5 (from higher to lower)

Non-interest income activities	Current situation			Future perspectives		
	Volume	Profitability	Risk	Volume	Profitability	Risk
Fee based						
1. Underwriting activities	3.3	2.9	2.9	3.5	3.5	3.2
2. Securitisation	4.8	4.3	4.2	4.2	3.8	4.6
3. Advisory (consulting) activities	4.0	3.2	4.3	2.8	2.8	3.8
4. Asset management, subdivided into:						
Treasury management	3.3	3.4	2.9	3.3	3.3	3.2
Private banking	2.9	2.7	4.1	2.3	2.5	4.2
5. Information and data processing services	4.6	4.7	4.7	3.5	4.2	4.7
6. Real estate and housing transactions	4.5	4.3	3.0	4.3	4.0	3.3
7. Correspondent banking	3.3	3.6	4.1	4.0	4.2	4.5
8. Credit cards	2.7	2.9	3.4	2.3	2.4	3.1
9. Provision of guarantees	2.6	2.6	2.2	2.7	2.8	2.1
10. Loans administration on behalf of other lenders	4.0	3.8	4.4	3.6	3.6	4.4
11. Securities transactions on behalf of third parties	2.5	2.1	4.1	2.6	2.8	4.3
12. Payment transactions	2.0	2.3	3.3	2.6	2.9	3.6
13. Account administration	2.9	3.4	4.9	3.0	3.5	4.8
14. Safe custody and administration of securities	3.0	3.0	4.6	3.7	3.5	4.7
15. FX transactions	3.0	2.7	4.0	3.7	3.7	4.1
16. Sale and purchase of coins and precious metals on behalf of third parties	5	4.8	4.8	4.8	3.8	4.5
17. Brokerage services in connection with insurance contracts	3.4	3.4	4.3	2.7	2.7	4.2
18. Brokerage services in connection with savings and loans	3.4	3.6	4.4	3.5	4.0	4.0
19. Derivatives trading activities	3.5	3.5	2.43	2.7	3.0	2.5
Capital gains						
1. Proprietary trading in securities	2.6	2.2	1.6	2.5	2.7	1.9
2. Proprietary trading in FX	2.7	2.6	1.6	3.1	3.1	1.8
3. Proprietary trading in derivatives	3.3	3.0	1.3	3.1	3.0	1.3
Income from securities						
1. Income from shares and other variable yield securities	3.6	3.6	1.8	3.6	2.9	1.9
2. Income from participating interests and shares in affiliated undertakings	2.9	2.8	2.2	2.9	2.8	2.4

The table includes the average mean value derived from responses from Austria, Belgium, Spain, Finland, France, Greece, Ireland, Italy, Luxembourg, Portugal and Sweden. Numbers 1 to 5 correspond to a scaling order from a higher to a lower degree of importance. Volatility and risk were seen by most Member States as having the same features. Moreover, it was considered difficult to make a clear distinction between profitability and volume. The table was completed on a "best effort" basis.

Source: Supervisory authorities represented in the Banking Supervisory Committee.

ANNEX 2

Introduction to the tables and charts

Unless otherwise indicated, the following charts and tables have been produced on the basis of contributions from national authorities (EU central banks and supervisory authorities). The data were provided on an unconsolidated basis including all credit institutions incorporated in the reporting country together with branches from third countries and excluding foreign branches from EU countries (to avoid double-counting) and foreign subsidiaries of credit institutions. Although the layout and definitions of the Banking Accounts Directive have been applied for the breakdown of the non-interest income, the set of data as a whole cannot be regarded as having been collected on the basis of a harmonised statistical framework. Therefore, data should be taken as indicative only and should be regarded with due caution. **Given this general caveat, footnotes in the tables and charts indicating peculiarities in the data series have been kept to a minimum**.

Owing to national differences and differences in data availability, there are smaller or greater inconsistencies between data in a number of cases. These inconsistencies may be the result of flawed comparability over time (changes in reporting frameworks and data availability; in the case of Ireland and the Netherlands, for example, data refer to a sample of banks), across countries (different definitions of reporting populations, for example the well-known differences between the definitions of a "credit institution") or a result of differences within the samples, which may include or exclude some banks over a period. The data are, therefore, not fully comparable with those of EU countries which only included banks in the sample under examination. In addition, for at least one country it was reported that, for banks with a financial year not ending on 31 December, figures in that given year were not readjusted on an annual basis. The caveat also applies notably to the EU or euro aggregates, which are given for indicative purposes in a number of cases.

Tables 1 to 5 have been extracted from the previous report of the BSC on the possible effects of EMU on the EU banking systems in the medium to long term (February 1999). Tables 1 and 2 contain calculations on the percentage change in relative importance over a given time period (1995-97). The procedure followed for calculating the percentage change in relative importance included the following steps; first, the total of several items (e.g. in Table 1 assets of investment funds, credit institutions and insurance and pension funds) was calculated and the relative share of every single item in the total was derived for both observation periods (1995 and 1997). However, *this step is not included in the table*. As a last step, percentage changes in relative importance with reference to the two observation periods were calculated. These percentage changes are mentioned in Tables 1 and 2, but cannot be deducted directly from the figures mentioned in the first part of the tables.

List of tables

Statistical analysis: measurements of correlation and volatility

26 Rank of non-interest/operating income and ROE ratios. Spearman's correlation test

27 Rank of non-interest/operating income and operating cost/operating income ratios. Spearman's correlation test

28 Correlation of income sources. Net interest income and non-interest income (both expressed as a percentage of the average balance sheet total)

29A Measurement of volatility, net interest income (coefficients of variation as a percentage of average balance sheet total)

29B Measurement of volatility, non-interest income (coefficients of variation as a percentage of average balance sheet total)

29C Measurement of volatility, net interest income minus total provisions (coefficients of variation as a percentage of average balance sheet total)

29D Measurement of volatility, net interest income minus provisions on loans (coefficients of variation as a percentage of average balance sheet total)

30 Volatility of the non-interest income and its components. Coefficient of variation of the non-interest income and its components sorted by non-interest income coefficient of variation in a descending order (period 1993-98)

Explanations related to the tables and charts

Abbreviations used in the tables

The following abbreviations for the EU countries are used in the tables:

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

Blank field/country not mentioned in the table: data are not available.

Weightings and averages

Most of the tables contain averages. These averages are presented for illustrative purposes only. Tables 8 to 17, 19 to 27 and 30 have been compiled on the basis of information submitted by the national authorities. Weighted averages – for the EU and euro area – (Tables 8-11, 17, 19 to 25) have been calculated for those years for which data on Member States were available (mostly 1994-98 or 1995-98) by multiplying the respective country data by a weight representing the country's GDP share in EU GDP for the year 1998. In order to overcome the problem of data availability for the earlier period, the OECD bank profitability database is used for the calculation of aggregate (EU and euro area) indicators for the banks' income structure (Table 18). Moreover, the OECD data basis was employed for the calculation of EU and euro averages for the correlation coefficient (correlation of interest and non-interest income (Table 28) and the coefficient of variation of net interest income and non-interest income (Tables 29A to 29D). GDP weights were chosen as being the standard approach for weighting financial quantities such as monetary aggregates and may be inaccurate where financial sectors such as that of Luxembourg are larger than GDP. However, this "error" in terms of measuring the relative importance of Luxembourg as the financial sector using GDP does not lead to any distortion of the EU average

The following weights have been used for EU averages:

AT	BE	DE	DK	ES	FI	FR	GR	IE	IT	LU	NL	PT	SE	UK
2.48	2.94	25.33	2.05	6.86	1.51	17.10	1.43	1.00	13.96	0.22	4.61	1.29	2.77	16.44

For the euro area the following weights have been used:

AT	BE	DE	ES	FI	FR	IE	IT	LU	NL	PT
3.21	3.81	32.77	8.87	1.96	22.13	1.29	18.05	0.28	5.96	1.67

For the calculation of the EU and euro area aggregate indicators for the period 1989-95 (Table 18), EU and euro area weighted averages are calculated by making an allocation of the weight of Ireland, for which the OECD database does not provide relevant data, to the rest of the EU and euro area countries in a manner proportionate to their weightings. Moreover, the euro area and EU weighted averages for the years 1993 and 1994 in Tables 8 to 11 are calculated by using the 1995 data for three countries (Finland, Ireland and the United Kingdom) as proxies for the years 1993 and 1994. ROE and ROA ratios and the respective weighted averages include **profits before tax**. The ROE and ROA are calculated by country by dividing aggregate absolute figures for profit before tax by aggregate absolute values for total equity and total assets respectively. Alternatively, in the cases where weighted ROE and ROA ratios were not available, non-weighted ratios were requested as an alternative; this is, at least, the case for the United Kingdom, whereas for Germany the ROE ratio was calculated on the basis of yearly averages of equity (Return On Average Equity). The EU12 average in Table 30 is unweighted.

Measurement of volatility

The coefficient of variation (standard deviation/mean)*100 was calculated as a measure of volatility appropriate for comparisons across data sets in Tables 29A-29D and 30. With regard to Tables 29A to 29D, the volatility of interest and non-interest income levels (both expressed in ratio form, as a percentage of average balance sheet assets on the basis of OECD data) was calculated by the coefficient of variation, which is the ratio of the standard deviation to the mean multiplied by 100. However, a different methodology was followed for the calculation of the coefficient of variation of non-interest income and its components (Table 30). In particular, the values in domestic currencies concerning non-interest income and its components were converted into ECU by using monthly average ECU values for the year concerned. The short period (1993-98) for which analytical data from national sources were available and in which low levels of inflation prevailed across most of the EU countries allows for the conversion of data in national currencies into ECU and the calculation of the EU average. The use of values instead of ratios has the advantage that the result is not affected by the changes in the denominator.

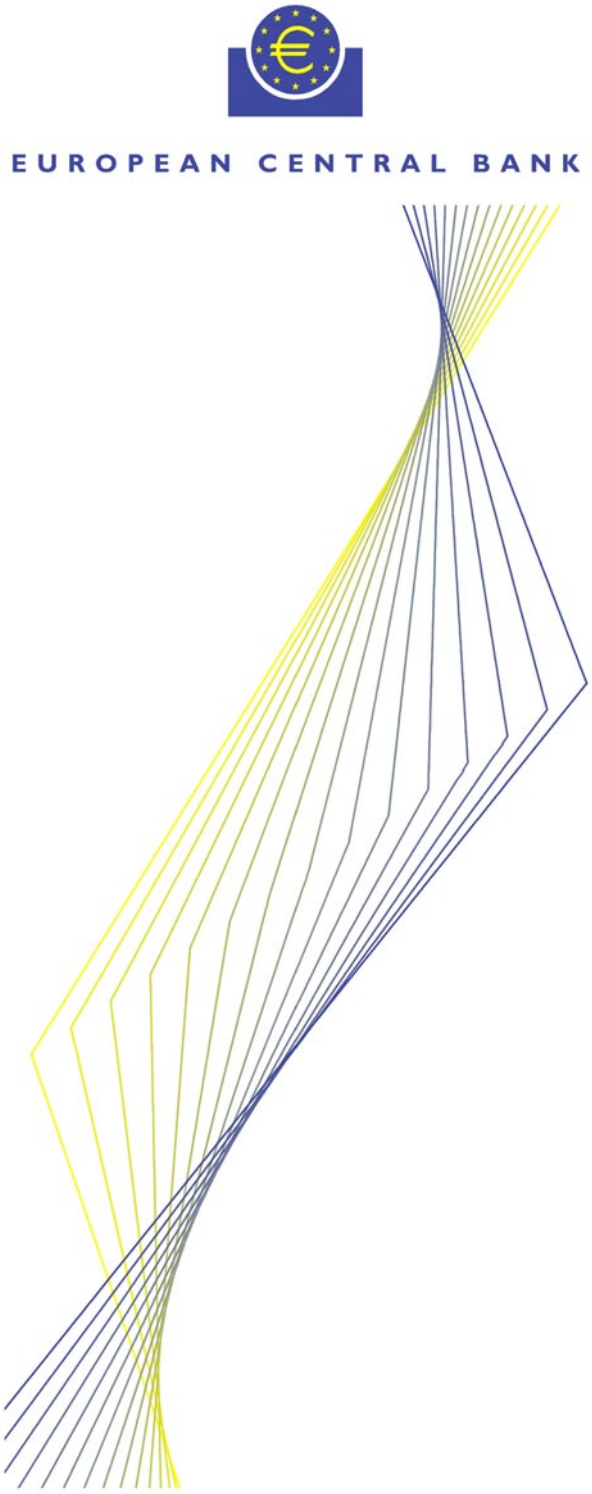
The following ECU values have been used for the conversion of national currencies:

	1990	1991	1992	1993	1994	1995	1996	1997	1998
BEF	42.423	42.2224	41.6062	40.4672	39.662	38.5473	39.2998	40.5291	40.623
DKK	7.8561	7.9082	7.8119	7.5916	7.5435	7.3271	7.3598	7.4829	7.4998
DEM	2.0519	2.0507	2.021	1.9368	1.9248	1.8736	1.9096	1.9642	1.9692
GRD	201.427	225.2153	246.8861	268.4125	287.9386	303.0107	305.5692	309.3311	330.7594
ESP	129.4279	128.4608	132.4428	148.9101	158.9029	162.9971	160.7403	165.8837	167.1915
FRF	6.9141	6.9733	6.85	6.633	6.5835	6.5247	6.4932	6.6121	6.6017
IEP	0.7677	0.7678	0.7609	0.7996	0.7935	0.8156	0.7934	0.7475	0.7862
ITL	1521.876	1533.261	1594.286	1840.328	1913.946	2131.498	1958.801	1929.629	1943.722
LUF	42.423	42.2224	41.6062	40.4672	39.662	38.5473	39.2998	40.5291	40.623
NLG	2.3119	2.3109	2.2755	2.1757	2.1585	2.0987	2.1398	2.2106	2.2198
ATS	14.4387	14.4305	14.222	13.6266	13.5413	13.1813	13.4351	13.8226	13.8552
PTE	181.1067	178.6612	174.679	188.1248	196.905	196.1154	195.7731	198.5586	201.7052
FIM	4.8551	5.0042	5.802	6.6973	6.1908	5.7092	5.8301	5.8808	5.9827
SEK	7.52	7.4798	7.5299	9.1146	9.1579	9.3337	8.5156	8.6552	8.9085
GBP	0.7141	0.7011	0.737	0.7805	0.7756	0.829	0.8137	0.6926	0.6762

Spearman's rank correlation test

Spearman's rank correlation coefficient was calculated for two sets of variables. First, for testing a possible correlation between the ranked values of the ratio of non-interest income to operating income and ranked ROE values and, second, for testing a possible correlation between the ranked values of non-interest income to operating income and ranked values of the ratio of operating cost to operating income for the EU banks (Tables 26 and 27). Spearman's rank correlation test provides a statistical measurement of the correlation between the two individual data sub-sets ranked. Illustration of the rank correlation test is provided in many statistical textbooks.

Spearman's correlation test was preferred because it provides a measurement of correlation for ranked variables, thus diminishing the effect of "extreme" values on the correlation measurement and, to the extent that differences in the variables as a result of the use of non-harmonised databases do not affect the ranking of countries, it could provide a better measurement of correlation. Against this background, since the rank order of a set of variables is used for measuring their correlation, any discrepancies arising from data accuracy or differences in the method of calculations do not affect the correlation measurement if they do not cause any change in the ranking.



Tables

Table 1

The relative importance of financial intermediaries

Assets of credit institutions, investment funds' assets and insurance companies' and pension funds' assets under management

(expressed as a percentage of GDP (benchmark years 1997 and 1995)
sorted by the assets of credit institutions as a percentage of GDP in 1997)

	1997 Absolute value as a % of GDP			1995 Absolute value as a % of GDP			% change in relative importance 1995-97		
	Investment funds	Insurance companies & pension funds	Credit institutions	Investment funds	Insurance companies & pension funds	Credit institutions	Investment funds	Insurance companies & pension funds	Credit institutions
UK			328	16		296			
IE	70		299	37	26	195			
BE	32	31	294	24	26	279			
DE	25	37	256	16	32	223	30	-2	-2
FR		45	245	33	40	224			
AT	23	26	238	14	23	231	47	6	-4
NL	19	146	227	16	124	194	1	0	0
DK	8	69	220	5	66	203	48	-4	0
PT	26	31	220	17	23	184	24	9	-3
SE	21	104	213	11	86	179	54	-1	-3
ES	35	22	183	18	18	183	77	11	-9
IT	19	19	155	7	17	150	137	1	-7
FI	3	42	113	1	38	122	225	12	-6
GR	23		102	10	12	96			
LU	2771		3696	2072	45	3604			

Source: ECB publication entitled "Possible effects of EMU on the EU banking systems in the medium to long term", February 1999.
Note: For the calculation of the percentage change in relative importance see Annex 2 (Introduction to the tables and charts).

Table 2

The relative importance of different financial instruments:

(expressed as a percentage of GDP (benchmark years 1997 and 1995)
sorted by banks' loans as a percentage of GDP in 1997)

	1997						1995						% change in relative importance 1995-97					
	CPs[1)]	CDs	Equities	Bonds	Deposits	Loans	CPs	CDs	Equities	Bonds	Deposits	Loans	CPs	CDs	Equities	Bonds	Deposits	Loans
UK		10			223	220		6			216	206						
IE	6	3	76	34	122	175	4		40	43	93	115	13		34	-44	-7	8
NL	1	1	187	97	93	156	1	1	103	80	90	138	-21	-21	40	-7	-20	-13
DE	1	0	60	92	101	144	0	0	43	85	99	134	15	700	26	-1	-7	-2
DK			72	186	154	140			40	193	148	130			67	-11	-4	0
SE	2	12	124	96	53	122	1	9	70	97	47	118	76	11	48	-17	-5	-13
AT			18	65	99	121			13	60	101	118			29	4	-5	-1
BE	3	2	164	159	111	97	2	1	132	168	98	99	54	147	16	-11	5	-9
ES	1	0	51	60	74	88	1	0	31	55	79	81	-36		50	-1	-16	-3
PT	3	2	50	67	116	83	3	1	47	63	113	67	-9	82	-3	-3	-6	13
FR					67	81	2	19	32	54	63	83						
IT	1	11	107	122	38	67	1	19	83	116	38	65	-6	-45	20	-2	-6	-5
FI	1	14	65	46	49	58	1	13	35	42	56	66	-12	-2	71	0	-20	-20
GR	0	0	30	42	76	36	0	0	15	64	69	33			95	-36	8	8
LU			17	833	1389	692			11	682	1418	681			46	16	-7	-3

Source: ECB publication entitled "Possible effects of EMU on the EU banking systems in the medium to long term", February 1999.
1) CPs is the acronym for commercial paper and CDs for certificates of deposits.
2) For the calculation of the percentage change in relative importance see Annex 2 (Introduction to the tables and charts).

Table 3

The relative importance of different categories of bonds: government bonds, credit institutions' bonds, private non-financial enterprises' bonds

(expressed as a percentage of GDP (1997 and 1995)
sorted by government bonds as a percentage of GDP in 1997)

	1997			1995			% change in relative importance 1995-97			Relative importance of private non-financial enterprises' bonds to total bonds in 1997
	Private non-financial enterprises' bonds	Credit institutions' bonds	Government bonds	Private non-financial enterprises' bonds	Credit institutions' bonds	Government bonds	Private non-financial enterprises' bonds	Credit institutions' bonds	Government bonds	
BE	10.1	38.3	111.1	7.8	47.1	112.7	35.7	-14.4	3.5	6.3
IT	1.6	19.4	100.4	1.6	12.2	101.9	-4.4	51.6	-6.1	1.3
DK	11.0	95.0	62.0	9.0	93.0	67.0	22.9	2.8	-6.9	6.5
NL		43.1	53.4		26.2	54.2		37.0	-17.9	
ES	2.7	4.6	52.9	3.4	4.2	47.4	-27.3	0.5	1.9	4.4
SE	3.7	38.6	46.6	3.5	51.8	41.4	16.0	-18.9	22.4	4.1
PT	7.0	10.0	40.0	5.0	5.0	45.0	35.1	93.0	-14.2	12.3
GR	3.3	0.4	38.3	0.9	4.2	59.1	435.2	-85.0	-0.8	7.8
DE	0.1	54.6	37.7	0.1	46.4	36.5	40.0	5.7	-7.4	0.1
FI	3.8	7.1	35.6	4.9	10.0	27.5	-29.3	-35.5	18.2	8.2
IE	0.0	1.6	32.2	0.5	0.4	42.4	-97.4	414.1	-2.8	0.0
AT	2.8	31.2	30.6	3.3	29.2	27.5	-21.6	-0.9	3.5	4.3
LU	115.7	307.6	1.1	87.2	260.2	1.2	3.5	-7.7	7.6	27.3

Source: ECB publication entitled "Possible effects of EMU on the EU banking systems in the medium to long term", February 1999.
Note: For the calculation of the percentage change in relative importance see Annex 2 (Introduction to the tables and charts).

Table 4

Share of UCITS controlled by credit institutions

(percentage points)

	1992	1993	1994	1995	1996	1997	% change 1992-97	% change 1995-96	% change 1996-97
AT	100	100	100	100	100	100	0	0	0
PT	100	99	99	100	100	100	0	0	0
ES	92	92	93	92	93	93	2	1	1
LU[1)]	90	90	90	90	90	90			
GR					89	85			-4
SE			86	85	84	85		-1	1
IT	57	63	65	66	79	84	47	20	6
FI	67	53	51	55	62	81	20	12	31
NL	55	55	53	52	52	50	-9	0	-4

Source: ECB publication entitled "Possible effects of EMU on the EU banking systems in the medium to long term", February 1999.
LU[1)]: share is higher than 90% for all five years.

Table 5

Credit institutions' loans to non-banks as a percentage of GDP

	1980	1985	1990	1995	1996	1997	%change 1985-95	%change 1995-96	%change 1996-97
UK		147	201	206	204	220	40	-1	8
IE	78	75	87	115	132	175	54	15	32
NL	71	92	126	138	146	156	50	6	7
DE	106	117	131	134	140	144	14	5	3
DK	109	111	153	130	134	140	17	3	4
SE		93	150	118	118	122	27	0	4
AT	84	101	114	118	119	121	17	1	2
BE	81	81	92	99	98	97	23	-1	-1
ES		72	80	81	83	88	13	2	6
PT	77	73	52	67	72	83	-8	7	15
FR	31	76	87	83	80	81	9	-4	2
IT	51	48	62	65	65	67	37	0	3
FI	49	59	88	66	63	58	12	-5	-8
GR	39	39	36	33	34	36	-16	6	4
LU	937	1,080	865	681	676	692	-37	-1	2
EU weighted average		96	117	117	118	124	21	1	5

Source: ECB publication entitled "Possible effects of EMU on the EU banking systems in the medium to long term", February 1999.

Table 6

Geographical distribution of global OTC derivatives market activity

(average daily turnover in USD billions)

Country	April 1998		April 1995	
	Notional amounts	Percentage share	Notional amounts	Percentage share
United Kingdom	591	35	351	30
United States	294	17	164	14
France	99	6	55	5
Japan	123	7	139	12
Germany	87	5	56	5
Switzerland	63	4	47	4
Singapore	91	5	79	7
Other countries	336	20	271	23
TOTAL	1684	100	1162	100

Source: BIS publication entitled "Central Bank Survey of FX and derivatives market activity 1998", Basel, May 1999.

Table 7

Geographical distribution of global traditional foreign exchange market activity

(average daily turnover of notional amounts in USD billions)

Country	April 1998		April 1995		April 1989	
	Amount	Percentage share	Amount	Percentage share	Amount	Percentage share
United Kingdom	637	32	464	30	184	26
United States	351	18	244	16	115	16
France	72	4	58	4	23	3
Japan	149	8	161	10	111	15
Germany	94	5	76	5		
Netherlands	41	2	26	2	13	2
Switzerland	82	4	87	6	56	8
Singapore	139	7	105	7	55	8
Other countries	417	20	351	20	161	22
TOTAL	1982	100	1572	100	718	100

Source: BIS publication entitled "Central Bank Survey of FX and derivatives market activity 1998", Basel, May 1999.

Table 8

Relative importance of the components of non-interest income

Net income from fees and commissions expressed as a percentage of non-interest income

	1993	1994	1995	1996	1997	1998	average 1993-98
UK			71	80	80	72	76
IE			86	76	71	68	76
NL	58	66	60	60	58	59	60
ES	48	77	57	52	55	59	58
DK	34	213	38	48	56	56	74
GR	60	62	62	62	57	53	59
DE	60	65	62	61	58	52	60
IT	37	64	44	39	46	50	47
LU	45	68	52	55	54	50	54
FI			57	51	52	48	52
FR	53	66	59	57	53	47	56
AT	41	46	44	44	44	42	44
BE	30	40	32	32	36	36	34
PT	39	44	36	29	35	35	36
SE	60	58	63	46	49	35	52
EURO weighted	51	64	55	53	53	50	55
EU weighted	55	68	58	57	57	54	58

Source: National central banks and supervisory authorities represented in the Banking Supervision Committee.

Notes

1) as a working hypothesis for the calculation of the EURO and EU weighted averages, the 1995 data for the UK, IE and FI are used as proxies for the years 1993 and 1994.

2) 1993-1998 averages for the UK, IE and FI refer to the 1995-1998 period for which data are available.

3) the average for DK has been influenced by the "extreme" value of the ratio for 1994 (a value of more than 100% indicates that there was a negative contribution (value) by another component of non-interest income (see table 9). With the exclusion of the 1994 figure, the average for the rest of the years decreases to 46 percent.

Table 9

Relative importance of the components of non-interest income

Net profit (loss) on financial operations expressed as a percentage of non-interest income

	1993	1994	1995	1996	1997	1998	average 1993-98
BE	44	26	40	37	39	44	39
FR	45	30	36	39	39	43	39
PT	40	28	28	39	34	34	34
GR	28	24	19	21	29	33	26
IT	45	0	23	29	21	17	22
LU	34	3	27	27	19	16	21
ES	34	-21	14	25	22	16	15
NL	18	13	20	20	18	16	17
FI			11	24	20	15	17
AT	18	12	13	12	13	12	13
SE	19	7	8	32	9	11	15
UK			15	13	12	11	13
DE	15	1	10	9	9	10	9
IE			10	8	8	8	8
DK	57	-151	38	29	14	6	-1
EURO weighted	31	8	21	23	21	21	21
EU weighted	28	6	20	22	19	19	19

Source: National central banks and supervisory authorities represented in the Banking Supervision Committee.

Notes

1) as a working hypothesis for the calculation of the EURO and EU weighted averages the 1995 data for the UK, IE and FI are used as proxies for the years 1993 and 1994.

2) 1993-1998 averages for the UK, IE and FI refer to the 1995-1998 period for which data are available.

3) extreme values for DK and, to a lesser extent, for ES for 1994 have affected the 1993-1998 average for these countries. Negative values denote losses in financial operations.

Table 10

Relative importance of the components of non-interest income

Income from securities expressed as a percentage of non-interest income

	1993	1994	1995	1996	1997	1998	average 1993-98
SE	5	4	16	12	25	35	16
DE	20	30	25	27	29	31	27
DK	3	9	18	18	24	25	16
AT	16	16	16	16	19	25	18
ES	16	37	26	21	21	24	24
FI			6	6	7	19	10
PT	6	5	15	12	12	16	11
NL	5	6	6	5	10	11	7
IE			-3	10	13	11	8
IT	2	6	5	5	7	10	6
FR	2	4	5	3	8	10	5
BE	12	15	13	17	11	9	13
LU	13	15	12	7	9	7	11
GR	6	6	9	8	6	6	7
UK			2	2	1	1	2
EURO weighted	10	17	14	14	16	19	15
EU weighted	9	14	12	12	14	17	13

Source: National central banks and supervisory authorities represented in the Banking Supervision Committee.

Notes

1) as a working hypothesis for the calculation of the EURO and EU weighted averages the 1995 data for the UK, IE and FI are used as proxies for the years 1993 and 1994.

2) 1993-1998 averages for the UK, IE and FI refer to the 1995-1998 period for which data are available.

3) "extreme" values for IE in 1995 have affected the 1993-1998 average for this country.

Table 11

Relative importance of the components of non-interest income

Other operating income expressed as a percentage of non-interest income

	1993	1994	1995	1996	1997	1998	average 1993-98
LU	9	15	8	11	18	27	15
IT	16	31	29	27	27	23	25
AT	25	27	28	27	24	22	25
SE	16	31	13	10	16	19	17
FI			26	18	20	19	21
UK			11	5	8	15	10
PT	15	22	21	20	19	15	19
NL	18	15	15	15	13	15	15
IE			7	6	8	13	8
DK	6	29	6	6	6	13	11
BE	14	19	16	13	14	11	14
GR	7	7	10	9	8	8	8
DE	4	4	3	3	4	7	4
ES	2	7	3	2	2	2	3
EURO weighted	8	11	10	9	9	9	9
EU weighted	8	12	10	8	9	11	10

Source: National central banks and supervisory authorities represented in the Banking Supervision Committee.

Notes

1) as a working hypothesis for the calculation of the EURO and EU weighted averages the 1995 data for the UK, IE and FI are used as proxies for the years 1993 and 1994.

2) other operating income was not reported by FR for the period 1993-97 and the amount reported for 1998 was negligible as a percentage of non-interest income. Consequently, a zero value has been taken into account for FR when computing the Euro and EU weighted averages.

3) 1993-1998 averages for the UK, IE and FI refer to the 1995-1998 period for which data are available.

Table 12

Relative importance of the main sub-components of net income from fees and commissions

Commissions from FX transactions expressed as a percentage of net income from fees and commissions

	1993	1994	1995	1996	1997	1998	average 1993-98
GR	15	11	12	12	13	26	15
AT			14	13	13	12	13
NL	12	12	13	11	8	5	10
IT	4	4	5	4	4	3	4
ES	3	3	3	2	2	1	2
FI			1	1	1	1	1
FR	1	1	1	1	1	1	1
PT	1	2	1	0	0	0	1

Source: National central banks and supervisory authorities represented in the Banking Supervision Committee.
Note: Average data refer to the period for which data are available (e.g. 1995-98 for FI).

Table 13

Relative importance of the main sub-components of net income from fees and commissions

Commissions charged for guarantees expressed as a percentage of net income from fees and commissions

	1993	1994	1995	1996	1997	1998	average 1993-98
PT	22	23	23	23	17	14	20
BE	17	17	18	16	14	11	15
DK	17	14	14	14	15		15
GR	9	7	8	7	8	10	8
AT	14	13	14	13	10	10	12
ES	11	11	12	11	9	8	10
FI			15	10	8	7	10
FR	6	6	6	6	5	5	6
IT	7	7	8	7	6	4	7

Source: National central banks and supervisory authorities represented in the Banking Supervision Committee.
Note: Average data refer to the period for which data are available (e.g. 1995-98 for FI and 1993-97 for DK).

Table 14

Relative importance of the main sub-components of net income from fees and commissions

Commissions charged for securities transactions expressed as a percentage of net income from fees and commissions

	1993	1994	1995	1996	1997	1998	average 1993-98
BE	44	47	41	44	46	50	45
NL	22	22	22	29	33	38	28
AT	26	25	22	25	29	32	26
PT	21	22	23	23	23	27	23
GR	25	34	29	27	27	26	28
FR	15	14	11	12	14	16	14
ES	9	9	9	9	13	10	10
IT	2	2	2	2	3	6	3
FI			3	3	2	3	3

Note: Average data refer to the period for which data are available (e.g. 1995-98 for FI).

Table 15

Relative importance of the main sub-components of net income from fees and commissions

Commissions charged for payment transactions expressed as a percentage of net income from fees and commissions

	1993	1994	1995	1996	1997	1998	average 1993-98
ES	67	61	65	63	54	50	60
FI			28	26	29	32	29
PT	31	30	27	31	30	23	29
AT			31	29	28	28	29
NL	34	32	32	28	24	25	29
FR	19	19	23	23	22	22	21
GR	21	17	20	22	19	23	20
BE	27	25	27	22	17	14	22
IT	15	11	13	14	13	11	13

Source: National central banks and supervisory authorities represented in the Banking Supervision Committee.
Note: Average data refer to the period for which data are available (e.g. 1995-98 for FI and AT).

Table 16

Relative importance of the main sub-components of net income from fees and commissions

Commissions charged for safe custody and administration of securities expressed as a percentage of net income from fees and commissions

	1993	1994	1995	1996	1997	1998	Average 1993-98
BE	9	10	11	14	14	13	12
FR	20	18	16	14	10	10	15
NL	5	6	5	5	7	6	6
FI			6	6	7	10	7
ES	5	6	5	6	6	6	6
IT	5	4	4	4	4	4	4
PT	1	2	2	2	3	4	2

Source: National central banks and supervisory authorities represented in the Banking Supervision Committee.
Note: Average data refer to the period for which data are available (e.g. 1995-98 for FI).

Table 17

Summary table

Non-interest income mix prevailing in the EU countries in terms of the relative importance of its main components

(percentage points)

	1998				AVERAGE 1993-98			
	Fees and commissions	Income from securities	Net profit on Financial operations	Other operating income	Fees and commissions	Income from securities	Net profit on Financial operations	Other operating income
BE	36	9	44	11	34	13	39	14
DK	56	25	6	13	74	16	-1	11
DE	52	31	10	7	60	27	9	4
GR	53	6	33	8	59	7	26	8
ES	59	24	16	2	58	24	15	3
FR	47	10	43	0	56	5	39	0
IE	68	11	8	13	76	8	8	8
IT	50	10	17	23	47	6	22	25
LU	50	7	16	27	54	11	21	15
NL	59	11	16	15	60	7	17	15
AT	42	25	12	22	44	18	13	25
PT	35	16	34	15	36	11	34	19
FI	48	19	15	19	52	10	17	21
SE	35	35	11	19	52	16	15	17
UK	72	1	11	15	76	2	13	10
EURO weighted	50	19	21	9	55	15	21	9
EU weighted	54	17	19	11	58	13	19	10

Source: National central banks and supervisory authorities represented in the Banking Supervision Committee.
Note: For the calculation of the EU and euro area averages and for 1993-97 averages across countries see notes on tables 8 to 11.

Table 18

Aggregate indicators for the euro and the EU area

Period 1989-95 (percentage points)

Net Non-interest income / gross income

	1989	1990	1991	1992	1993	1994	1995
EURO weighted	23.1	24.2	24.4	25.5	29.7	25.7	28.7
EU weighted	26.1	26.7	27.3	28.5	32.9	28.5	31.6

Net interest income / assets (end of year)

	1989	1990	1991	1992	1993	1994	1995
EURO weighted	2.20	2.18	2.18	2.13	2.02	2.00	1.93
EU weighted	2.31	2.29	2.33	2.20	2.13	2.10	2.01

Net Non-interest income / assets (end of year)

	1989	1990	1991	1992	1993	1994	1995
EURO weighted	0.66	0.69	0.70	0.71	0.85	0.68	0.74
EU weighted	0.86	0.88	0.93	0.92	1.10	0.87	0.94

Gross income / assets (end of year)

	1989	1990	1991	1992	1993	1994	1995
EURO weighted	2.86	2.87	2.87	2.83	2.88	2.68	2.67
EU weighted	3.17	3.18	3.27	3.12	3.23	2.97	2.95

Return on equity (before tax)

	1989	1990	1991	1992	1993	1994	1995
EURO weighted	12.13	11.23	11.23	8.66	8.49	6.66	8.45
EU weighted	10.39	11.33	12.14	8.28	10.36	10.45	12.45

Source: OECD Bank Profitability

Note

1) *The following sectors per country are included in the OECD sample for the calculations of the above ratios: AT: All banks, BE: All banks, DE: All banks, DK: Commercial banks and savings banks, ES: All banks, FI: All banks, FR: All banks, GR: Commercial banks, IT: All banks, LU: Commercial banks, NL: All banks, PT: Commercial banks, SE: Commercial banks, UK: Commercial banks.*
2) *No data for IE existed for the period concerned. EU and euro area weighted averages are calculated by making an allocation of the weight of IE to the rest of the EU and euro area countries in a manner proportionate to their weightings.*

Table 19

Non-interest income expressed as a percentage of operating income

	1980	1985	1990	1995	1996	1997	1998	%change 1996/95	%change 1997/96	%change 1998/97
LU	18	20	35	34	38	43	55	11	14	27
SE		46	26	30	35	41	53	16	17	29
FR				34	38	45	52	11	19	16
AT			42	39	41	43	47	5	5	10
IT				31	35	39	46	15	11	18
GR				45	47	45	45	4	-5	1
BE			29	32	34	37	43	7	9	15
FI				35	43	40	42	22	-5	4
PT	59	57	20	27	35	35	41	26	1	17
NL	26	26	29	33	37	40	40	9	8	2
IE	23	17	27	31	36	37	40	15	5	7
UK			39	43	39	39	40	-8	-1	2
DK				28	31	30	37	8	-1	23
ES	13	14	17	27	31	33	36	13	8	8
DE				25	25	29	33	3	13	14
EURO weighted				30	32	36	41	10	12	14
EU weighted				32	34	37	41	6	9	12

Source: National central banks and supervisory authorities represented in the Banking Supervision Committee.

Table 20

Non-interest income expressed as a percentage of total assets

	1980	1985	1990	1995	1996	1997	1998	%change 1996/95	%change 1997/96	%change 1998/97
GR				1.61	1.71	1.71	1.76	6	0	3
IT				1.18	1.32	1.38	1.75	12	5	27
IE	1.20	0.87	1.43	1.48	1.78	1.43	1.69	20	-20	18
FI				1.02	1.34	1.18	1.39	31	-12	18
UK			1.88	1.54	1.40	1.32	1.39	-9	-6	5
SE		1.36	0.55	0.86	0.92	0.91	1.26	7	-1	38
PT	1.93	1.63	1.03	0.86	1.03	1.05	1.23	20	2	17
AT			1.14	1.06	1.12	1.12	1.18	6	0	5
ES	0.61	0.63	0.77	0.98	1.07	1.14	1.17	9	7	3
DK				1.13	1.07	0.93	1.17	-6	-13	26
NL	0.74	0.75	0.66	0.88	1.02	1.06	1.06	15	5	0
FR				0.67	0.72	0.83	1.02	7	15	23
BE		0.50	0.53	0.58	0.63	0.66	0.87	9	4	32
LU	0.17	0.28	0.41	0.36	0.41	0.49	0.72	14	20	49
DE				0.58	0.58	0.65	0.71	-1	11	11
EURO weighted				0.80	0.87	0.93	1.09	8	7	17
EU weighted				0.94	0.98	1.00	1.15	3	3	15

Source: National central banks and supervisory authorities represented in the Banking Supervision Committee.

Table 21

Net interest income expressed as a percentage of total assets

	1980	1985	1990	1995	1996	1997	1998	%change 1996/95	%change 1997/96	%change 1998/97
IE	3.96	4.19	3.92	3.31	3.20	2.39	2.52	-3	-25	5
UK			2.98	2.06	2.17	2.09	2.13	5	-4	2
GR				1.94	1.90	2.10	2.12	-2	11	1
ES	4.18	3.87	3.75	2.60	2.42	2.28	2.09	-7	-6	-8
IT				2.66	2.44	2.17	2.06	-8	-11	-5
DK				2.85	2.41	2.13	1.95	-15	-11	-9
FI	2.74	2.26	1.88	1.80	1.81	1.78	1.92	0	-1	8
PT	1.30	1.23	4.18	2.29	1.97	1.91	1.78	-14	-3	-7
NL	2.12	2.17	1.63	1.76	1.77	1.63	1.57	1	-8	-3
DE	1.64	2.00	1.55	1.78	1.71	1.60	1.47	-4	-7	-8
AT			1.58	1.69	1.64	1.50	1.32	-3	-9	-12
BE		1.62	1.31	1.23	1.21	1.10	1.16	-2	-9	5
SE		1.60	1.56	2.00	1.70	1.32	1.13	-15	-22	-15
FR				1.31	1.20	1.03	0.94	-8	-14	-8
LU	0.76	1.15	0.76	0.69	0.67	0.63	0.59	-4	-5	-7
EURO weighted				1.91	1.80	1.63	1.53	-6	-9	-6
EU weighted				1.96	1.87	1.72	1.63	-4	-8	-5

Source: National central banks and supervisory authorities represented in the Banking Supervision Committee.

Table 22

Operating income expressed as a percentage of total assets

	1980	1985	1990	1995	1996	1997	1998	%change 1996/95	%change 1997/96	%change 1998/97
IE	5.16	5.06	5.36	4.79	4.98	3.82	4.21	4	-23	10
GR				3.55	3.61	3.81	3.88	2	6	2
IT				3.84	3.76	3.55	3.81	-2	-6	7
UK			4.86	3.60	3.57	3.41	3.52	-1	-4	3
FI				2.89	3.15	2.99	3.31	9	-5	11
ES	4.79	4.50	4.52	3.58	3.49	3.42	3.26	-2	-2	-4
DK				3.98	3.47	3.07	3.12	-13	-12	2
PT	3.27	2.88	5.26	3.18	3.05	2.99	3.00	-4	-2	0
NL	2.86	2.91	2.29	2.64	2.78	2.69	2.63	5	-3	-2
AT			2.72	2.75	2.76	2.62	2.51	0	-5	-4
SE		2.96	2.11	2.86	2.62	2.23	2.38	-8	-15	7
DE				2.37	2.29	2.24	2.18	-3	-2	-3
BE		2.11	1.84	1.81	1.84	1.76	2.03	2	-4	15
FR				1.99	1.92	1.86	1.96	-3	-3	5
LU	0.93	1.44	1.16	1.05	1.07	1.12	1.32	2	5	17
EURO weighted				2.72	2.65	2.57	2.49	-2	-3	-3
EU weighted				2.90	2.85	2.72	2.79	-2	-4	2

Source: National central banks and supervisory authorities represented in the Banking Supervision Committee.

Table 23

Return on equity (weighted)

(percentage points)

	1980	1985	1990	1995	1996	1997	1998
IE	21.3	13.8	26.8	27.3	28.7	28.4	32.6
FI	8.4	9.3	6.1	-8.3	13.8	22.2	27.4
UK			5.1	14.3	26.5	25.6	25.8
LU	16.6	28.9	22.4	17.8	18.0	19.7	23.1
NL	31.0	29.0	18.0	20.8	22.0	19.3	22.0
DE				14.1	13.3	12.8	19.3
ES	12.4	17.7	23.1	15.2	16.1	17.1	17.4
GR				20.2	15.9	16.3	17.2
SE		29.3	9.4	16.0	19.8	12.1	15.6
DK				20.0	17.1	15.8	15.5
BE		13.3	11.0	13.1	15.3	15.1	14.7
IT				6.3	8.3	5.9	13.3
PT	15.5	11.7	13.0	8.2	8.5	10.4	10.0
FR				3.2	4.3	7.4	9.6
AT			10.1	9.2	9.1	8.9	8.4
EURO weighted				10.2	11.2	11.4	15.8
EU weighted				11.4	14.2	13.9	17.4

Source: National central banks and supervisory authorities represented in the Banking Supervision Committee.

Notes:
1) ROE ratios include profits before tax.
2) For DE, ROE was calculated with respect to the yearly averages of equity.
3) For the UK, ROE figures are unweighted.

Table 24

Return on assets (weighted)

(percentage points)

	1980	1985	1990	1995	1996	1997	1998
IE	1.26	0.78	1.27	1.54	1.78	1.44	1.72
FI	0.29	0.36	0.39	-0.25	0.49	0.89	1.20
UK			0.29	0.71	1.04	1.15	1.15
GR				1.00	0.74	0.82	1.02
DK				1.33	1.17	1.03	0.97
ES	0.74	0.83	1.36	0.88	0.88	0.94	0.94
IT				0.43	0.56	0.40	0.94
SE		1.31	0.48	0.97	1.14	0.72	0.90
LU	0.55	1.04	0.73	0.56	0.57	0.64	0.81
NL	0.96	1.09	0.72	0.87	0.90	0.83	0.77
DE	0.46	0.62	0.40	0.52	0.48	0.45	0.66
PT	0.49	0.32	0.93	0.55	0.55	0.63	0.61
BE		0.39	0.28	0.33	0.38	0.39	0.45
AT			0.39	0.41	0.41	0.42	0.41
FR				0.14	0.18	0.29	0.39
EURO weighted				0.46	0.50	0.49	0.69
EU weighted				0.54	0.62	0.62	0.78

Source: National central banks and supervisory authorities represented in the Banking Supervision Committee.
Note: ROA ratios include profits before tax.

Table 25

Operating cost/operating income

(percentage points)

	1980	1985	1990	1995	1996	1997	1998
SE				52	63	71	71
NL	66	63	68	67	68	69	71
FR				66	70	69	68
AT			70	69	69	69	68
IT				70	69	73	65
ES	73	63	67	66	64	64	64
BE				70	67	68	63
GR				65	70	62	63
DK				68	68	68	63
DE				59	58	58	60
FI				69	65	56	57
UK			66	64	62	61	57
PT	55	68	42	64	63	59	55
IE	70	70	67	64	61	61	55
LU	38	27	32	35	37	35	39
EURO weighted				65	65	65	64
EU weighted				64	64	64	63

Source: National central banks and supervisory authorities represented in the Banking Supervision Committee.

Table 26

Rank of non-interest income/operating income and ROE ratios.
Spearmans' rank correlation test

1998

Countries	Non-interest income/ operating income	ROE
LU	1	4
SE	2	9
FR	3	14
AT	4	15
IT	5	12
GR	6	8
BE	7	11
FI	8	2
PT	9	13
NL	10	5
IE	11	1
UK	12	3
DK	13	10
ES	14	7
DE	15	6
Spearman's rank correlation coefficient		-0.37

1997

Countries	Non-interest income/ operating income	ROE
GR	1	7
FR	2	14
LU	3	4
AT	4	13
SE	5	11
FI	6	3
NL	7	5
IT	8	15
UK	9	2
IE	10	1
BE	11	9
PT	12	12
ES	13	6
DK	14	8
DE	15	10
Spearman's rank correlation coefficient		-0.08

1995

Countries	Non-interest income/ operating income	ROE
GR	1	3
UK	2	8
AT	3	11
FI	4	15
LU	5	5
FR	6	14
NL	7	2
BE	8	10
IE	9	1
IT	10	13
SE	11	6
DK	12	4
ES	13	7
PT	14	12
DE	15	9
Spearman's rank correlation coefficient		0.01

Source: National central banks and supervisory authorities represented in the Banking Supervision Committee.

Note: The numbers in the columns above (non-interest income/operating income and ROE) represent the ranking order of the EU countries on the basis of the respective ratios (Tables 19 and 23).

Table 27

Rank of non-interest income/operating income and operating cost/operating income ratios
Spearman's rank correlation test

1998

Countries	Non-interest income/operating income	Operating cost/ operating income
LU	1	15
SE	2	1
FR	3	3
AT	4	4
IT	5	5
GR	6	8
BE	7	7
FI	8	11
PT	9	13
NL	10	2
IE	11	14
UK	12	12
DK	13	9
ES	14	6
DE	15	10
Spearman's rank correlation coefficient		0.28

1997

Countries	Non-interest income/operating income	Operating cost/ operating income
GR	1	9
FR	2	4
LU	3	15
AT	4	5
SE	5	2
FI	6	14
NL	7	3
IT	8	1
UK	9	10
IE	10	11
BE	11	6
PT	12	12
ES	13	8
DK	14	7
DE	15	13
Spearman's rank correlation coefficient		0.19

1995

Countries	Non-interest income/operating income	Operating cost/ operating income
GR	1	9
UK	2	12
AT	3	3
FI	4	4
LU	5	15
FR	6	7
NL	7	6
BE	8	2
IE	9	10
IT	10	1
SE	11	14
DK	12	5
ES	13	8
PT	14	11
DE	15	13
Spearman's rank correlation coefficient		0.14

Source: National central banks and supervisory authorities represented on the Banking Supervision Committee.
Note: The numbers in the columns above (non-interest income/operating income and operating cost/operating income) represent the ranking order of the EU countries on the basis of the respective ratios (Tables 19 and 25).

Table 28

Correlation of income sources

Correlation of net interest income and non-interest income

(both expressed as a percentage of the average balance sheet total)

	Period covered	Sector for OECD sample	Correlation coefficient	
AT	1987-96	All banks	-0.13	
BE	1981-97	All banks	-0.05	
DK	1980-97	Commercial banks and savings banks	0.11	
FI	1980-97	All banks	0.16	
FR	1988-97	All banks	-0.90	
DE	1980-96	All banks	-0.26	
GR	1989-96	Commercial banks	0.17	
IE	1995-97	All banks	0.99	
IT	1984-97	All banks	0.45	
LU	1980-97	Commercial banks	-0.67	
NL	1980-96	All banks	-0.17	
PT	1980-97	Commercial banks	-0.03	
ES	1980-97	All banks	-0.51	
SE	1980-97	Commercial banks	0.32	
UK	1984-97	Commercial banks	0.54	
			Unweighted	Weighted
EU average			0.00	-0.09
euro area average			-0.10	-0.25
United States	1980-96		0.80	
Japan	1980-95		-0.20	
Switzerland	1980-96		0.45	

Source: OECD Bank Profitability.

Table 29A

Measurement of volatility
Coefficient of variation
Net interest income

(as a percentage of the average balance sheet total)

	Period	Coefficient of variation	
AT	1987-97	6.93	
BE	1981-97	31.84	
DK	1980-97	16.39	
FI	1980-97	24.10	
FR	1988-97	25.94	
DE	1980-97	9.77	
GR	1989-97	18.70	
IE	1995-97	15.48	
IT	1984-97	10.87	
LU	1980-97	21.22	
NL	1980-97	12.79	
PT	1980-97	32.70	
ES	1980-97	16.59	
SE	1980-97	13.83	
UK	1984-97	15.04	
		Unweighted	Weighted
EU average		18.13	15.68
euro area average		18.93	15.81
United States	1980-96	10.41	
Japan	1980-95	15.15	
Switzerland	1980-96	11.20	

Source: OECD Bank Profitability.

Table 29B

Coefficient of variation

Non-interest income

(as a percentage of the average balance sheet total)

	Period	Coefficient of variation	
AT	1987-97	29.29	
BE	1981-97	18.76	
DK	1980-97	124.23	
FI	1980-97	13.87	
FR	1988-97	28.87	
DE	1980-97	12.18	
GR	1989-97	13.59	
IE	1995-97	6.20	
IT	1984-97	17.40	
LU	1980-97	29.04	
NL	1980-97	11.76	
PT	1980-97	22.91	
ES	1980-97	15.08	
SE	1980-97	52.25	
UK	1984-97	11.82	
		Unweighted	Weighted
EU average		27.15	20.17
euro area average		18.67	18.04
United States	1980-96	24.16	
Japan	1980-95	62.44	
Switzerland	1980-96	17.93	

Source: OECD Bank Profitability.

Table 29C

Coefficient of variation

Net interest income minus total provisions

(as a percentage of the average balance sheet total)

	Period	Coefficient of variation	
AT	1989-97	8.08	
BE	1981-97	35.20	
DK	1980-97	17.83	
FI	1980-97	18.28	
FR	1988-97	45.29	
DE	1980-97	9.70	
GR	1989-97	20.67	
IE	1995-97	15.62	
IT	1984-97	15.65	
LU	1980-97	21.63	
NL	1980-97	16.05	
PT	1980-97	27.97	
ES	1980-97	19.75	
SE	1980-97	57.29	
UK	1984-97	22.69	
		Unweighted	Weighted
EU average		23.45	22.51
euro average		21.20	21.38
United States	1980-96	14.22	
Japan	1980-95	19.13	
Switzerland	1980-96	23.56	

Source: OECD Bank Profitability.

Table 29D

Coefficient of variation

Net interest income minus provisions on loans

(as a percentage of the average balance sheet total)

	Period	Coefficient of variation
AT	1989-97	11.70
BE	1993-97	6.68
DK	1980-97	16.63
FI	1980-97	21.81
FR	1988-97	43.10
DE	1980-97	9.63
GR	1989-97	20.07
IE	1995-97	15.62
IT	1984-97	16.22
NL	1993-97	3.09
PT	1990-97	27.66
ES	1980-97	18.30
SE	1980-97[(1)]	69.64
		Unweighted
EU-13 average		21.55
Euro-10 average		17.38
United States	1980-96	14.22
Japan	1980-95	19.06

1) Data are not available for the period from 1992 to 1996.
Note: For the sectors of the banking system in each country included in the OECD sample, see Table 22.
Source: OECD Bank Profitability.

Table 30

Volatility of non-interest income and its components
Coefficient of variation of non-interest income and its components

(sorted by the non-interest income coefficient of variation in descending order)

Period from 1993 to 1998

	Non-interest income	Fees and commissions	Income from securities	Profit on financial operations	Other operating income
DK	38	19	69	161	44
PT	37	33	67	40	30
LU	31	27	17	46	85
SE	32	9	105	68	49
ES	30	18	19	96	30
IT	29	32	75	59	29
FR	28	16	93	36	
BE	25	30	21	37	10
NL	25	22	61	27	22
DE	21	13	33	50	63
GR	18	13	22	35	24
AT	13	12	35	14	9
EU-12 average (unweighted)	27	20	51	56	36

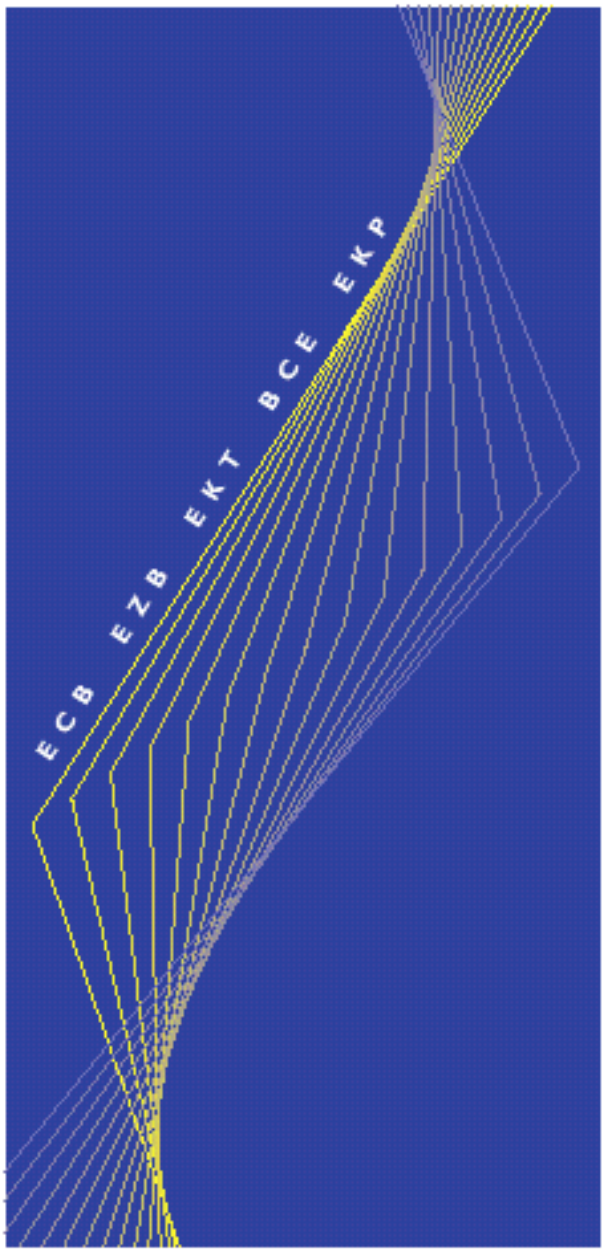
Sources: National central banks and supervisory authorities represented on the Banking Supervision Committee.

Notes

1) The coefficient of variation was calculated on the basis of data provided by national authorities.The approach followed included, first, the conversion of all amounts into ECU and, second, the calculation of the co-efficient of variation. This implies a different methodology (based on nominal values) than the one followed in the calculation of the volatility (co-efficient of variation) of interest and non-interest income (based on ratios, see Tables 29A to 29D).

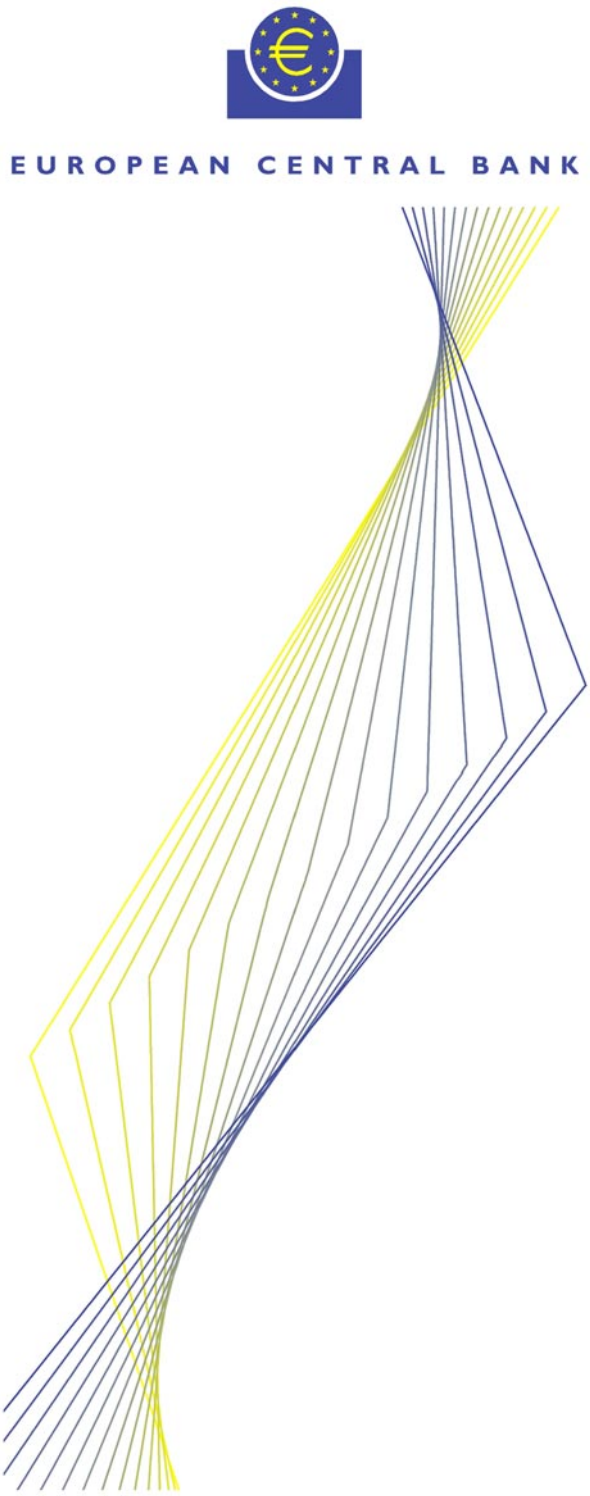
2) Other operating income was not reported as a different sub-category by FR for the period from 1993 to 1997. whereas the figure reported for 1998 was negligible as a percentage of non-interest income. The EU unweighted average of the coefficient of variation for other operating income has been calculated for the remaining 11 countries mentioned in this table.

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**

ISBN 92-9181-058-4

Contents

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.*

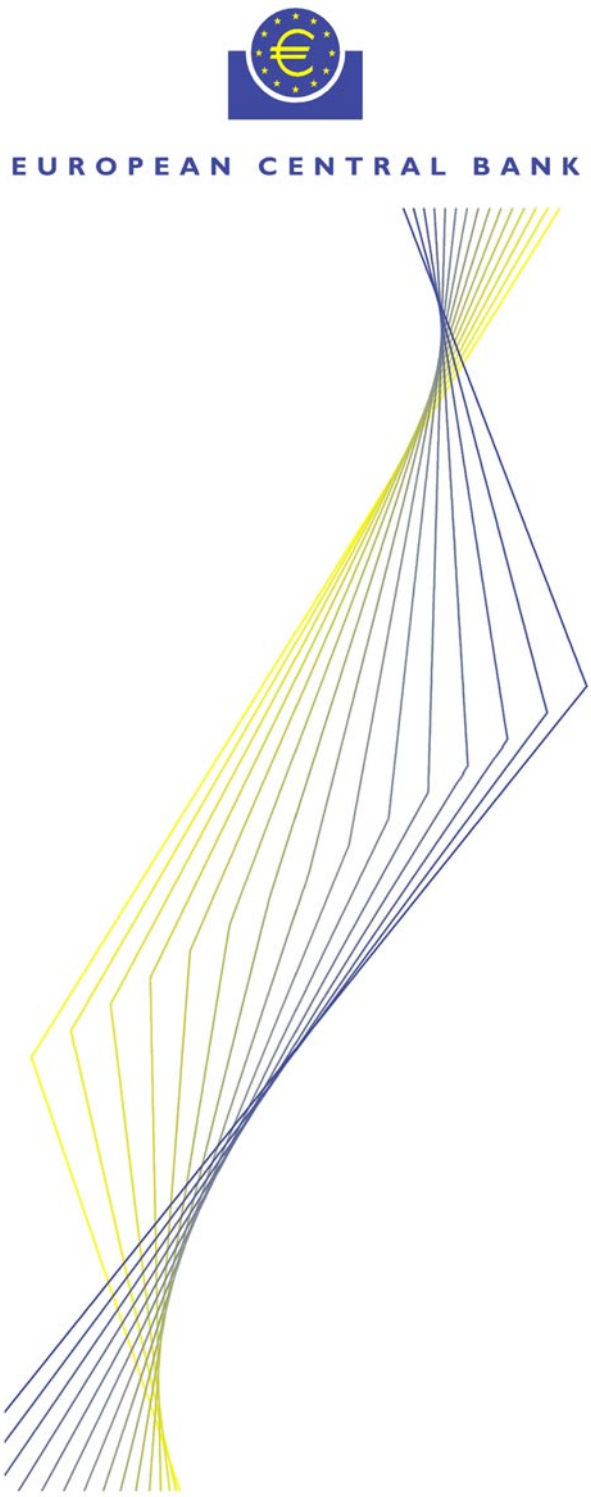
25 *Kindleberger (1978) and Guttentag and Herring (1986) argue that, in most instances of real estate price crashes, prices had dimbed upwards for a very long period of time. Consequently, the repayment record of the real estate loans was good in comparison with other types of lending, resulting in "myopic"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

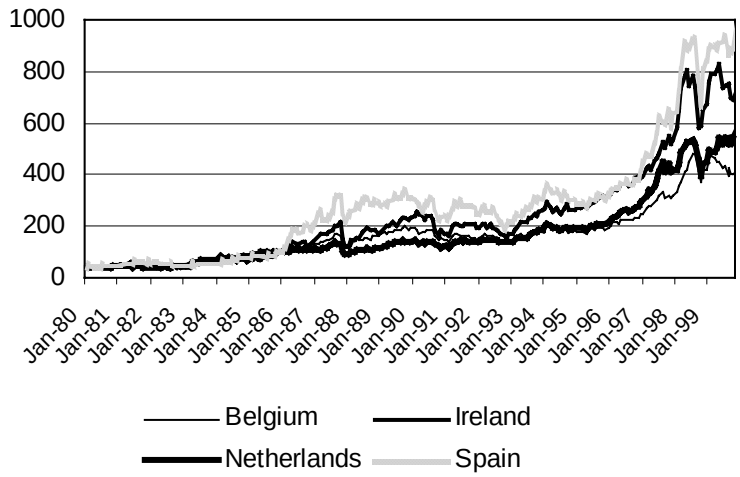
	Belgium	Denmark	Germany	Spain	Ireland	Italy	Netherlands
1988	9.5		6.8	27.9		16.2	7.8
1989	16.6		9.5	28.1		8.9	10.0
1990	12.5		5.1	26.1		21.3	6.8
1991			8.7	18.2		21.3	6.7
1992	15.6		24.1	4.9	29.3	-3.9	11.2
1993	11.6	-5.6	22.4		22.1	8.5	9.7
1994	30.8	-2.2	16.6	2.3	14.7	4.2	
1995	-5.6	-1.6	7.5	15.1	16.7		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

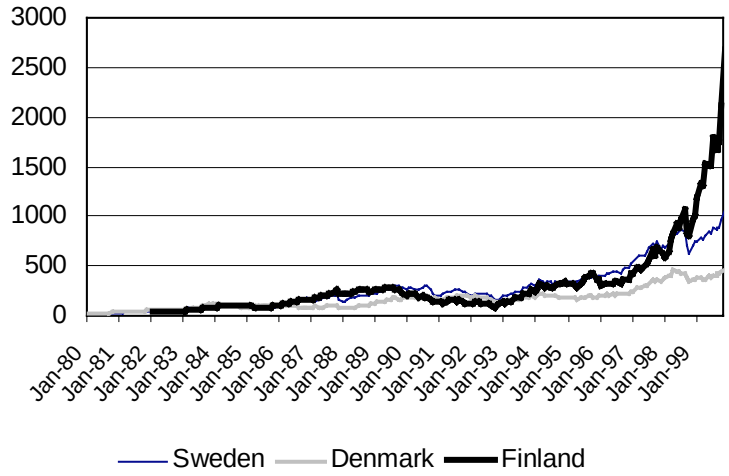
Source: European Mortgage Federation (Hypostat 1988-1998, November 1999).

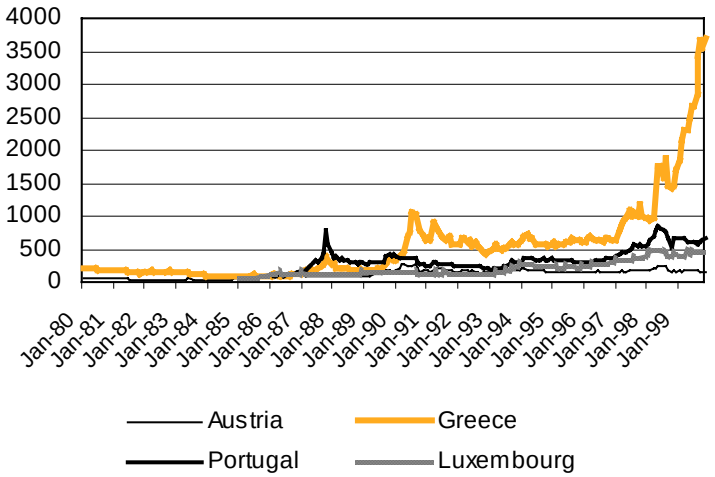
Chart 1

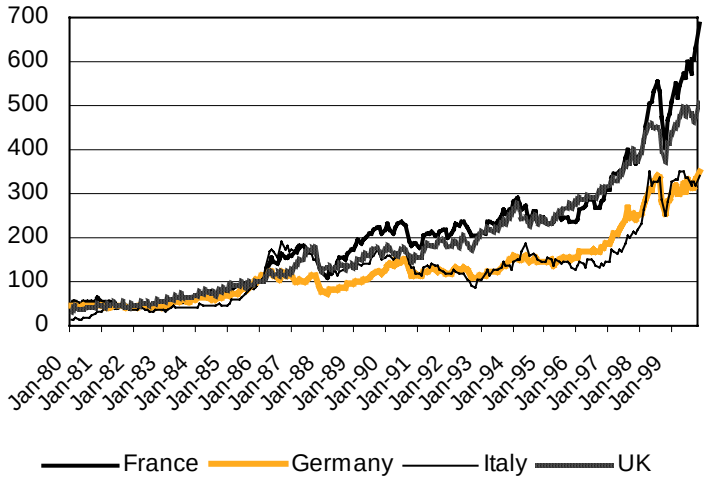
Stock prices (General indexes, January 1980–November 1999)

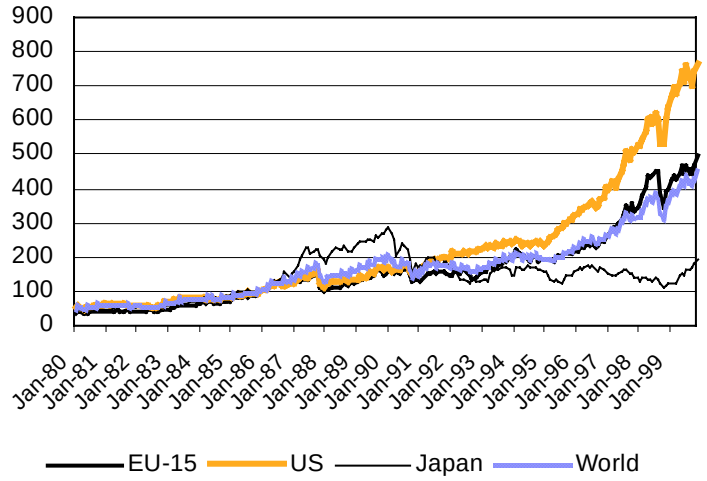
Indexes December 1985=100, end of month data











Source: Datastream.

References

Allen, F. and Gale D. (1998), "Bubbles and Crises", Wharton Financial Institutions Center Working Paper, August.

Benston, G.J. and Kaufman, G.G. (1995), "Is the Banking and Payments System Fragile?", Journal of Financial Services Research, 9, pp. 209-240.

Berg, S. (1998), "Bank Failures in Scandinavia" in EDI Development Studies, Preventing Bank Crises: Lessons from Recent Global Bank Failures, Federal Reserve Bank of Chicago.

Bäckström, U. (1998), "What Lessons Can Be Learned from Recent Financial Crises? The Swedish Experience", in Maintaining Financial Stability in a Global Economy, Federal Reserve Bank of Kansas City.

Cargill, T., Hutchinson, M. and Ito, T. (1998), "The Banking Crisis in Japan", in EDI Development Studies, Preventing Bank Crises: Lessons from Recent Global Bank Failures, Federal Reserve Bank of Chicago.

Crockett, A. (1997), "The Theory and Practice of Financial Stability", Department of Economics, Princeton University.

Davis, E.P. (1993), "Bank Credit Risk", Working Paper 8, Bank of England, London.

Davis, E.P. (1995), "Debt, Financial Fragility and Systemic Risk", Oxford, Oxford University Press.

Dewatripont, M. and Tirole, J. (1993), "Efficient Governance Structure: Implications for Banking Regulation", in C. Mayer and X. Vives (eds.), Capital Markets and Financial Intermediation, Cambridge, Cambridge University Press, pp. 12-35.

Diamond, D.W. and Dybvig, P. (1983), "Bank Runs, Deposit Insurance and Liquidity", Journal of Political Economy, Vol. 91, pp. 401-409.

Eichengreen, B. and Portes, R. (1987), "The Anatomy of Financial Crises", in R. Portes and A.K. Swoboda (eds.), Threats to International Financial Stability, Cambridge, Cambridge University Press, pp. 10-58.

Eisenbeis, R.A. (1997), "Bank Deposits and Credit As Sources of Systemic Risk", Federal Reserve Bank of Atlanta Economic Review, Third Quarter, pp. 4-19.

European Mortgage Federation (1998), "The Valuation of Properties for Lending Purposes in the EU", Brussels.

Fisher, I.M. (1932), "Booms and Depressions", New York, Adelphi.

Fisher, I.M. (1933), "The Debt Deflation Theory of Great Depressions", Econometrica, 1, pp. 337-357.

Guttentag, J. and Herring, R. (1986), "Disaster Myopia in International Banking", Princeton University Essays in International Finance, 164, September.

Herring, R. and Wachter, S. (1999), "Real Estate Booms and Banking Busts: An International Perspective", The Wharton School, Financial Institutions Center Working Paper 99-27.

Kaminsky, G. and Reinhart C. (1996), "Banking and Balance-of-payments Crises: Models and Evidence", Working Paper, Board of Governors of the Federal Reserve, Washington D.C.

Kindleberger, C.P. (1978), "Manias, Panics and Crashes", New York, Basic Books.

Latter, T. (1997), "Causes and Management of Banking Crises", Bank of England Centre for Central Banking Studies, Handbooks in Central Banking, 12.

Lagunoff, R. and Schreft, L. (1998), "A Model of Financial Fragility", Federal Reserve Bank of Kansas City.

Lewis, M.K. (1994), "Banking on Real Estate", in D.E. Fair and R.J. Raymond (eds.), The Competitiveness of Financial Institutions and Centres in Europe, Financial and Monetary Policy Studies 28, Kluwer Academic Publishers.

Merton, R.C. (1977), "An Analytical Derivation of the Cost of Deposit Insurance Loan Guarantees", Journal of Banking and Finance, June 1977, 1, pp. 3-11.

Minsky, H.P. (1972), "Financial Instability Revisited: The Economics of Disaster", Reappraisal of the Federal Reserve Discount Mechanism, 3, June, pp. 95-136.

Minsky, H.P. (1977), "A Theory of Systematic Financial Fragility", in E.J. Altman and A.W. Sametz (eds.), Financial Crises: Institutions and Markets in a Fragile Environment, New York, Wiley, pp. 138-152.

Minsky, H.P. (1991), "The Financial Instability Hypothesis: A Clarification", in M. Feldstein (ed.) The Risk of Economic Crisis, Chicago, The University of Chicago Press, pp. 158-170.

Schwartz, A. (1986), "Real and Pseudo Financial Crises", in F. Capie and G. E. Woods (eds.), Financial Crises and the World Banking System, London, Macmillan, pp. 11-31.

Shleifer, A. and Vishny, R. (1997), "The Limits of Arbitrage", Journal of Finance, 52, pp. 35-55.

Vihriälä, V. (1997), "Banks and the Finnish Credit Cycle 1986 - 1995", Bank of Finland Studies, E: 7.