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**Research Report**

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EUROPEAN CENTRAL BANK

## OCCASIONAL PAPER SERIES

NO. 13 / APRIL 2004

### **FAIR VALUE ACCOUNTING AND FINANCIAL STABILITY**

by a staff team led by  
Andrea Enria  
and including  
Lorenzo Cappiello,  
Frank Dierick, Sergio Grittini,  
Andrew Haralambous,  
Angela Maddaloni,  
Philippe Molitor,  
Fatima Pires and  
Paolo Poloni





EUROPEAN CENTRAL BANK



In 2004 all ECB publications will feature a motif taken from the €100 banknote.

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## I INTRODUCTION

Accounting standards bodies are currently refining their proposals for the introduction of additional elements of fair value accounting for financial instruments. The ECB has a keen interest in this debate, as accounting reforms are likely to have a profound impact on the banking and financial industry. Furthermore, harmonised and high-quality accounting standards could make a significant contribution to the integration and efficiency of financial markets in the euro area. On a broader scale, they could also facilitate European firms' access to the large international financial markets, thereby promoting growth. The interest of the ECB also stems from the concerns that a wider application of fair valuations might have adverse effects on financial stability. The consistency between the accounting framework and the reporting for supervisory and statistical purposes is also an aspect deserving due attention.

This paper<sup>1</sup> focuses mainly on the potential financial stability implications of Full Fair Value Accounting (FFVA)<sup>2</sup>. However, it also addresses certain issues specifically relating to *International Accounting Standard 39 – Financial Instruments: Recognition and Measurement*. The attention is centred exclusively on banking, even though it is acknowledged that similar concerns may arise for the stability of other sectors of financial activity, and insurance in particular<sup>3</sup>. In order to make what is a very complex issue more manageable, this paper uses a stylised comparison between FFVA and the present accounting rules, herein referred to as the Current Accounting Framework (CAF<sup>4</sup>). The results are preliminary and somewhat incomplete. They are based on some simplifying assumptions that may need to be reviewed. Whereas the findings suggest the need for further analysis, some relevant conclusions already emerge.

Section 2 explains the setting for this work, describing the state of play of accounting standards in the European Union (EU) and reviewing the main arguments supporting and

opposing FFVA versus the CAF. A simulation exercise trying to analyse the potential impact of the introduction of FFVA on an average EU bank's balance sheet is presented in Section 3. This exercise assesses the different dynamics of balance-sheet items under FFVA and the CAF in the face of a number of shocks. Section 4 presents a comparison of the impact of the use of fair value valuation criteria on a small sample of EU banks in order to highlight the main items of the balance sheet on which FFVA is likely to have a significant effect. Section 5 presents the preliminary results of an empirical investigation aimed at gauging whether the shift from the CAF to FFVA for banks' trading books has affected the price volatility of the banks' own listed shares. Section 6 then enters into more specific concerns relating to the consistency of the current accounting reform (focusing mainly on aspects of IAS 39) with sound risk management practices adopted by banks (especially in the treatment of hedging), supervisory tools and statistical requirements. Finally, Section 7 presents the conclusions of the analysis, stressing that the introduction of

<sup>1</sup> By a staff team led by Andrea Enria and including Lorenzo Capiello, Frank Dierick, Sergio Grittini, Andrew Haralambous, Angela Maddaloni, Philippe Molitor, Fatima Pires and Paolo Poloni. This paper has benefited from the suggestions and contributions received by members of the Banking Supervision Committee (BSC) and by members of an ad-hoc task force of the BSC composed by Juergen Ardnt, Carlo Calandrini, Thomas De Vecchi, Olivier Jaudoin, Maria Leal, Konstantijn Maes, Kalliopi Nonika, and Jacobo Varela. Christian Fehlker and Michael Olsen also contributed to the project. Comments on earlier versions of the paper from Darren Pain, Panagiotis Strouzas and Garry Schinasi are also gratefully acknowledged.

<sup>2</sup> Under FFVA, assets and liabilities are carried on the balance sheet at their market value, if known, or at fair value, which is defined as the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's-length transaction.

<sup>3</sup> Häusler G., 2003, "The Insurance Industry, Fair Value Accounting and Systemic Financial Stability", International Monetary Fund, International Capital Markets, Speech given at the 30th General Assembly of the Geneva Association.

<sup>4</sup> It is acknowledged that accounting practices may vary considerably across Europe. However, for the purpose of this study a generalised framework was considered – the Current Accounting Framework (CAF). Under the CAF assets are carried at the amount of cash or cash equivalents paid or the fair value of the consideration at the time of acquisition. Liabilities are carried at the amount received in exchange for the obligation. In general terms, CAF is the measurement basis most commonly used by enterprises in preparing their financial statements. However, it is also usually combined with other measurement bases, such as market prices (namely for trading activities) and lower of cost or market prices ("LOCOM").

FFVA could have a very significant effect. Volatility of income is likely to be affected and the pro-cyclicality of lending might also increase. However, the positive effect that FFVA would have on the ability of stakeholders to take corrective action and safeguard the safety and soundness of financial institutions is also recognised. It is argued that any step towards the introduction of FFVA should be gradual enough – and consistent across countries and companies – to avoid magnifying any systemic disturbances.



## 2 THE DEBATE ON FAIR VALUE ACCOUNTING

### 2.1 ACCOUNTING STANDARDS IN THE EUROPEAN UNION

The need for a reform of the accounting treatment of financial instruments stems from several market developments. Financial innovation has blurred the distinction between financial instruments and has contributed to the development of markets for instruments that were traditionally considered as illiquid and non-tradable. The rationale for the different accounting treatment of banking, securities and insurance services has gradually disappeared as they often serve the same economic function. Moreover, as financial institutions have increased the range of services they provide, so mixed accounting systems have been developed that do not seem sustainable in the long run.

As the trading and capital market-related activities of banks has grown, the accounting framework has been modified to permit market valuations for all the instruments held for trading purposes. The coexistence in banks' financial statements of items valued at historical cost (which are mainly held in the so-called "banking book") and others at market values (in the "trading book", which is "marked-to-market") would be viable only if banks were managing the two components of the bank portfolio in a totally segregated manner. But this is not the case, as trading instruments are increasingly used to hedge the interest rate risk in the banking book.<sup>5</sup> More importantly, the increased reliance of financial institutions on derivatives contracts, which in most jurisdictions are recorded as off-balance-sheet items, has contributed to a growing misalignment between the information contained in financial statements and the true risk profiles of reporting entities. Even supervisory authorities and central banks are often lacking information on the effective redistribution of risks resulting from the extensive use of derivative instruments such as credit derivatives. Current disclosure requirements are not deemed to be adequate to cover this information gap. An improvement in the quality, coherence and information content of financial statements therefore seems necessary in order to reflect the

new financial environment and thereby favour a proper monitoring of management's behaviour by stakeholders.

Within the EU, the push for a reform also originates in the need to overcome differences in accounting standards between Member States. Harmonisation in this area is a crucial step towards supporting the integration of financial markets in the euro area and in the EU.

A fundamental building block of the long-term strategy developed by the International Accounting Standards Board (IASB), an independent and privately-funded standard-setting body based in London, is to bring financial statements up to date with market developments. In December 2000 the Joint Working Group of Standard Setters (JWG), consisting of the IASB's predecessor and national accounting standard-setters, developed a proposal to use FFVA for all financial instruments. In the presence of coherent methodologies for the calculation of fair values, the proposal would in fact provide a simple and consistent approach for the valuation of financial instruments on the books of financial institutions and across entities with a different mix of activities.

However, the JWG's proposal was received with scepticism by some banks and by regulators, as credit risk models and valuation methods of illiquid or non-traded instruments are not yet suitably developed to extend FFVA to important components of the balance sheet of financial institutions, in particular banks. Concerns were also voiced regarding the impact on financial stability that might derive from the increased volatility of financial statements. The ECB also conveyed its concerns to the JWG in November 2001.<sup>6</sup>

5 Jackson, P. and Lodge, D., 2000, "Fair value accounting, capital standards, expected loss provisioning, and financial stability", Financial Stability Review, Regulatory Policy Division, Bank of England.

6 Fair value accounting in the banking sector: ECB comments on the "Draft standard and basis for conclusions – financial instruments and similar items" issued by the Financial Instruments Joint Working Group of Standard Setters, 8 November 2001.



In 2002 the IASB proposed amendments to International Accounting Standard (IAS) 39 – the crucial standard for the valuation of financial instruments. The proposal included the possibility that several components of the banking book (in particular, loans) could continue to be carried at amortised cost, whilst introducing an irrevocable option allowing financial institutions to measure any financial asset or liability at fair value through profit and loss at inception, the “fair value option”. Further criticism regarding the treatment of portfolio hedging prompted the IAS to issue a specific Exposure Draft on this issue. The debate is still very contentious, namely regarding the issues of macro-hedging and the fair value option.

The ECB has voiced its concerns regarding the application of the fair value option. These concerns are also supported by the conclusions of this report. The IASB has acknowledged the concerns that the fair value option may be used inappropriately and announced its intention to limit the application of the option to specified categories of financial instruments, to introduce the requirement that fair values be verifiable and to recognise the role of prudential supervisors. These proposals were published in the Exposure Draft, issued in April 2004. The final version of IAS 39 is expected to be issued in October 2004.

The European Commission’s interest in the harmonisation of accounting standards in the EU is reflected in the strong political commitment to endorse the standards issued by the IASB. In May 2003 the EU Council approved a Directive<sup>7</sup> which removed any inconsistencies between the existing Accounting Directives and the IAS, and complemented a Regulation of July 2002<sup>8</sup> that requires all listed EU companies (including banks) to prepare consolidated accounts in accordance with IAS from 2005 onwards. In July 2003 the Commission welcomed the endorsement of the IAS by the Accounting Regulatory Committee<sup>9</sup> (ARC), and in September 2003 adopted a Regulation<sup>10</sup> endorsing the IAS, with the exception of IAS 32 and IAS 39 pending the

finalisation of these standards by the IASB. The Commission therefore has a strong interest that the main issues of concern raised with reference to the wider use of fair values for financial instruments be satisfactorily dealt with, in order to move to full endorsement of the IAS.

## 2.2 POTENTIAL DRAWBACKS AND ADVANTAGES OF A FULL FAIR VALUE ACCOUNTING FRAMEWORK

Given the relevance of accounting standards and the lively policy debate, fundamental issues are raised to highlight both the costs and the benefits of the wider application of fair value accounting, which makes it difficult to arrive to a clear-cut overall evaluation.

Five main *drawbacks* have surfaced from the current debate on whether more extensive use should be made of fair valuations. The first focuses on the *likely increase in the volatility of income*. It can be argued that volatility provides relevant information and should be duly recognised in the financial statements. However, an excessive reliance on fair values, including for assets that are not actively traded on liquid secondary markets, runs the risk that the information disclosed will embody “artificial” volatility, driven by short-term fluctuations in financial market valuations, or caused by market imperfections or by inadequate development of valuation techniques. Moreover, for *assets and liabilities held to maturity, the volatility reflected in the financial statements is artificial and can be ultimately misleading*, as any deviations from

7 Directive 2003/51/EC of the European Parliament and of the Council of 18 June 2003 amending Directives 78/660/EEC, 83/349/EEC, 86/635/EEC and 91/674/EEC on the annual and consolidated accounts of certain types of companies, banks and other financial institutions and insurance undertakings, published in OJ L 178 of 17 July 2003.

8 Regulation (EC) No 1606/2002.

9 Committee composed of representatives of the EU Member States and headed by the European Commission. The committee has a regulatory function and provides opinions on Commission proposals to adopt international accounting standards.

10 Regulation (EC) No 1725/2003.

cost will be gradually compensated for during the life of the financial instrument, “pulling the value to par” at maturity.<sup>11</sup>

The cost could be a potential increase in the intrinsic *pro-cyclicality of bank lending*, as more accentuated increases in bank profits and capital during upturns would support the overextension of credit, that would then create the conditions for a deeper and more long-lasting downturn. This would then also be exacerbated by the effect that downward adjustments in asset valuations would have on bank profits and capital, which would further restrain their lending. Moreover, another potential result would be to limit credit availability to counterparties whose credit status is more volatile, e.g. small and medium-sized enterprises (SME). Given the importance of SMEs in Europe this may have a detrimental effect on future economic developments.

The second drawback relates to the role of banks in *maturity and liquidity transformation*. The joint provision of deposits and loans puts banks in a position to provide liquidity on demand and support the needs of other components of the financial sector and of the economy as a whole, also in times of distress.<sup>12</sup> This role is fundamentally linked to the opaque nature of the value of bank assets resulting from the non-marketability of loan contracts.<sup>13</sup> It is argued that the attempt to introduce fair values for loans fails to recognise a permanent and positive feature of banking, i.e. its contribution to the overcoming of informational asymmetries between lenders and borrowers. In this line of reasoning, FFVA might drive banks to forego their fundamental function. As the accounting framework would not reflect their “lend and hold” attitude towards credit extension, banks would face an incentive to hedge, securitise, or shift the risk to customers (e.g., via floating-rate or shorter-term loans) in order to move towards a matched composition of their liabilities.<sup>14</sup> The potential cost to the financial system would be that liquidity and maturity transformation would be more limited in scope,

as interest rate changes would be directly reflected in the profit and loss (P&L) accounts. In this perspective, FFVA could encourage banks to unduly emphasise short-term results at the expense of long-term customer relationships and investment needs.

The third drawback concerns the role of *banks as institutions smoothing intertemporal shocks*.<sup>15</sup> In all likelihood, FFVA will produce more positive results during good times, when asset prices are increasing. This would be particularly the case if economic agents have an overly optimistic assessment of risks during upturns, reflected in a short-term bias in the calculation of expected cash flows. The upward revaluations of assets would be reflected in bank profits and bank management could face pressure from shareholders to distribute dividends, including unrealised gains on assets remaining in the bank portfolio.<sup>16</sup> Banks’ ability to smooth intertemporal shocks would therefore be adversely affected, with a resulting cost in terms of both the efficiency and the stability of the financial intermediation function. The CAF, on the other hand, applies the principle of prudence which does not recognise unrealised gains that may not materialise. In addition, the CAF makes it possible to build up reserves during good times, which can then be depleted during bad times. This would translate into lower variability in bank income and would allow banks to insure themselves against unforeseen circumstances. This intertemporal

<sup>11</sup> See Section 3.4 for a more detailed explanation of this issue.

<sup>12</sup> Padoa-Schioppa, T., 1999, “Licensing Banks: Still Necessary?”, Group of Thirty, William Taylor Memorial Lecture on Banking Policy, Washington D.C., 24 September.

<sup>13</sup> Diamond, D. W., 1984, “Financial Intermediation and Delegated Monitoring”, *The Review of Economic Studies*, vol. 51, no 3, pp. 393-414.

<sup>14</sup> FFVA’s discounting model makes longer-term assets increasingly sensitive to changes in interest rates.

<sup>15</sup> Allen, F. and Gale, D., 1997, “Financial Markets, Intermediaries, and Intertemporal Smoothing”, *The Journal of Political Economy*, Vol. 105, No 3, pp. 523-546.

<sup>16</sup> Tax is an added complication given that in several EU countries accounting statements are used to determine the taxable basis.

smoothing function of the financial system would therefore be better accomplished under the CAF.<sup>17</sup>

The fourth drawback is the potential disruption to market discipline caused by the reduction of comparability and reliability of financial statements across financial institutions. Under FFVA, when there is no observable market value then valuation models are used. Fair values obtained by these models should be based on inputs from liquid markets in order to reduce the scope for possible manipulation. At present a variety of valuation models coexist with varied inputs and assumptions, and this may significantly reduce comparability if used indiscriminately across banks and across balance-sheet items. Furthermore, it should also be mentioned that the date and purpose of the valuation is critical in establishing a fair market value. A valuation is determined for a particular point in time, and generally should not be relied upon for other dates. In the same vein, a valuation is usually performed for a particular purpose and generally may not be appropriate for another purpose. For example, shareholders may value intangibles while creditors would be more interested in the net realisable value. Moreover, given the current state of the art, particularly with regard to credit risk models, reliability in financial statements could be negatively affected. Indeed, fair values do not always convey precise information concerning a bank's risk profile, thus hindering market discipline that requires reliable information in order to be effective. Misjudgement can trigger overreaction, which can have a negative impact on the financial situation of a firm.

Finally, the fifth drawback focuses on the *limited reliability* of present bank estimates of probabilities of default (PDs) for accounting purposes. In its comments on the work of the JWG, the Federal Reserve Board<sup>18</sup> questioned the reliability and objectivity of fair values estimated using market credit spreads and internal models. Indeed, there are serious limitations on the use of credit market information as there is a large dispersion in

observed credit spreads for rated debt within each risk grade and for a given maturity for lower-rated debt categories. Even between bank loans and bond obligations with the same obligor, differences in observed credit spreads are large and varied. Meanwhile, internal credit risk rating systems may produce valuable information reflecting banks' risk management needs, but they are not suitable for managing loan portfolios on a market-value basis.

Moving to the *advantages* of FFVA, the key issue is the improved scope for *market discipline and corrective action*. It is increasingly acknowledged in both the academic literature and the supervisory debate that the discipline exercised by informed and uninsured investors is an essential complement of supervisory control. FFVA would in principle lead to better insight into the risk profile of the banks than is presently the case, also in the light of the requirement to move many relevant off-balance-sheet items onto the balance sheet. Financial stability could benefit if shareholders, uninsured depositors and other debtholders are in a position to readily identify a deterioration in the safety and soundness of a bank. In fact, their reactions – either by directly interfering in managerial choices or by exiting from the investment – could put pressure on the bank's management to take corrective action at an early stage (see Box 1).

17 Freixas, X. and Tsomocos, D., 2003, "Book vs. Fair Value Accounting in Banking, and Intertemporal Smoothing", September.

18 O'Brien, J., 2001, "The Use of Bank Internal Ratings Systems for Loan Fair Valuation", Board of Governors of the Federal Reserve System, Division of Research and Statistics, December.

**COUNTRY EXPERIENCES<sup>1</sup>**

There are several examples of crises that may have been exacerbated by a lack of market access to information on embedded losses. For instance, the lack of information and weakened market discipline may have played an important role in deepening the US Savings and Loans crisis and the more recent Japanese financial crisis.

**US Savings & Loans**

Between 1980 and 1994, about 1,300 Savings & Loans institutions (S&Ls), with assets of USD 621 billion, closed down or received Federal Savings and Loans Insurance Corporation (FSLIC) assistance. They had been weakened by a sharp increase in their funding rates and poor investment decisions. However the accounting treatment may also have played an important role.

Indeed, under the existing accounting framework, the S&Ls appeared to be solvent despite a deficit on a market-value basis of USD 118 billion.

The S&Ls were exposed to substantial interest rate risk, as 80% of their lending was in long-term fixed rate mortgages, funded mainly by short-term deposits at market interest rates. When the average cost of S&L funding rose from 7% to 11% it surpassed the average return on their mortgage lending. However, the embedded interest rate losses (under the existing accounting framework) showed up only in earnings each year going forward, whereas under FFVA the overall loss would have been immediately recognised on the balance sheet through the present value calculations. Thus, although the S&Ls had already sustained a sharp fall in their expected earnings income stream, this fact was concealed by the accounting rules and the S&Ls continued to reflect positive net worth.

In this context, the FSLIC responded by deciding to exercise regulatory forbearance, which included a loosening of the accounting standards. The S&Ls were allowed to amortise goodwill from other S&L acquisitions over 40 years, whilst at the same time immediately recognising income from the acquired assets. Moreover, a plunge in the real estate market also added loan losses to the already embedded interest rate losses. And to make matters worse, the S&Ls were allowed to defer losses on loans sold over the remaining contractual life of the asset, rather than recognising the loss immediately in the profit and loss account (P&L). As a result, S&L financial accounts completely failed to reflect the already massive existent embedded losses and appropriate corrective action by stakeholders (or early liquidation) was delayed, thus increasing the final cost of the crisis to the US taxpayer.

**Provisioning practices in Japan**

Japanese banks disclose their non-performing loans under standards set by the Japanese Bankers' Association (Zenginkyo). The definition of non-performing loans used by Zenginkyo prior to 1995 was narrow, comprising only loans to borrowers in legal bankruptcy plus loans in arrears for six months or more. However, from 1995 onwards the definition was broadened on

<sup>1</sup> "Fair Value Accounting, Capital Standards, Expected Loss Provisioning, and Financial Stability", Financial Stability Review, Bank of England, June 2000.

two occasions, and from 1998 the Japanese Financial Supervisory Agency (JFSA) finally introduced a comprehensive assessment of problem loans more in accordance with the existing accounting standards.

Notably, with each redefinition of problem exposures, the amount of non-performing loans, as disclosed by the banks, substantially increased, despite the fact that these non-performing loans were net of write-offs, which were also increasing over the period.

It can be argued that the crisis was indeed prolonged by the delay in provisioning and write-offs. In 1995 the redefinition of non-performing loans led to their sharp increase in the disclosed amount, and specific provisions and write-offs also increased substantially, from less than JPY 6 trillion to JPY 11 trillion.

Thus it seems that following the sharp decline in property and equity markets, provisioning took a number of years to adequately reflect the extent of the latent damage to loan books. Proponents of full fair value accounting (with full allowance for expected losses) state that under this regime problems would tend to become evident earlier, allowing for timelier corrective action.

Indeed, more precise information on the value of banks' assets would support market discipline and transparency, thus favouring the working of private incentives in curtailing opaque practices of cross-subsidisation (see Box 2).

## Box 2

### UNDER-PRICED AND OVER-PRICED LOANS

If a loan is correctly priced at origination, the fair value equals the face value. In the absence of any change in external conditions and in the presence of a flat yield curve, valuations will not differ under FFVA and the CAF, even if the borrower has defaulted (or the asset has been impaired). If the yield curve is not flat then some differences can emerge, but in all likelihood they would remain very limited. However, if for any reason the loan is over-priced, the fair value will reflect this surplus at origination, and the value of the loan will be corrected downwards in the following period to coincide with the nominal value at maturity – or at default, corrected for the loss given default (LGD). A symmetric result would apply in case of an under-priced loan. This means that phenomena such as *implicit subsidies and cross-subsidisation* – in relation to other entities of the banking group or to customers – would be reflected in bank accounts, provided of course that mispriced loans were correctly fair valued. In particular, under-pricing would immediately cause a loss to be reported in the income statement. The likely result would be increased transparency, vis-à-vis the public at large and the supervisors, which could represent a powerful incentive to abandon these pricing practices.

Another interesting aspect concerns the distribution of this effect over time. While the cumulated profits will be the same at the maturity of the loan, their distribution through time will differ substantially. Under the CAF the reported profits will be stable throughout the life of the loan, but FFVA will give rise to increased volatility, as it imposes reporting a gain or a loss at origination that is then reabsorbed throughout the life of the loan.

The second advantage can be seen as the other side of the coin regarding the cost of banks' role in *maturity and liquidity transformation*, as mentioned above. Indeed, it may also be the case that banks will take advantage of the tools provided by financial innovation and rely on more sophisticated instruments to perform their traditional liquidity transformation function. For instance, banks may increasingly rely on securitisation and other risk-transfer mechanisms to limit the adverse consequences of FFVA on the P&L account, while ensuring liquidity provisions to support developments on secondary markets for instruments that are currently non-tradable. If so, FFVA might end up supporting the increased marketability of currently illiquid assets. By spreading the risks through the financial system, it might also have a positive benefit of possibly increasing systemic resilience.

The third advantage stresses the potential of FFVA to *limit the scope for pro-cyclicality*. At least for large borrowers, for whom secondary trading prices or credit spreads can be used, fair values would reflect the market perception of credit quality. As a result, adjustments in valuations would be well understood by the users of financial statements. Furthermore, as fair values are based on the notion of expected cash flows, they are forward-looking in nature and should embody all the information available. Hence, FFVA should allow for the earlier recognition of asset deterioration. If, however, losses are incurred and measured on the basis of private information and discretionary and unquestioned decisions of the management, provisions and charge-offs may well come as a surprise to the markets. They could also tend to be more backward-looking and pro-cyclical. Provisioning may also come in big chunks, making investors' assessment on the quality of bank assets subject to sharp adjustments. The perceived opaqueness of bank behaviour may also lead investors to overshoot in their reaction to such news. As all this is likely to occur during downturns, a late correction in valuations may possibly be transposed into a tighter credit squeeze that

would contribute to a further slowdown in economic activity. Furthermore, the potential for increased volatility would possibly increase the risk of certain binding financial ratios being exceeded (e.g. capital requirements or ratios used in loan covenants that could trigger actions such as repayment). Financial institutions may face an incentive to take proactive measures in order to prevent this from occurring, for instance by building up additional reserves and thereby increasing their resilience.

Finally, it may be argued that increased volatility in accounting magnitudes is not necessarily a problem if *investors correctly interpret the information disclosed*. In particular, and already under the CAF, market analysts and institutional investors try to extrapolate fair valuations from a variety of sources. If they were completely successful in doing so, the increased volatility in balance-sheet items would have no impact on investors' perceptions<sup>19</sup>. But even if this were not the case and new elements were to be conveyed by the disclosure of financial statements under FFVA, mature financial markets would be in a position to appropriately interpret this increased volatility.

The divergent views regarding FFVA reveal a different perspective on banking. Under FFVA, a bank is seen as a bundle of assets and liabilities, not very different from an investment fund: what matters is the *net asset value*, i.e. what the shareholders could earn by selling the bank at any particular moment. The emphasis is on the investors' (in particular, the shareholders') view, in the belief that the main

<sup>19</sup> This argument presupposes the existence of markets that are semi-strong form efficient, i.e. where all available *public* information is correctly reflected in the market valuations by investors. Tests for market efficiency are always joint tests of market efficiency and the correctness of the underlying asset pricing model (that is used to compute normal prices and returns). Modern financial literature rejects this joint hypothesis and finds that there is substantial predictability of asset returns. This rejection has driven the quest for more advanced asset-pricing models, aiming to link the reported predictability with the expected excess returns that follow from the asset-pricing model.



function of financial statements is to provide accurate information on which they can base their decisions. The traditional approach is more geared towards perceiving a bank as a *going concern*, thus emphasising the role of bank-customer relationships that may escape an accurate market pricing and the viability of the bank in the medium term. Within this framework, the focus is more on the interest of all stakeholders (in particular creditors, but also borrowers) that the bank steadily continues to perform its liquidity and maturity transformation functions. The different perspective emerges with greater clarity in the discussion on the treatment of own credit risk and on the issue of provisioning practices, which will be discussed in more detail in the following sections.

The above outline of the debate on FFVA shows that the issue is multifaceted and difficult to address relying solely on hard evidence. In order to have a balanced assessment of the arguments discussed above, it would be essential to understand how this change in accounting paradigm would impact the behaviour of banks and banks' stakeholders. This is not easily done, as no country has gone so far as to apply FFVA to all assets and liabilities. However, some elements for an assessment have been gathered and provided in this report, which may contribute to weighing the pros and cons.

### 3 FULL FAIR VALUE ACCOUNTING VS THE CURRENT ACCOUNTING FRAMEWORK: A SIMULATION EXERCISE

As a first attempt to understand the likely impact of FFVA (as compared with the CAF) on financial stability, a simulation exercise was performed aimed at gauging how various shocks would affect the balance sheet of a bank. The following scenarios were considered: (i) a significant deterioration in asset quality; (ii) an unexpected change in interest rates; (iii) the deflating of a real-estate bubble; and (iv) significant upward and downward adjustments in stock prices.

#### 3.1 KEY ASSUMPTIONS AND THE VALUATION MODEL

In order to make the exercise relevant for the assessment of the introduction of FFVA in the EU, the simulation uses a hypothetical bank resembling as much as possible the asset and liability composition of the average EU bank. Of course, this type of analysis is subject to a “Lucas critique”, given that the balance sheet structure is taken as given and that the behaviour of the bank is assumed not to change when confronted with a reform of the accounting framework. However, the simulation remains useful to provide the background for a discussion of possible behavioural reactions to the introduction of FFVA for financial instruments. In fact, if FFVA is ever adopted, banks will look at the likely impact on their current balance sheet structure and decide on changes that minimise the undesirable effects. Furthermore, a simulation exercise is also helpful for understanding the overall effect: even though the different scenarios are analysed under a *ceteris paribus* assumption, it is possible to combine some of them and have a preliminary assessment of possible compensating effects.

In order to more accurately reflect the profile of a “typical EU bank”, aggregate data for the EU banking sector are considered. OECD statistics provided the main source of aggregate information, while additional breakdowns are calculated using the ECB’s Money and Banking Statistics. When no other aggregate source was

available, the financial statements of some major EU banks are used as a proxy.

Unfortunately, reliable aggregated data on the size of variable and fixed rate contracts and on the relative weight of securities included in the banking and trading books are not readily available. Hence the simplistic assumption is made that the assets are held in equal proportion (i.e. 50%-50%). Even though the situation seems to be highly diversified across Member States, this assumption was checked on a sample of different banks and appeared to be plausible<sup>20</sup>. As the results can be very sensitive to this assumption, additional national sources could be used in further refinements of the work, or different proportions could be simulated in order to estimate the sensitivity of the effects to the assumptions. A further simplifying assumption that might be reconsidered in future work concerns the maturity of the loan portfolio. In the absence of information on residual maturity, an average maturity of ten years was considered for mortgage loans, while for corporate loans short, medium and long-term aggregates as reported in the ECB statistics were respectively attributed a maturity of one, three and ten years. Moreover, partial checks performed in some Member States confirmed that on the basis of available information this assumption is sufficiently robust. Finally, another important simplifying assumption is that derivatives are not considered. This is certainly a clear constraint for the analysis, but the lack of information does not allow any other possibility.

<sup>20</sup> Regarding the size of variable and fixed-rate contracts the assumption is representative of the situation in some Member States. Where the relative weight of securities in the banking and trading books is concerned, the situation varies greatly between Member States from an equal split to approximately 80% of securities in the banking book.

**Table 1 Initial balance sheet**

Balance sheet	Structure before the shock	
	% of assets	in €
<b>Assets</b>		
1. Corporate loans	31.0	3,100.0
1.a. Short-term – fixed rate	15.5	1,550.0
1.b. Medium-term	4.7	465.0
Fixed rate	2.3	232.5
Variable rate	2.3	232.5
1.c. Long-term	10.9	1,085.0
Fixed rate	5.4	542.5
Variable rate	5.4	542.5
<i>Specific provisions for corporate loans</i>		
2. Mortgage loans – fixed rate	15.0	1,500.0
<i>Specific provisions for mortgage loans</i>		
3. Securities	23.0	2,300.0
3.a. Debt securities	18.4	1,840.0
Trading book	9.2	920.0
Banking book	9.2	920.0
3.b. Shares	4.6	460.0
Trading book	2.3	230.0
Banking book	2.3	230.0
<i>Specific provisions for securities in banking book</i>		
4. Other	31.0	3,100.0
Total assets	100.0	10,000.0
<b>Liabilities</b>		
1. Deposits & interbank borrowing	63.0	6,300.0
2. Bonds	12.5	1,250.0
3. Other	18.6	1,850.0
<b>Capital and reserves</b>	5.9	600.0
Total liabilities & Capital and reserves	100.0	10,000.0

Our average EU bank (see balance sheet above), is assumed to be newly established, thus the CAF and FFVA should in principle<sup>21</sup> deliver the same picture at the start of the simulation. Attention should therefore be focused on the differential treatment in the presence of different shocks. The box below summarises the main assumptions to provide a quick overview of the changes in the various scenarios.

The approach used aims to estimate how a shock to an exogenous factor would affect the fair value of a financial instrument. The information on probabilities of default (PDs) and losses given default (LGDs) has been extrapolated from the results of the third Quantitative Impact Survey (QIS3) performed by the Basel Committee on Banking Supervision to assess the effects of the proposed changes to the New Basel Capital Accord. For the sake of simplicity, a flat yield curve was assumed<sup>22</sup>.

The fair value of fixed-income instruments (e.g., loans, bonds, medium-term notes (MTNs), etc.) is calculated by discounting the expected cash flows at the discount rate. The expected cash flow at a given point in time is the sum of all the possible cash flows on that date, multiplied by the probability attached to a particular outcome. A distinction is made between collateralised and non-collateralised instruments, as well as between bullet instruments – whose principal is repaid in full at maturity – and annuities – which envisage a constant payment in each period – thus leading to four possible types of instrument (see Box 3).

21 As argued in Box 2, this may not be the case if the bank for any reason under-prices or over-prices some loans.

22 A flat yield curve simplifies the analysis considerably. Indeed, the forward rate curve will be identical to the yield curve in this case, and hence every change in the yield curve will represent an unexpected change by definition. This is important, since only unexpected changes in interest rates will affect the net worth of banks in theory. If the yield curve were upward sloping, an increase in the interest rate that is in line with the forward rate leaves net worth unchanged.

### Box 3

#### KEY ASSUMPTIONS

- Balance sheet composition reflects average EU banking sector structure
- Variable and fixed rate contracts in equal proportions (50%-50%)
- Maturities (average):
  - Short term: 1 year
  - Medium term: 3 years
  - Long term: 10 years
- Flat yield curve
- Mortgage loans: collateralised annuities
- Corporate loans: uncollateralised bullet loans
- Probability of default (PD) and loss given default (LGD) extrapolated from the Third Quantitative Impact Survey (QIS3)
  - Mortgage loans: PD = 0.5% and LGD = 10%
  - Corporate loans: PD = 1% and LGD = 45%
- Scenario I: One-off deterioration in asset quality
  - Mortgage loans: PD = 1%
  - Corporate loans: PD = 2%
- Scenario II: Cumulative deterioration in asset quality
  - Mortgage loans: PD = 7.48%
  - Corporate loans: PD = 15.66%
- Scenario III: Interest rate changes
  - Parallel shift in yield curve: 100 basis points (upward and downward)
- Scenario IV: Real estate crisis
  - Commercial real estate replaces mortgage portfolio
  - LGD = 70%
  - PD = 3%
  - Interest rates = +300bp
- Scenario V: Volatility in equity prices
  - Annual price increase: 30%
  - Annual price decrease: 40%

The calculation is given by the following formula:

$$\text{Fair value} = \sum_{t=1}^n \frac{E_t(CF)}{(1 + RF_t + RP_t)^t}$$

where  $n$  indicates the contractual maturity of the financial instrument,  $CF$  the cash flows,  $RF$  the risk-free zero coupon rate, and  $RP$  the risk premium. In turn the expected cash flow at a particular point in time (i.e., the numerator of the ratio) can be expressed as follows:

$$E_t(CF) = \sum_{i=1}^m CF_t(i)p_t(i)$$

where  $m$  indicates the number of possible states at time  $t$  and for each state  $i$  there is a corresponding possible cash flow  $CF(i)$  with an associated probability  $p(i)$ . The formula is then adjusted to take into consideration the repayment of part of the principal before maturity for annuities, while for collateralised loans the expected cash flow is adjusted in case of borrower default to take into account the collateral value. The changes in the probability

of default (PD) are factored into the associated probability, whilst the changes in the loss given default (LGD) are incorporated in the CF.

### 3.2 DETERIORATION IN ASSET QUALITY

The first scenario considered is an unexpected and generalised increase in credit risk. The deterioration in the creditworthiness of the borrowers will be reflected in the increase of their probability of default. The main assets that will be affected by changes in the credit quality will be the loan portfolio (which comprises 46% of total assets) and the debt securities held both in the trading and the banking book (18% of total assets). First, an analysis is conducted with reference to a one-off and rather mild deterioration in asset quality. This makes it possible to focus on the different timing with which FFVA and the CAF reflect the increase in credit risk in the financial statements. Then a harsher scenario affecting all the instruments is simulated.

#### 3.2.1 ONE-OFF DETERIORATION

In order to simulate a discrete increase in credit risk, changes in the PDs of mortgage loans, corporate loans and debt securities were considered, using the information available from the QIS3.

*Mortgage loans*,<sup>23</sup> which represent approximately 15% of assets, are assumed to have a PD of 0.5%, which is larger than the floor set in Basel II for retail loans (0.3%) and reflects the approximate average for retail lending in the QIS3. In addition, the initial LGD is assumed equal to the floor set in Basel II (10%). The deterioration in credit quality takes the form of a one-off increase in the PD from 0.5% to 1.0%, which can be historically considered rather mild. The overall impact of this increase in credit risk is therefore minor. As soon as the increase in PDs materialises into the impairment of loans or outright defaults, the overall effect can be quantified as a loss of 0.04% of total assets and 0.6% of capital and reserves. The final effect would be the same under both

FFVA and the CAF: under FFVA, the value of the assets would be revised downwards in order to reflect the decrease in expected cash flows, while under the CAF a provision for the same amount would be created as soon as the asset is recognised as impaired, with exactly the same effect on the P&L. The timing of this adjustment could, however, differ substantially under the two accounting regimes.

*Corporate loans*, which represent approximately 31% of assets, are assumed to start with a PD equal to 1%<sup>24</sup> and an LGD of 45%<sup>25</sup>. For the sake of simplicity, these are assumed to be uncollateralised bullet loans. The one-off deterioration in credit quality takes the form of an increase in the PD to 2%, which can be considered a relatively mild and realistic scenario, consistent with the results of the QIS3. In this case, the final impact would be more substantial and the negative effect on the P&L could be estimated at almost 3% of capital and reserves. Once *debt securities*, which account for 18% of the total assets of our average bank, are also considered, the additional adverse effect could be quantified at 1.3% of capital and reserves. *The overall effect of a decline in credit quality of the magnitude just described would therefore make for a final increase in losses equal to 4.8% of capital and reserves.*

Thus far, we have addressed the end period, assuming that the deterioration in asset quality would fully materialise. In this case, by construction FFVA and the CAF deliver exactly the same outcome. But the interesting aspect is the different time profile with which the change is recorded in the bank's balance sheet. FFVA recognises the deterioration in asset quality as soon as the PDs are revised upwards, even though impairment or default have not yet materialised: the value of the loans is immediately revised downwards, as the value of the expected future

<sup>23</sup> Mortgage loans are assumed to have an average maturity of ten years and take the form of annuities. As a reminder, the average maturity was used, as information on residual maturity was not available.

<sup>24</sup> The current 8% capital charge approximately equates with a 1% PD when the exposure is uncollateralised.

<sup>25</sup> According to QIS 3 results, an LGD of 45% corresponds more or less to the LGD of a senior uncollateralised loan.

**Table 2 Deterioration in credit quality under FFVA vs the CAF with default**

Asset item	Structure (% of total assets)	Impact of a one-off mild deterioration in credit quality	
		on assets	on capital & reserves
Mortgage loans	15	0.0%	-0.6%
Corporate loans	31	-0.2%	-2.9%
Debt securities	18	-0.1%	-1.3%
Total	64	-0.3%	-4.8%

cash flows decreases, and the decrease is directly translated in the P&L accounts. Under the CAF, however, the deterioration becomes visible only when the loans are considered impaired and specific provisions are created.

Here the crucial point concerns the provisioning behaviour of the bank under the CAF. If the bank's provisioning decisions were taken in a perfectly forward-looking manner, i.e. reflecting any change in the expected cash flows, the effects under the CAF would be exactly equivalent to those under FFVA, *ceteris paribus* (namely if interest rates remain constant). If, on the contrary, the bank provisions were mainly backward-looking, there would be a relevant difference with FFVA (see Box 4). It has to be noted, though, that a relevant obstacle to forward-looking provisioning comes from present accounting and

tax regulations. In order to limit the possibility for management to manipulate financial results, regulations in most countries tend to give a strict interpretation of the notion of impairment: provisioning is allowed only when the losses have already materialised or when there is hard evidence that they will materialise soon.

Therefore, *FFVA would allow a timelier recognition of any deterioration in asset quality, which might facilitate the exertion of pressure by stakeholders and supervisors to take corrective action. From a financial stability perspective, the timelier recognition under FFVA is welcome and consistent with prudent accounting recognition principles.* The sooner the problems are detected, the sooner the institutions and the regulators can become fully aware of them and take the necessary actions.

#### Box 4

##### CREDIT RISK PROVISIONING AND FAIR VALUE

Under the *current accounting framework*, credit losses are recognised when it is probable as of the balance sheet date that some or all contractual payments will not be received. The term “probable” loss is not precisely defined, but is mostly used to mean that the possibility that losses will materialise exceeds a certain threshold, generally 50%. Assessments of the probability that some contractual payments will not be received usually rely upon one or more of the following: (i) information, circumstances or events, regarding the credit quality of an individual loan; (ii) statistical analyses, based on historical experience, concerning credit losses associated with a portfolio of loans; or (iii) the judgement of a bank's management regarding an individual loan or a portfolio of loans, notably with respect to the evolution of the economic environment.

This concept of loss is attached to the view that a financial statement should reflect events that have occurred within the reporting period and should not reflect events that have not yet occurred. This concept is usually designated under the terms of “incurred loss”. The provisions made against this risk are thus *backward-looking*.



One drawback of this approach is that it often leads to provisions for loan losses being created only after the credit quality of a borrower has already deteriorated substantially and the loan has been assigned a very low internal credit grade, if not classified as defaulted. This can lead to loans being overvalued and profits overstated during periods when loan quality is already declining, but default rates have not yet started to increase. It also implies that the aggregate level of provisions will typically increase only after economic downturns are well under way.

This situation is aggravated if only specific provisions are created. Indeed, the drawback of backward-looking provisioning could be alleviated if the individual assessment is supplemented by a group assessment, and general provisions are established when the risk cannot be insulated and linked to a specified item.

By contrast, the notion of *forward-looking provisioning* refers to the likelihood of default embodied in any loan. Provisions should reflect any change in the probability of default after taking into account recovery rates. This approach is very close to the Basel Committee's view on expected losses related to the banking book, to the extent that unexpected losses (UL) should in principle be compensated for by capital and expected losses (EL) by provisions after they have been assessed through the internal ratings-based methods.

The notion of *dynamic provisioning* can be considered a specific extension of forward-looking provisioning, in the sense that it deals with credit risk over the whole life of the loan (in Basel II, the calculation of EL is limited to one year). A provision is created at inception based on the historical probability of default until maturity of comparable loans.

*Full fair value accounting* is forward-looking by nature since it requires the revaluation of an item when there is a change in its market price or, in the absence of a market, in the present value of the stream of revenues generated by the item. Indeed it takes expected loss into account, since a change in risk at any point in the holding period is reflected in a change in the current fair value.

However, the following elements regarding FFVA should be considered when comparing it to forward-looking provisioning:

- FFVA does not take the principle of prudence into consideration since it treats unrealised profits and losses similarly. With forward-looking provisioning unrealised gains are not accounted for, except on liquid instruments recognised in the trading portfolio;
- FFVA does not distinguish between credit risk and other risks (interest rate, currency, etc.) that are not linked to the counterparty;
- Credit risk measurements derived from financial markets, i.e. spreads, are imprecise and can be influenced by factors other than those directly linked to the counterparty's credit risk (a more general market risk aversion).

Therefore, as a tentative conclusion, even though FFVA is forward looking, it differs significantly from forward-looking provisioning with regard to prudence, volatility of accounts, accuracy and reliability.

On the other hand, if the increase in credit risk is subsequently reversed before the impairment and defaults take place, then no or limited impact would be visible under the CAF, while the full downward and upward adjustments would be recorded under FFVA.

### 3.2.2 CUMULATIVE DETERIORATION

In order to assess the impact of a severe decrease in asset quality, a scenario was designed in which credit risk steadily increased for five years. The cumulative default rates were drawn from the long-term averages published by Moody's for the period 1983-1999, assuming a constant value of collateral. The five-year cumulative default rates for corporate loans was then set at 15.66%, consistent with a credit rating B1 from Moody's (BB for S&P and Fitch) with an adverse economic environment. Following a similar approach, the cumulative rate for retail mortgage loans was set at 7.48%.

The mechanics of the adjustment is analogous to previous scenarios, but owing to the severity of the deterioration in a five-year time frame, the impact on capital and reserves is very significant. *The cumulative loss would reach almost 50% of capital.* Under the balance sheet structure of our average bank, a yearly return on equity of approximately 10% throughout the period would be needed to compensate this effect without depleting capital and reserves.

Again, in order to assess the differential impact on bank accounts, it is essential to focus the attention on the time frame for balance sheet adjustments under FFVA and the CAF. The overall impact on capital of credit losses, at

least, would be the same under both – it is the timing of the recognition of those changes in the accounts that differs, and this may have positive or negative effects. Under FFVA the unexpected downward revision in credit quality would be immediately translated into the P&Ls over the entire five-year period. The value adjustment would in all likelihood be more forward looking than the present provisioning behaviour of EU banks. The positive implication would be that corrective action could be taken earlier, thus preventing management from adopting a passive attitude and waiting until the storm blew over. The effect on volatility may also turn out to be lower than under the CAF, if the extreme assumption is made that provisioning only occurs ex-post, when the losses have already materialised.

On the other hand, two main points can be raised, which question the appropriateness of FFVA in presence of shocks like the one simulated here. First, it is current practice for rating systems of banks to use PDs that are estimated in a point-in-time fashion, taking into consideration at most a one-year horizon. This approach may make sense from a risk management perspective, as it allows internal ratings to reflect promptly changes in credit risk. However, such estimates, would be fed into the valuation of expected cash flows and could be revised quite frequently. A large adjustment of the magnitude described above could well drive a bank to insolvency, whereas taking a longer-term perspective and considering that long-term loans would be kept in the portfolio beyond the crisis period, may cause a more positive picture to emerge. Second, the CAF need not be coupled with backward-looking provisioning. If the CAF were to be combined with forward-looking provisioning, which takes

**Table 3 Severe decrease in the credit quality of loan portfolio under FFVA or the CAF with default**

Asset item	Structure (% of total assets)	Impact of a 5-year cumulative deterioration in the credit quality of the loan portfolio	
		on assets	on capital & reserves
Mortgage loans	15	-0.4%	-7.3%
Corporate loans	31	-2.5%	-40.9%
Total	46	-2.9%	-48.1%

a through-the-cycle view on PDs based on long-term statistical evidence, buffers would be created that would shelter the balance sheet from a deterioration in asset quality

All in all, it can be concluded that in presence of shocks on credit quality *FFVA would allow a more timely recognition of the change in the risk environment*. FFVA would be *more forward looking than the CAF coupled with backward provisioning*. However, if PDs are estimated at a short-term horizon, *FFVA could also cause some artificial volatility in bank capital and the adjustments would remain procyclical*. The CAF combined with dynamic provisioning would, on the contrary, provide for a smoothing of such shocks, via the use of buffers accumulated in good times.

### 3.3 PARALLEL SHIFTS OF THE YIELD CURVE

A parallel shift of 100 basis points, both upwards and downwards, is considered. The results of the simulation here depend crucially on the following assumptions: maturity of assets and liabilities, proportion of variable and fixed rate contracts, and the relative weight of the trading and investment books. Assumptions on maturity, in particular, may attribute excessive relevance to long-term, fixed rate assets, whose value is more sensitive to changes in interest rates. This could unduly magnify the impact of the shock under FFVA. Another important caveat has to be made: given the lack of available data, it was not possible to take into account the use of off-balance-sheet instruments aimed at hedging interest rate risk, which may play a relevant role in offsetting the changes reported under FFVA.

The simulated upward shift of the yield curve would generate losses of a comparable magnitude under FFVA and the CAF. The difference would stem only from the loan book, as under the CAF debt securities in the banking book are valued at the lower of cost or market value (LOCOM principle). The value adjustments, to be reported in the P&L, would amount to about 22% of capital and reserves under both the CAF and FFVA (see table below). This conclusion is dependent on the assumption that the bank is newly established, so that the carrying amount equals the market value immediately prior to the shock. If the market price before the shock were above the carrying amount, the CAF would allow the absorption of part of the adjustment without showing it in the P&L accounts. This leads to the other conclusion, which shows a much greater difference when the yield curve shifts downward by 100 basis points. In this case, the profits generated under FFVA would be twice as large as those under the CAF (24% of capital and reserves, compared with 12%).

### 3.4 IMPACT OF AN INTEREST RATE SHOCK OVER TIME

The results presented in the previous section (and which, as mentioned above, should be treated with caution) show that *the volatility of bank income could significantly increase as a result of the adoption of FFVA*. This is also an example where the contrast between the *net asset value perspective*, embodied in FFVA and the *going concern perspective* underlying the CAF can be best portrayed. Again, we have to take into account the time dimension of the shock on the bank's P&L. Assuming that the assets and liabilities affected by the shock are

Table 4 Parallel shifts of the yield curve

Adjustments to yield curve	Impact on assets (%)		Impact on capital and reserves (%)	
	CAF	FFVA	CAF	FFVA
100 bp upward adjustment	-1.3	-1.3	-21.8	-22.2
100 bp downward adjustment	0.7	1.4	12.0	24.0

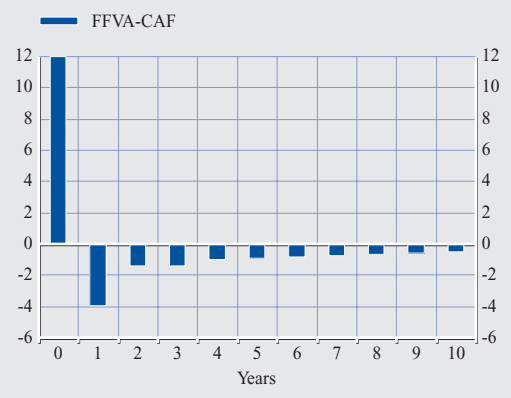
neither sold before maturity nor renewed after maturity, FFVA and the CAF will have to deliver exactly the same cumulative impact on the P&L. The reason is that bonds and loans show a “pull-to-par” movement, as at maturity (unless the debtor has defaulted earlier) their market value and fair value will have to equal par value, irrespective of any value changes that may have been recorded over their lifetime. Of course, such a convergence effect does not work for shares held by the bank as they do not have a maturity and there is no obligation for the issuers to repay a nominal amount.

The convergence effect implies that, *ceteris paribus*, any immediate change in the fair value of such bonds and loans as a result of the interest rate shock will be gradually recovered through offsetting value adjustments over the remaining life of the instruments. The following graph maps the difference through time between profits and losses under FFVA and the CAF in case of a 100 basis point decrease in interest rates. It shows that the search for a measurement methodology that refers at any point in time to the net asset value of the portfolio substantially increases the volatility of income for instruments that are held to maturity, in particular in the period immediately after the interest rate shock. It should also be noted that the increase in the portfolio value as a result of the interest rate decline would immediately show up under FFVA, but not under the CAF, thus leading to the build-up of unrealised gains in the latter case.

A similar analysis can be performed for a scenario of interest rate increases. This basically leads to a mirror image of the graph, with a large *negative* difference between the fair value and historical value immediately after the interest rate increase (although the difference between FFVA and CFA should be smaller for an interest rate increase given that the value of the securities in the banking book will be revised downwards in both FFVA and CFA/LOCOM). The value difference is then recovered over the remaining life of the instruments.

**Chart 1 Difference between FFVA and the CAF in the P&L account from a downward shift in the yield curve of 100 bp**

(as a % of capital & reserves)



The earlier scenario of an interest rate decline can be combined with asset quality deterioration, with interesting results. For instance, if the deterioration in asset quality coincides with a recession and an alleviation of inflationary pressures, a decrease in interest rates (even though this would not occur as the kind of parallel shift simulated here) might alleviate the impact of the value adjustments under FFVA. In this case, the CAF with perfectly forward-looking – but not cyclically adjusted – provisioning might imply a wider correction of valuations than under FFVA, as offsetting the interest rate effect would not be taken into consideration.

### 3.5 REAL ESTATE CRISIS

For the purpose of this exercise, the composition of the balance of the average EU bank was modified, and the mortgage portfolio was replaced by a commercial real estate portfolio. The assumption that commercial real estate represents approximately 15% of total assets is not as extreme as it might seem, given the resemblance with situations prevailing in some EU countries like Ireland and Sweden. A stress scenario similar to those experienced in major collapses of real estate markets followed by banking crises (as in the Nordic banking crisis) was tentatively designed (focusing

solely on the loan book). The reduction in collateral values of the commercial real estate portfolio was factored in through a 50% increase in the LGDs over average values reported in the QIS3, and the PDs were increased to about 3%. These shocks were considered to occur together with an increase in interest rates of 300 basis points, which is extreme but still falls short of the increases experienced in some countries during actual real estate crises.

The impact of such a shock on the average EU bank would be very substantial and the valuation effect would play a prominent role, as FFVA would immediately capture the effect of a change in interest rates as well as the downward adjustment in collateral values. This means that from the very moment at which the shock materialises, the bank would experience value adjustments of such a magnitude as to absorb more than half of its capital and reserves (54%). Under the CAF, disregarding provisioning behaviour, no impact would materialise until actual impairment or default; but also when default occurs the effect would be much more limited (less than half of the FFVA impact, in fact), because the interest rate effect would be missing (see summary table below). This means that *in a typical real estate crisis scenario, in which an increase in interest rates is coupled with an increased fragility of the borrowers and a decrease in collateral values, FFVA could actually contribute to accelerating and possibly deepening the effect of the crisis.* In fact, if interest rates decrease or collateral values recover somewhat, the valuation effect under FFVA would be reversed only after having generated a capital squeeze that, if it does not drive the bank out of the market, would in any case substantially affect its willingness to lend.

However, FFVA's immediate capturing of the shock and forward-looking nature may allow for a swifter correction. Under the CAF, even the final effect would be more limited, as the interest rate effect would not be captured. However, under the CAF the subsequent correction of banks' lending behaviour would tend to be slower than under FFVA.

### 3.6 SHARP ADJUSTMENTS IN EQUITY PRICES

Finally, the simulation exercise focused on adjustments in equity prices. The simulation was based on recent swings, which were large enough to represent a "stress scenario": in the period between 1999 and 2001 an average annual increase of 30% and fall of 40% of share prices took place. Although the equity portfolio only represents approximately 5% of assets, the impact that surfaced from the shocks turned out to be substantial, given the magnitude of the price adjustments.

Under the LOCOM principle that is used in the CAF, the treatment of equity in the banking book is asymmetric. Changes bringing the price below cost call for a specific value adjustment of the instruments and the change directly affects the P&L; increases in their market values do not affect the accounting treatment of the instruments and do not result in any profits. This means that a major difference between FFVA and the CAF will emerge in the case of a sharp upward adjustment in stock prices. In fact, the simulation shows that *a 30% increase in stock prices would result in profits of about 12% of capital and reserves under the CAF, reflecting the adjustment in the trading book, while under FFVA profits would be twice as large (24%).* Of course, different assumptions

Table 5 Real estate crisis

Impact of real estate crisis			
(%)			
Impact of real estate crisis	FFVA	Initial moment	CAF After default/impairment
On assets	-3.2	0.0	-1.6
On capital and reserves	-53.8	0.0	-26.1

**Table 6 Adjustments in equity prices**

Price swings	Impact on assets (%)		Impact on capital and reserves (%)	
	CAF	FFVA	CAF	FFVA
30% appreciation in equity prices	0.7	1.4	11.7	23.5
40% depreciation in equity prices	-1.8	-1.4	-29.6	-29.6

on the relative weight of the trading and banking book would deliver different results, but the effect remains striking.

*This raises a twofold concern from a financial stability perspective. First, as unrealised gains will feed into the P&L under FFVA, they may be distributed and any subsequent downward correction in equity markets could directly impact on capital.<sup>26</sup> Second, in the opposite case where profits are not distributed, the increase in regulatory capital might fuel an increase in lending and entail a pro-cyclical effect.*

When considering a significant fall in stock prices, the assumption that the average EU bank considered in the analysis is newly established means that any downward adjustment is considered as below cost, and so the treatment would be equal under FFVA and the CAF. The

40% downward adjustment would determine losses of up to 30% of capital and reserves.

However, if we consider a well-established bank, the historical upward trend in stock prices would imply that the equities in the banking book were accounted for on the balance sheet at a value substantially lower than current market valuations. In other words, the bank would have a substantial amount of unrealised gains (also referred to as “hidden reserves”), which would be larger the longer the average holding period. The evolution of the European stock market index (Eurostoxx) could provide an idea of the potential magnitude of unrealised gains.

Hence, if a bank has unrealised gains, even a downward adjustment of the magnitude

<sup>26</sup> Although this concern may be alleviated by the fact that some countries (e.g. UK) have specific rules on what can and cannot be considered as “distributable” profits.

**Table 7 European stock market returns by holding period**

Years	Holding period			
	15 years	10 years	5 years	3 years
1987	100.00			
1988	72.26			
1989	94.26			
1990	121.08			
1991	92.28			
1992	101.44	100.00		
1993	101.39	99.95		
1994	141.14	139.14		
1995	128.74	126.91		
1996	140.36	138.37		
1997	170.17	167.75	100.00	
1998	233.17	229.86	137.03	
1999	303.36	299.05	178.27	100.00
2000	418.41	412.47	245.88	137.93
2001	397.44	391.80	233.56	131.02
2002	319.05	314.52	187.49	105.17

Sources: Datastream, Eurostoxx index.



described here could have a very different impact under FFVA and the CAF. Again, depending on the assumptions on the magnitude of these unrealised gains and on the relative weight of the investment and trading book, the losses under the CAF could be half as large as those under FFVA. If we consider a compounded shock, with the decrease in stock prices occurring together with an upward shift in the yield curve affecting fixed income assets and liabilities, the differential impact of FFVA with respect to the CAF could even be greater.

The argument concerning unrealised gains points to a more general issue. Some EU banks – in particular in countries where the investment component of the equity portfolio is traditionally large – may have significant hidden reserves, which could be realised whenever a shock generates large losses and market participants grow worried about the bank's solvency. In 2001 it was often argued that some large German banks were disposing of long-term shareholdings in order to limit losses caused by deterioration in their loan portfolio and low returns from investments in capital market-related activities. To some extent, this helped regain the confidence of investors and responded to market rumours hinting at more substantial liquidity and even solvency problems. In the presence of FFVA this would not have been possible as the profits resulting from the appreciation of the equity portfolio would have been reported much earlier. These unrealised gains might have already been distributed as, in good times, shareholder pressure for higher dividends may be difficult to resist. This example captures the point on intertemporal smoothing discussed in Section 2.2. At the same time, it should also be stressed that unrealised gains do not support a proper functioning of market mechanisms and could provide bank management with excessive margins of discretion which may not be used solely for the benefit of financial stability. In order for market discipline to be effectively exercised, investors need to be adequately informed, financial statements transparent and banks required to hold explicit capital to cover

risks rather than use hidden reserves. To this end, the disclosure of unrealised gains would be useful information, which could be provided by banks in the Annexes to their financial statements.

\* \* \*

To conclude this section we note that:

- the differential impact of a credit risk shock under FFVA and the CAF depends on the assumptions on the provisioning behaviour that would be followed under the CAF. A static comparison with the present behaviour of EU banks, which seems to be biased in favour of backward-looking and pro-cyclical provisioning, would suggest that a move to FFVA might actually represent an improvement, as it could be analogous to forward-looking provisioning. However, the CAF coupled with forward-looking provisioning would actually deliver better results from a financial stability perspective, as it would make it possible to recognise credit losses in a timely fashion without entailing the changes in valuations that under FFVA would be generated by interest rate movements;
- for other shocks embodying a significant price component, a major difference between FFVA and the CAF would surface. In all cases, concerns emerged that the premature recognition of unrealised value changes might aggravate somewhat the effects of the shock and cause a pro-cyclical impact, even though the positive effect via better market discipline and transparency is to be acknowledged;
- the findings on the relevant impact of shifts in the yield curve, with all the caveats needed to interpret the results, raise important questions as to the incentives banks would face if confronted with the introduction of FFVA. In particular, it is likely that they would take the initiative to reduce the exposure to interest rate risk, and it cannot

be ruled out that such initiatives might also lead to a shortening in the maturity of loans and/or to a more extensive recourse to variable rate contracts. As a result, banks may be pushed to shy away from their traditional role, and increasing portions of liquidity risk and interest rate risk would be transferred to bank customers, i.e. households and corporates, which may be less skilled at managing them;

- FFVA would probably see increasing recourse to securitisation and other hedging mechanisms to limit the adverse consequences on the P&L account. If this were the case, FFVA might end up favouring the increased marketability of presently illiquid assets, spreading the risks through the financial system and possibly increasing systemic resilience.

Finally, it should be noted that the simulation exercise does not capture changes in behaviour subsequent to the introduction of FFVA, as banks would readjust their portfolios in order to minimise the negative affects and better position themselves to reap the potential benefits. In that respect, it is interesting to analyse the case of Denmark, which is the EU country that has gone furthest in the use of fair values – although not extended to the loan book – in order to check whether this has indeed resulted in increased volatility or instability of the financial system. The available empirical evidence shows that Danish accounting principles have not resulted in significant income volatility for banks. Furthermore, recent data point to what can be considered as low exposure to interest rate risk of the Danish banking sector. These results raise the question of whether banks would increase their hedging activity as a consequence of the introduction of fair values in order to shelter their balance sheets from undesired volatility, which would be positive from a financial stability point of view.

## 4 DISCLOSURES OF FAIR VALUES IN THE FINANCIAL ACCOUNTS: COMPARATIVE ANALYSIS OF MAJOR EU BANKS

Disclosures  
of fair values in  
the financial accounts:  
comparative analysis  
of major EU banks

According to requirements defined by the US Financial Accounting Standards Board (Statement of Financial Accounting Standard 107, “Disclosures about Fair Value of Financial Instruments”), companies listed on US markets should disclose the estimated fair values of on- and off-balance-sheet financial instruments when it is possible to do so. Compliance with this requirement therefore furnishes fair-value data for a number of EU banks listed in the US on the basis of their financial statements for 2000, 2001 and 2002 in which they report fair values for all financial instruments. The small sample of banks considered includes ABN Amro, Barclays Bank, Deutsche Bank, Royal Bank of Scotland, ING, Fortis, and Bank Austria Creditanstalt.<sup>27</sup>

The analysis encompassing a small sample of banks was carried out at the individual bank level, without any data aggregation, in order to avoid smoothing the variability that could stem from a different portfolio composition. Attention is focused on the difference in the valuation of balance sheet items under FFVA and the CAF, in relation to capital and reserves, and on the different changes in fair values and book values between two years, again showing the difference between the two in relation to capital and to total assets. The results show that FFVA has an important impact on some components of the banks’ portfolios. They also show that such impacts could also vary significantly across banks.

On the assets side, the impact of FFVA on *interbank lending* would be rather modest, even though for some banks the use of fair values produces a revaluation, attributable to the embedded interest rate gains on this activity (approximately 4% of capital and reserves). As expected, FFVA determines quite a change in the *loan book*. Both the absolute magnitude of the changes and the variability across banks are extremely relevant. For instance, in 2001 the loan book of Fortis was revalued by more than 40% of capital and reserves, followed by an important downward revision (-15%) in 2002. For some banks fair values are not changing at a

pace significantly different from that of book values, nor are they moving in a different direction. If all the banks in the sample had moved to FFVA in 2002, the profits generated by loan revaluation would have ranged from 1% to 33% of capital and reserves. This evidence signals that valuation methods could still differ significantly. It also confirms that income volatility would in all likelihood rise significantly unless banks changed their behaviour when having to measure at fair values as opposed to simply disclosing values. The picture is varied when looking at *securities holdings*, where the impact is rather significant for three banks, in particular in the last period considered, but only moderate for the other four banks. If one bank (ING) had adopted an FFVA approach in 2002, the revaluation of the securities portfolio would have generated profits of up to 49% of capital and reserves. Where *derivatives* are concerned, however, under the CAF they are recorded as off-balance-sheet items unless held for trading. Hence the change induced by FFVA is significant. Different accounting treatments of derivatives hamper a proper assessment, but again a relevant impact can be detected for at least two banks in the sample. If those banks (Barclays and ING) had adopted FFVA in 2002, the revaluation of their derivatives position would have generated profits of around 18% of capital and reserves.

On the liabilities side, some interesting effects are also worth mentioning. For instance, the effect on *deposits and interbank lending* would be heterogeneous across banks, with some extreme movement. For instance, Fortis reports a significant fall in the fair value of deposits below book value, stemming from the valuation method used for fixed rate deposits. This difference between fair value and book value amounts to 33% of capital and reserves.

<sup>27</sup> The analysis comprises seven banks, five of which are the largest banks in their home country (as measured by assets). ABN and ING are the 1st and 2nd-largest banks in the Netherlands. Barclays is the largest in the UK, Deutsche Bank the largest in Germany, and Fortis and Bank Austria Creditanstalt the largest in Belgium and Austria, respectively.

**Table 8 Fair values versus book values**

Net financial assets <sup>1)</sup>	FV revaluation <sup>2)</sup>					
	as a % of SHE		as a % of assets			
	2002	2001	2000	2002	2001	2000
ABN Amro	32	38	20	1	1	1
Barclays	4	8	7	0	0	0
Deutsche	5	5	-20	0	0	-1
RBS	-1	-10	-6	0	-1	0
ING	44	28	12	1	1	1
Fortis	74	68	-22	2	2	-1
Bank Austria Creditanstalt	16	10	9	1	0	0

1) Net financial assets = financial assets - financial liabilities.

2) FV revaluation = FV - BV.

Significant changes occur also in the valuation of *debt securities* and *derivatives*.

All in all, this simple comparison shows that, if banks do not change their behaviour, the *introduction of FFVA could render EU banks' balance sheets more volatile*. The effect is not particularly noticeable when measured vis-à-vis total assets, but it is definitely not negligible when measured against banks' shareholders' equity (SHE). In some cases, substantial unrealised gains emerge. This raises the question of the use of such value adjustments, as dividend distribution would hamper the ability to shelter future downward movements.

## 5 FAIR VALUES AND VOLATILITY IN SHARE PRICES

The evidence that FFVA would introduce higher volatility in banks' balance sheets is not, in itself, a sufficient reason for rejecting the validity of the approach. In particular, it may be argued that financial markets could already base their valuation on fair values, so that the reform would only have the benefit of aligning the balance sheet treatment with the market valuations that already guide investment decisions. Furthermore, even if the introduction of FFVA were to induce increased volatility in share prices, investors may well be able to interpret the relevant developments, disentangling the different sources of volatility. Of course, this hypothesis cannot be properly tested, as FFVA has not been introduced in any country. However, some indication, also for EU countries, can be inferred from the changes in the valuation methods for the trading books of banks.

At the beginning of the 1990s the Capital Adequacy Directive<sup>28</sup> was transposed into the national legislation of EU countries, introducing the principle that banks' trading books should be marked-to-market. An empirical analysis has been conducted with the aim of gauging the impact that a shift from historical cost accounting to FFVA for the trading book would have on the volatility of bank share prices (P) in some EU countries. The same kind of empirical analysis could in principle be carried out to check for changes in the volatility of earnings. However, banks usually release earnings data on a semi-annual or quarterly basis. Higher-frequency data

(monthly or weekly) are made available by major data providers.<sup>29</sup> However, these series seem to display relevant changes only at times when banks release the data: the intermediate missing points are filled in using an interpolation technique, but they seem to lack economic content. Any exercise aimed at computing the volatility of banks' earnings per share with monthly or weekly frequency will thus not be possible. Moreover, the sample size (especially for the period before the adoption of the FVA) is not sufficiently large to carry out the analysis on low-frequency data.

The analysis is based on weekly bank equity indices<sup>30</sup> for five EU countries: France, Germany, Italy, Spain and the United Kingdom. For each country both individual bank data and a sector index are considered, except for France where the lack of data means that only the sector index can be used. The sample period varies from each country, according to data availability. Whenever possible, the analysis is carried out from January 1973 to January 2004. Subject to data availability, the banks with the highest market capitalisation included in national bank equity indices have been chosen. For each country the date of when the EU Capital Adequacy Directive was transposed into national legislation was identified (see Box 5).

28 Council Directive 93/6/EEC, enacted on 15 March 1993. Nevertheless, changes in accounting regulations concerning the treatment of so-called held-for-trading securities had already been implemented in some of Member States.

29 Thomson Financial Datastream, for example.

30 As provided by Datastream.

### Box 5

#### WHEN DID BANKS START TO MARK-TO-MARKET THEIR TRADING BOOKS?

The empirical analysis of banks' share volatility depends critically on the date at which the change in accounting regulation was carried out in each country. In principle, a distinction could be made between the *de jure* and *de facto* change in accounting standards, i.e. distinguishing between when a new regulation was introduced in the country's legal framework and when the banks actually started to adopt the new standards. For the purpose of this study it was generally accepted that major banks (such as the ones included in the indices) would adopt the new

regulations as soon as possible, i.e. starting the next fiscal year. The dates were chosen as follows.

In France, the accounting trading book was created by regulation at the beginning of 1990, and thus a dummy variable was introduced starting in January 1991. In Germany, accounting regulations demand valuation at historical costs of banks' assets and liabilities. However, Paragraph 252 (2) of the German Commercial Code, which was introduced in 1991, allows exceptions to this general principle and thus prompted the development of fair value measurement for banks' trading books. A dummy variable was introduced in January 1992. In Spain, the *held-for-trading* category of securities, which could be valued using market values, was introduced in accounting regulations in September 1989; thus the dummy variable has a value of 1 starting in January 1990. In Italy the same definition was introduced in 1992 and the dummy variable takes the value of 1 starting from January 1993. In the United Kingdom, the British Bankers Association Statements of Recommended Practice (BBA SORP) was the first formal guidance recommending that trading book securities be marked-to-market. It was issued in 1990, with banks encouraged to adopt its recommendations as soon as practicable or in the first accounting period beginning on or after January 1993 at the latest. However, it was already common practice for banks with major securities trading operations (since the Stock Exchange "Big Bang" of 1986) to use market valuations. Thus, the empirical study has been carried out using two different dummy variables, the first one starting in January 1987 and the second one starting in January 1991.

After computing returns as the log differences of two consecutive price index observations, a Generalised Autoregressive Conditional Heteroskedasticity (GARCH) model is fitted on each series<sup>32</sup>. This makes it possible to estimate their time-varying volatilities. Within this econometric framework a dummy variable is used to test whether there was a significant

increase in volatility following the adoption of fair values for the trading book. In addition, a control variable for the total market volatility is introduced, also modelled using a GARCH process (see Box 6).

<sup>32</sup> Since equity price indices are non-stationary time series, empirical analysis is carried out on returns since these are stationary series.

#### Box 6

##### EMPIRICAL METHODOLOGY

This box describes the methodology used to test whether the change in the accounting standards concerning the reporting of financial instruments has had an impact on the volatility of banks' share prices.

The empirical analysis is carried out on logarithmic differences of banks' price indices,  $(P_{i,t})$ , including dividends, where  $i = 1, \dots, n$  represents the  $i$ th asset under consideration. Log differences in  $P$ 's makes it possible to compute (compounded) total returns,  $r_{i,t}$ .

First, a test is run to determine whether the returns process can be explained by autoregressive and moving average components. If the coefficients associated with these terms are significantly different from zero, they are included among the explanatory variables, otherwise they are discarded from the mean equation.



The mean equation for returns can be written as follows:

$$(1) \quad r_{i,t} = a_{i,0} + a_{i,1}r_{i,t-1} + \dots + a_{i,p}r_{i,t-p} + b_{i,1}\varepsilon_{i,t-1} + \dots + b_{i,q}\varepsilon_{i,t-q} + \varepsilon_{i,t}.$$

Error terms  $\varepsilon_{i,t}$ 's are assumed to have zero mean and a time-varying variance,  $h_{i,t}$ . The adopted variance process, (which turns out to be the variance of returns), is conditional on a time-varying information set and, as such, is updated as long as new information becomes available. Therefore it takes into account the events that affect equity markets. The linear Generalised Autoregressive Conditional Heteroskedasticity (GARCH) model originally proposed by Engle (1982) and Bollerslev (1986) is used:

$$(2) \quad h_{i,t} = \gamma_i + \alpha_i \varepsilon_{i,t-1}^2 + \beta_i h_{i,t-1}.$$

This form of the GARCH model, however, is not able to capture the so-called *asymmetric volatility phenomenon*. Typically volatility tends to increase more after negative return shocks than after positive return shocks of the same magnitude. Two different models, the leverage effect hypothesis (Black, 1976, and Christie, 1982) and the volatility feedback effect (Campbell and Hentschell, 1992) can help to explain this phenomenon. The leverage effect states that after an unexpected decrease in the equity value the debt-to-equity ratio of a firm tends to increase. This, in turn, will induce an increase in the riskiness (volatility) of equities which will surge as well. An alternative explanation is that after a negative shock and the consequent increase in equities variance, the expected return must become sufficiently high to compensate the investor for the increased volatility. This movement in prices will thus in itself create more volatility (volatility feedback). These two explanations for asymmetries in volatility are not mutually exclusive, and can be at work at the same time (see also Bekaert and Wu, 2000).

In order to take into account the asymmetry effect, equation (2) is therefore enriched with an additional term (see Glosten, Jagannathan and Runkle, 1993, and Zakoian, 1994) as shown in equation (3):

$$(3) \quad h_{i,t} = \gamma_i + \alpha_i \varepsilon_{i,t-1}^2 + \zeta_i I(\varepsilon_{i,t-1} < 0) \varepsilon_{i,t-1}^2 + \beta_i h_{i,t-1}.$$

The indicator function  $I(\varepsilon_{i,t} < 0)$  is equal to one if  $\varepsilon_{i,t}$  is negative, and equal to zero otherwise. Assume that  $\zeta_i$  turns out to be positive (negative). When  $\varepsilon_{i,t}$  is negative,  $I(\varepsilon_{i,t} < 0)$  is equal to one and volatility actually goes up (down). Conditional volatility, instead, does not change for positive innovations, since  $I(\varepsilon_{i,t} < 0)$  will be equal to zero.

Now assume that at a certain point in time,  $\tau$ , with  $\tau < t$ , the accounting requirements for the disclosing of financial assets changes. This change may be reflected in the variance  $h_{i,t}$ . This hypothesis can be tested by checking whether the intercept of the GARCH model changes with parallel shifts. Therefore the conditional variance represented in equation (3) is further modified as follows:

$$(4) \quad h_{i,t} = \gamma_{1,i} + \gamma_{2,i} d_{i,t} + \alpha_i \varepsilon_{i,t-1}^2 + \zeta_i I(\varepsilon_{i,t-1} < 0) \varepsilon_{i,t-1}^2 + \beta_i h_{i,t-1},$$

where  $d_{i,t}$  represents a dummy variable which takes on value zero for  $\tau < t$ , i.e. before the change in the accounting standards, and value one otherwise, i.e. for the whole period after the change

has occurred. If  $\gamma_{2,i}$  is significantly different from zero, then this will indicate that the process governing volatility has changed.

To check for possible changes in the intercept attributable to changes in the volatility of the whole market, the GARCH process (4) is modified as follows:

$$(5) \quad h_{i,t} = \gamma_{1,i} + \gamma_{2,i}d_{i,t} + \alpha_i \varepsilon_{i,t-1}^2 + \zeta_i I(\varepsilon_{i,t-1} < 0) \varepsilon_{i,t-1}^2 + \beta_i h_{i,t-1} + \lambda_i h_{m,t},$$

where  $h_{m,t}$  is the time varying variance associated with the whole market  $m$ . Equation (5) is jointly tested with the mean equation (1) to assess the impact of a change in accounting standards on banks' return volatility.

The variance for the whole market,  $h_{m,t}$ , is calculated using a procedure similar to that used for  $h_{i,t}$ . First, the returns on the whole market index are computed, and are then modelled in line with equation (1). Second, error terms are assumed to follow a GARCH process similar to that of equation (3). Finally,  $h_{m,t}$  is recovered and plugged into equation (4).

For each country the empirical analysis is carried out on an aggregate bank index and/or individual bank indices. For each time series, two different equations are estimated: one contains as a control variable the whole market variance while the other does not. The fourth column in the following table shows coefficients of the dummy variables which indicate whether there has been a switch in volatility after the adoption of the FFVA standards. P-values are reported in parentheses. T-statistics are shown in the last column.

In general, several different components are used for the valuation of equity prices. Apart from the well-known relationship between current stock prices and a combination of expected future dividends and stock returns, the valuation of a stock price index for banks may also depend on the accounting standards. With historical cost accounting, asset valuations have to rely on inferences regarding some items in the banks' balance sheets. This will inevitably increase the uncertainty associated with those items. On the other hand, under FFVA this type of uncertainty does not play any role in asset valuation. At the same time, however, fair value may result in the increased volatility of future cash flows. Therefore, when

accounting standards change from the CAF to FFVA, the overall effect on the volatility of banks' equity returns is uncertain. Moreover, as argued at the beginning of this section, since investors may base their valuations on fair values independently of the accounting standards, it would not be surprising to observe negligible changes in volatility when moving from one accounting regime to another.

Empirical evidence shows that the change in volatility of returns is almost never significant except for IKB in Germany, Banco Santander in Spain and Standard Chartered in the United Kingdom. Where bank indices are concerned, only the UK index is sensitive to the change in accounting standards. Controlling for the market returns does not improve significance.

These results need to be interpreted with caution for at least three different reasons. First, the choice of the cut-off dates at which banks changed from one accounting standard to the other is far from clear-cut. Banks in the same country may have started to implement fair valuations of financial assets at different times and for a different set of instruments. Second, towards the end of the 1980s and at the beginning of the 1990s the relative weight of

Table 9 Results of the FVA analysis using GARCH models for the volatility of returns

Countries		Control for the market	Coefficients of dummy variables	t-stats
Germany	Deutsche Bank	yes	0.20 (0.11)	1.62
		no	0.12 (0.10)	1.66
	HypoVereinsbank	yes	1.14 (0.17)	1.38
		no	1.13 (0.18)	1.35
	Commerzbank	yes	0.13 (0.59)	0.54
		no	0.17 (0.21)	1.25
	IKB	yes	-3.29 (0.0)	-3.66
		no	0.43 (0.05)	-2.00
	Bankgesellschaft Berlin	yes	0.07 (0.86)	0.18
		no	0.07 (0.85)	0.19
	Bank Index	yes	0.10 (0.38)	0.87
		no	0.07 (0.14)	1.47
Spain	Banco Santander	yes	1.00 (0.02)	2.40
		no	1.04 (0.0)	2.81
	Bankinter	yes	-1.24 (0.22)	-1.22
		no	-1.36 (0.39)	-0.85
	BBV Argentaria	yes	0.43 (0.38)	0.87
		no	0.45 (0.36)	0.92
	Bank Index	yes	0.18 (0.30)	1.03
		no	0.15 (0.50)	0.66
United Kingdom	Bank of Scotland	yes (since 1987)	-0.73 (0.27)	-1.10
		yes (since 1991)	-0.38 (0.41)	-0.83
		no (since 1987)	0.73 (0.14)	-1.48
		no (since 1991)	-0.52 (0.14)	-1.47
	Barclays Bank	yes (since 1987)	0.50 (0.32)	1.00
		yes (since 1991)	0.79 (0.13)	1.52
		no (since 1987)	-0.05 (0.79)	0.26
		no (since 1991)	-0.13 (0.48)	-0.71

**Table 9 Results of the FVA analysis using GARCH models for the volatility of returns (cont')**

Countries		Control for the market	Coefficients of dummy variables	t-stats
United Kingdom	STD Chartered	yes (since 1987)	15.60 (0.00)	4.56
		yes (since 1991)	0.88 (0.06)	1.85
		no (since 1987)	0.84 (0.26)	1.12
		no (since 1991)	0.30 (0.44)	0.77
	Abbey Bank	yes (since 1991)	0.47 (0.14)	1.46
		no (since 1991)	-0.08 (0.62)	-0.50
	Bank Index	yes (since 1987)	2.01 (0.05)	1.91
		yes (since 1991)	2.34 (0.03)	2.14
		no (since 1987)	0.11 (0.50)	0.66
		no (since 1991)	0.02 (0.88)	0.14
Italy	Banca Intesa	yes	-1.00 (0.41)	-0.82
		no	-0.88 (0.44)	-0.77
	Unicredito Italiano	yes	0.31 (0.41)	0.82
		no	0.32 (0.35)	0.93
	Capitalia	yes	2.47 (0.07)	1.79
		no	0.35 (0.57)	0.57
	Bank Index	yes	-0.25 (0.13)	-1.50
		no	-0.27 (0.12)	-1.54
France	Bank Index	yes	0.10 (0.64)	0.46
		no	0.08 (0.68)	0.41

the trading book – to which the FFVA standard applied – vis-à-vis the overall stream of income was relatively modest. Finally, even though volatility had increased significantly and permanently after the adoption of the FFVA, it would be important to analyse to what extent investors priced in this incremental volatility in the context of an asset pricing model. This would make it possible to check whether the higher variability embodies, from the investors' point of view, information about additional risk. The lack of a significant change in the risk

premium would indicate that investors interpret the additional variation as being in line with the new reporting requirements. Therefore, the additional volatility would not lead to a re-allocation of capital away from the bank's equity. Further investigation is thus needed to address the aforementioned points.

## 6 IAS 39: CONSISTENCY WITH MARKET PRACTICES, SUPERVISORY TOOLS AND STATISTICAL REQUIREMENTS

### 6.1 CONCERNS REGARDING HEDGING ACTIVITIES

Until now, the analysis of the effects of FFVA on financial stability has been conducted by comparing the full fair value for all financial instruments to the present setting, checking whether the potential move to FFVA could create adverse effects on financial stability. In this section the focus will be shifted to the impact of IAS 39, which can be understood as a partial application of fair value accounting. Indeed, IAS 39 includes a proposal which gives institutions the possibility to irrevocably apply fair valuations to any financial instrument at inception – the so-called “fair value option”.<sup>32</sup>

An important improvement of IAS 39 relates to the issue of the comprehensiveness of financial accounts, since these should provide a complete picture of the reporting company. One of the key areas in which the proposals of the IASB provide a significant improvement over the CAF regime is the recognition on the balance sheet of business that is now recorded only off-balance sheet, in particular derivatives transactions. There is an increasing awareness that the risk exposures of financial intermediaries cannot be appropriately assessed in the absence of reliable and comparable information on derivatives business. It is now well known that derivative contracts can be used not only to hedge risks but also to increase leverage, and the resulting increase in risk needs to be appropriately recognised on the balance sheet (see Box 7). Furthermore, the increased recourse to credit risk transfers has raised questions as to the effective redistribution of risks throughout the financial system.

A mixed accounting framework introduces artificial volatility in reported earnings that only incompletely reflects the economic hedging strategies of the reporting company and thus would not mirror the overall reduction in the risk exposure. Under FFVA, hedging activities would not represent a particular problem, as both the hedged and the hedging instruments would be fair valued. Changes in opposite directions would be automatically offset and

only the net change in value would be reflected in the P&L. However, under the present mixed system a problem arises, as derivative instruments are commonly used to hedge risks stemming from assets and liabilities that are valued at their historical values. Hence, in the absence of specific treatment, changes in the relevant risk factor would only be reflected in the value of the derivative, which would be fair valued, and not in the hedged instrument. This would introduce artificial volatility in bank profits. In addition, it would not reflect the risk management tools that are applied by banks and would fail to provide a clear and consistent picture of the risks involved.

Hence, a specific accounting treatment – “hedge accounting” – was devised in order to address this issue. Hedge accounting either defers or brings forward the recognition of gains and losses in the profit and loss account so that the gain or loss from the hedged instrument is recognised at the same time as the offsetting gain or loss from the hedging instrument.

In this context, IAS 39 defines two types of hedges, the fair value hedge, which protects against fluctuations in the value of balance sheet items, and the cash flow hedge, which protects future revenues or transactions. Changes in value of fair value hedges must be recognised in the income statement for both the hedged item and the hedging instrument, while changes in value of cash flow hedges, concerning the hedging instrument only, are taken to equity.

Initially, the IASB envisaged the application of fair value hedge accounting only at the micro level (i.e. instrument by instrument). In response to concerns of the banking industry, however, amendments were proposed in August 2003 to allow for fair value hedge accounting for portfolio hedges of interest rate risk (so-

<sup>32</sup> It should be noted, however, that the IASB is currently revising this standard in order to introduce a confined application of the fair value option to a specific set of financial instruments. On 21 April 2004, the IASB issued an “Exposure Draft of proposed amendments to IAS 39 Financial Instruments: Recognition and measurement the fair value option”, with a 90 day current period.

## Box 7

### THE POTENTIAL IMPACT OF OFF-BALANCE-SHEET ITEMS ON INTEREST RATE RISK EXPOSURES: AN EXAMPLE FROM BELGIUM

The figure below represents the report in which the assets and liabilities of all Belgian banks have been assigned to ten different time bands according to their remaining time-to-repricing (December 2003, source: Belgian Prudential Regulatory Scheme A, Banking and Finance Commission).

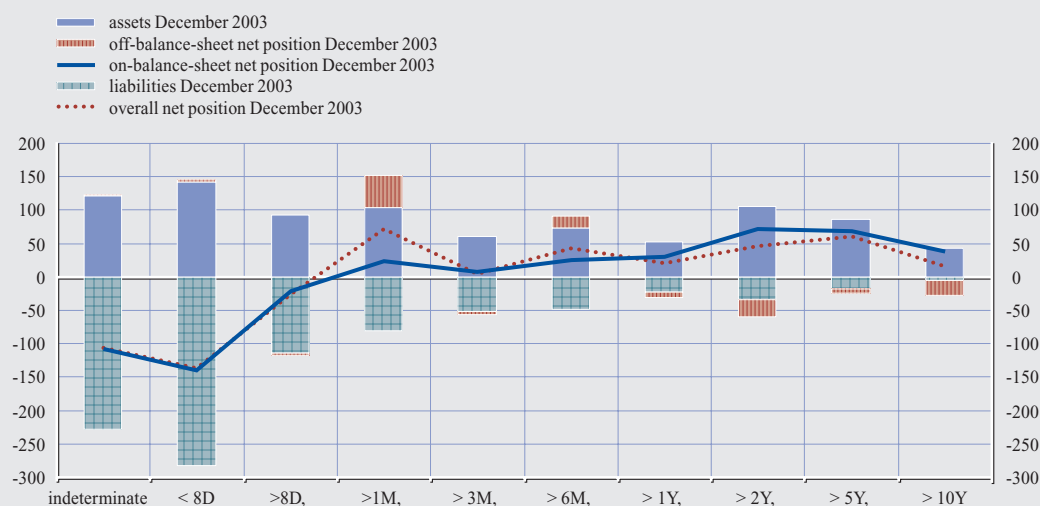
When restricting our attention to on-balance-sheet assets and liabilities only, we observe that net assets are typically negative at the short end and positive at the long end, implying that Belgian banks act as maturity and liquidity transformers.

When we take the net off-balance-sheet positions into account (e.g., options, forward rate agreements, interest rate swaps), we conclude that the total net exposure of banks across time-to-repricing time bands is affected. The effect over different time bands varies greatly. In particular, net off-balance-sheet positions seem to partially reduce all time band imbalances that exist at the long end of the time-to-repricing curve. While the impact is not extremely large, it should be noted that these are total mismatches over all Belgian banks, and the effects might be more significant were we to focus on an individual bank. At the short end, the impact is less consistent, although off-balance-sheet net positions can clearly be seen to increase the imbalance in time band “1 to 3 months”.

Of course, the figure below only yields a first-order approximation of the impact of off-balance-sheet instruments on the interest rate risk exposure. More specifically, the exercise might be sensitive to underlying assumptions and data limitations. First, the time band data does not

#### On- and off-balance sheet positions according to the residual term to the next interest rate review date

(EUR billions)





make it possible to distinguish between trading and banking book positions. Second, imbalances within a given time band do not surface. Third, the positions are reported on a solo basis, meaning that the consolidated balance sheet might look different. Fourth, option positions are included at their delta value. Fifth, savings deposits may be assigned to certain time bands according to their effective or behavioural maturity, instead of being classified into the indeterminate time band. Sixth, all positions in foreign currencies were converted into euro and added up (without allowing for compensations). Seventh, options risks in savings deposits and prepayment risks in loans are not taken into account.

called “macro-hedges”), which would move closer to banks’ prevailing risk management practices. Indeed, in most European countries this management technique is used as a basis for the hedging accounting treatment, allowing the bank to recognise the effect of this technique in the accounts.

IAS 39 also stipulates that derivative instruments may be used as hedging instruments, and requires all derivative financial instruments to be measured at fair value. The application of these measurement rules leads to differences in treatment depending on the nature of the financial instrument as opposed to management intent. In addition, the choice between using a fair value hedge and a cash flow hedge in economically equivalent situations would render very different impacts on net income or equity.

The accounting treatment of banks’ management of interest rate risk that involves

macro-hedges needs further consideration. In economic terms, it does not matter whether a derivative instrument is considered a fair value hedge or a cash flow hedge, while IAS 39 imposes different requirements for the recognition under the two types of hedge accounting. Concerns have been raised that portfolio hedging strategies, which form part of banks’ risk management strategies, would either be not at all recognised in hedge accounting, thus giving rise to volatile P&L statements, or would only qualify for cash flow hedge accounting. Cash flow portfolio hedge accounting requires banks to measure the hedging instrument (the financial derivative) at fair value, with resulting changes in its value debited or credited in equity. Through time this equity item will be gradually recycled in P&L. Hence, this accounting treatment results in increasingly volatile equity positions. Some banks expressed their concern that cash flow hedging would generate “artificial volatility” in equity (see Box 8).

#### Box 8

##### CASH FLOW HEDGE VERSUS FAIR VALUE HEDGE: IMPACT ON THE BALANCE SHEET

The following example provides a comparison of the potentially differing impacts of applying cash flow hedge accounting treatment or fair value hedge accounting treatment. The example uses a simplified balance sheet. The following additional assumptions were made:

- concerning the contractual maturities and repricing dates schedule. Period 2 is three years (duration 2.5) and Period 3 is five years (duration 4.5);
- all deposits are demand deposits, reimbursed on demand or in a brief period of time and have the following expected (behavioural) maturities: 800 for period 1; 1,100 for period 2 and 5,600 for period 3;

- demand deposits bear a 0% interest rate;
- hedging instruments are financial derivatives which constitute a perfect hedge;
- the entity successively invests the amounts of demand deposits at a short-term horizon with short-term interest rates.

**Table A Balance sheet with contractual maturities**

Balance sheet		Contractual maturities		
		Period 1	Period 2	Period 3
Loans to customers				
Short-term	3,500	3,500		
Medium & long-term - variable rate	1,750	300	300	1,150
Medium & long-term - fixed rate	1,750	500	300	950
Mortgage loans	3,000	300	300	2,400
	10,000	5,550	900	3,550
Deposits				
Interbank lending	7,500	7,500		
Equity (capital+ reserves)	1,500	1,500		
	1,000	1,000		
	10,000	9,000	0	1,000

Note: Figures in euro.

It should be noted that the IASB has established that demand deposits cannot qualify for fair value hedge accounting beyond the shortest period in which the counterparty can demand payment. Demand deposits constitute a significant part of banks' liabilities, usually bearing a null or a very low interest rate, which can be considered as a fixed rate.

Many banks manage interest rate risk by referring to behavioural maturities. In the following table the assets and liabilities are set in the timing schedule according to their expected maturities, which is relevant for risk management purposes. In this example, the timing of the deposits has been modified. Indeed, while individual demand deposits are seemingly very volatile, taken aggregately they have historically proved to be fairly stable.

**Table B Balance sheet with expected maturities**

Balance sheet		Expected maturities		
		Period 1	Period 2	Period 3
Loans to customers				
Short-term	3,500	3,500		
Medium & long-term – variable rate	1,750	300	300	1,150
Medium & long-term – fixed rate	1,750	500	300	950
Mortgage loans – fixed	3,000	300	300	2,400
	10,000	4,600	900	4,500
Deposits				
Interbank lending	7,500	800	1,100	5,600
Equity (capital + reserves)	1,500	1,500		
	1,000			1,000
	10,000	2,500	1,100	6,600

Note: Figures in euro.

Demand deposits create risk for the interest rate margin. The interest rate margin would fluctuate between the short rate market rates and a fixed rate, thus resulting in exposure to interest rate risk. In order to hedge this risk, banks enter into swaps paying the short-term floating rate and receiving the fixed rate.

As can be seen in the preceding table, the bank is liability-sensitive in Periods 2 and 3. According to the IAS 39 framework, hedging of net risk positions is not allowed. To hedge the interest rate margin risk resulting from demand deposits it is assumed that the bank will enter into two swaps of 1,100 and 5,600. The swaps are only recorded off-balance sheet at inception and have nil value.

If, subsequently, interest rates increase by 100 basis points, the fair value of the swaps would change as follows:

Period 2 swap: 27.5 (1,100\*0.01\*2.5)

Period 3 swap: 252.0 (5,600\*0.01\*4.5)

#### Recognition under cash flow hedge accounting:

The hedging instrument is measured at fair value, and changes are recognised in equity. Hence, with the changes in interest rates the change in fair value of the swap is recognised along with the consequent accounting loss recognised in equity. The balance sheet would be as follows:

**Table C Impact on the balance sheet from the cash flow hedge**

Balance sheet		Cash-flow hedge (CFH)
Loans to customers		
Short-term	3,500.0	
Medium & long-term – variable rate	1,750.0	
Medium & long-term – fixed rate	1,750.0	
	3,000.0	
Total assets	10,000.0	
Deposits	7,500.0	
Interbank lending	1,500.0	
Swap – Period 2		27.5
Swap – Period 3		252.0
<b>Equity (capital + reserves)</b>	<b>1,000.0</b>	<b>720.5</b>
of which:		
Initial equity		1,000.0
Other comprehensive income – Swap – Period 2		-27.5
Other comprehensive income – Swap – Period 3		-252.0
<b>P&amp;L (Net income)</b>		<b>0.0</b>
Total liabilities & equity	10,000.0	
<b>Impact on equity</b>		<b>-28.0%</b>
<b>Impact on P&amp;L</b>		<b>0.0%</b>

In this situation, the increase in interest rates of 100 basis points would reduce equity by almost 30%.

Any accounting rules that result in volatile equity positions in banks should be carefully considered. Market price volatility may feed into volatile equity positions, which may trigger supervisory action if minimum requirements are not met. In case of temporary price movements, such consequences of accounting rules for banking supervision might have a pro-cyclical effect in that market volatility and supervisory action would be linked in an automatic way. This would clearly be undesirable.

The main concern about the new proposals on macro-hedge accounting relates to the treatment of demand deposits.<sup>33</sup> Indeed the proposed new accounting rules on macro-hedging do not allow demand deposits to qualify for fair value hedge accounting. Clearly, for depositors the value of demand deposits is the nominal value. However, the behavioural maturity of core deposits differs from their contractual maturity and banks tend to take this into consideration in their risk management practices. Even though sight deposits are redeemable on demand, they are typically stable liabilities under a “going concern” scenario. The liquidity transformation role of banks stems from their ability to collect funds from a very disparate set of savers. This minimises the likelihood of a sudden and contemporaneous withdrawal of funds, which would only arise in the event of panic or systemic crises. The latter are normally addressed by other tools (including deposit insurance and emergency liquidity assistance), which make it possible to “lock in” the funds in illiquid investments. In the management of interest rate risk, therefore, banks tend to use behavioural maturities for deposits, in order to hedge only the residual risk. Of course this does not mean that banks should be left with absolute discretion in their decisions on the maturity allocation of deposits. Some criteria, consistent across credit institutions, would need to be developed. In this respect, convergence would best be achieved between the supervisory principles for the management of interest rate risk and the criteria defined by accounting standard-setters. Cooperation between the IASB and the Basel Committee on

Banking Supervision could appropriately lead in this direction.

It is frequently argued that the introduction in the US of accounting principles akin to those embedded in IAS 39 has not created major problems. However, the greater relevance of demand deposits in the EU vis-à-vis the US (see Box 9) suggests that the effect on EU banks’ practices merits further consideration.

The draft of IAS 39 also introduced an option enabling any financial instrument to be designated at origination for measurement at fair value. The introduction of the fair value option does not seem justified purely on transparency grounds. First, no mechanism is foreseen in the draft exposure to ensure that fair values are reliably measured. The total freedom left to financial intermediaries to choose which instruments to fair value, coupled with the lack of oversight on the valuation models adopted, would adversely affect the information content of financial statements. Second, because of the unreliability of fair values as well as the very fact that not all institutions would use fair valuations – for a limited and heterogeneous set of instruments – the comparability of balance-sheet information across financial institutions could be severely jeopardised. Moreover, from a broader perspective, comparability at the international level could also be compromised, as there is no such option available under US GAAP. From the financial stability viewpoint, the implications of the fair value option depend on the extent to which the option would be used. The absence of any control over the process must be of concern, as some banks may be pressed by institutional investors, rating agencies and market analysts to gradually extend the area of instruments to be fair valued, and this could lead other banks to follow suit. The move towards FFVA could therefore proceed unchecked, driven by agents that are not best placed to fully appreciate the

<sup>33</sup> Deposits can only qualify for fair value hedge accounting beyond the shortest period in which the counterparty can demand payment.

## Box 9

**STRUCTURAL DIFFERENCES BETWEEN THE US AND EU BANKING SECTORS<sup>1</sup>**

Underlying structural differences between the US and European banking sectors have influenced the current debate regarding the new accounting rules set forth in IAS 39, namely pertaining to the wider application of fair values and the treatment of demand deposits.

First, the US financial system can be characterised as market-based, while the EU is more bank-based. Indeed, the total lending business of deposit-taking banks ascends to about 130% of GDP in Europe, while it represents merely 20% of US GDP. Thus, lending is more important for European banks and one of the major limitations of applying fair value accounting is the lack of reliability of loan valuations. Moreover, while in the euro area the total size of the equity and bond market is roughly comparable to the amount of deposits, it is eight times larger in the United States. Considerable core demand deposits exist and are a fundamental characteristic of the European banking sector. These deposits remain on the balance sheet for longer periods, even when they are legally available to the depositors on demand or at very short notice. They are in this sense equivalent to long-term savings and are treated as such by banks, in accordance with sound interest rate risk management techniques as explained in the consultative document of the Basel Committee Principles for the Management and Supervision of Interest Rate Risk.

Second, the rate of savings is relatively low in the United States, not exceeding 3%, while it fluctuates around 12% in Europe. The savings market is also more disintermediated in the United States than in Europe. Indeed, Americans invest their savings in stocks and mutual funds while Europeans visit their banks to invest in fixed-income products (savings accounts and long-term certificates of deposits). This explains why European banks have extra resources. This surplus, which is much larger than for American banks, is mostly reinvested in bonds. Therefore, European banks are more vulnerable than American banks to the use of market values to assess their investment portfolios. The securities/equity ratio is around 200% for the five major US deposit banks, while it fluctuates between 600% and 1,200% for several European banks.

Fourth, other differences between the EU and US banking sectors include the average duration of the loan book, assets books and the degree of securitisation. In this respect, European banks' balance sheets are more interest rate-sensitive than those of their American counterparts.

<sup>1</sup> Bikker, J.A. and Wesseling, A.A.T., "Intermediatie, integratie en internationalisering: een overzicht van het Europese bankwezen" (Intermediation, integration, and internationalisation: an overview of the European banking system), De Nederlandsche Bank, Monthly Economic Bulletin, 67, 2003.

potentially adverse implications from a financial stability perspective.

## 6.2 SUPERVISORY CONCERNS

Several supervisory concerns have been expressed with reference to the introduction of FFVA for banks. Many of the points raised relate to the concerns that the volatility of bank income might increase substantially, a point that has also been discussed in previous sections. Furthermore, the following additional concerns of supervisors should be mentioned.

The first refers to *the compatibility of FFVA with dynamic provisioning*. Some supervisory authorities have recently introduced or are considering introducing *regulations on dynamic (or statistical) provisioning, which would be determined in accordance with statistically expected losses as opposed to the incurred loss model. The objective is to reduce the cyclicity of loan loss provisions by way of timelier provisioning when credit quality deteriorates*. This approach gradually recognises the increase in risk and spreads the cost over a longer period, thus cushioning the impact from loan impairment losses that are recognised in a single accounting period.

The compatibility of such a supervisory approach with FFVA – which in principle would eliminate any need for specific provisions as it already embodies expected losses in the definition of expected cash flows – is not clear. However, more forward-looking provisioning seems to be compatible with the current text of IAS 39.<sup>34</sup>

The second concern directly relates to the issue of *compatibility* between the accounting treatment and the supervisory requirements on capital adequacy being defined in the New Basel Accord. This issue is, of course, essential as risk management systems in place for reporting purposes should be deemed appropriate from a supervisor's point of view. Furthermore, misalignments between the two approaches

would determine the need for banks to run parallel reporting systems, unduly increasing compliance costs. The Basel Committee on Banking Supervision has started a dialogue with the IASB on this topic.

Moreover, this compatibility issue with the New Basel Accord raises an additional concern from a financial stability perspective. The almost contemporaneous implementation of the new capital requirements and of FFVA, at least for some items, might lead to a *cumulative procyclical effect*. Several commentators on the New Basel Accord, including the ECB, have stressed that the increased risk-sensitivity of the new framework may cause capital requirements to become binding during downturns, with an adverse effect on the banks' willingness to lend that may contribute to further postponing economic recovery. If the increase in credit risk is also coupled with a downward correction in asset prices, banks that are requested to apply FFVA more extensively may be subject to a double squeeze, as the capital requirement would increase while the profits would be pushed downwards on account of the valuation effect. This interaction should be studied in greater depth before the finalisation of the two reforms, in order to identify possible solutions.

Last but not least, a point that ranks high among supervisory concerns is the treatment of *own credit risk*. Under FFVA a decline in the creditworthiness of a bank would translate into a requirement for higher risk spreads by the investor. If the bank is asked to discount its liabilities using its current funding rate, which seems to be the preferred solution of accounting standard-setters, a higher risk margin determines a lower present (or fair) value. Since this lower value is on the liabilities side of the balance sheet, this translates in the P&L account into a profit that, if not distributed, is added to equity reserves (assuming assets constant). Supervisors find it counter-intuitive that a

<sup>34</sup> Matherat, S., 2003, "International accounting standardisation and financial stability", Financial Stability Review, Banque de France, June, pp. 132-153.



decline in the creditworthiness of the bank would translate into a profit and add up to capital, thus allowing for a further expansion of lending. The approach of standard-setters is correct as long as things are viewed from the shareholders' perspective or in the event of a bankruptcy or failure. Indeed, under limited liability an increase in the default risk increases the value of the shareholders' put option. However, it takes no account of the creditors, who would be negatively affected by such a development. Again, we find here a clear example of the net asset value approach followed by proponents of FFVA. In this case, however, the final outcome is particularly striking, as banks are by their very nature institutions operating with a high leverage, and an accounting approach that disregards creditors' concerns would be particularly difficult to accept. It would certainly clash with the supervisory assessment of banks, as supervisors would never recognise as regulatory capital the reserves created by a revaluation of liabilities arising out of diminished creditworthiness. On the other hand, the application of FFVA to own credit risk would discourage sound risk management given that an upgrade in a credit rating would result in the recognition of a loss. An additional, more technical observation relates to the composition of own funds, as changes in own credit risk could translate into a swap between tier 1 and tier 2 capital.<sup>35</sup> Moreover, the bank might be under increasing pressure to distribute profits whereas the loss would have to be booked directly to equity reserves, hence reducing with full effect tier 1.

### 6.3 STATISTICAL CONCERNS

The statistical experts of the Eurosystem assessed the possible implications of IAS on the statistical requirements of the ECB, including the statistical requirements related to financial stability.

In terms of the recognition and measurement of financial instruments, there appears to be a

reasonably close correspondence between IAS and the requirements for Money and Banking Statistics (MBS) with regard to securities and derivatives. However, the possible extension of the application of FFVA to non-negotiable financial instruments in the form of loans and deposits would be contrary to the currently applicable principle that these instruments be recorded at nominal value in the statistical balance sheet.

Users of the MBS seek to maintain loans/deposits at nominal value. Nevertheless, they have also expressed an interest in receiving data on a fair value basis for banking analysis, whilst acknowledging the subordinate status of the requirement and the potential costs of providing data on a dual valuation basis.

As a response to IAS 39, there is the intention to change the ECB reporting requirements by either imposing the reporting of nominal values for stocks of loans and deposits or by extending the requirement for flow adjustments to also cover the revaluation of loans and deposits.

For the purposes of external statistics, euro area financial accounts and government finance statistics, it is expected that the IAS will improve the overall data quality. However, the wider use of FFVA could create inconsistencies among statistics. Whereas the European System of Accounts (ESA 95) currently requires nominal values for deposits and loans, corporations complying with the IAS will report data on loans and deposits on a fair-value basis and this could create some consistency problems in the future, e.g. in the reconciliation between MBS and Balance of Payments statistics and for the presentation of financial accounts statistics.

Of particular concern is the possibility that in the EU listed companies could be permitted or required to apply the IAS in their individual accounts while non-listed companies could be

<sup>35</sup> For example, a reduction in the value of subordinated debt included in tier 2 would be transferred as a "revaluation gain" to tier 1.

permitted or required to maintain the CAF. Differences in the approaches taken by Member States and the diversity in timing of implementation at national level may have a disruptive impact on the quality of euro area statistics. Moreover, FFVA raises the more general concerns of comparability of statistics based on valuation criteria that are subject to discretionary variables.

Finally, it should be stressed that to the extent that financial reporting requirements diverge from supervisory and statistical reporting requirements, FFVA runs counter to the ECB objective, and that of the European Commission, to streamline the overall reporting requirements of European companies.

## 7 CONCLUSIONS

The analysis conducted in this paper should be seen as a first step in a very complex issue that requires significant additional research and careful consideration of the policy options. Although this analysis must be developed further, some tentative conclusions can nevertheless be drawn.

The analysis confirms the concerns that the potential *wider application of fair values* could unduly increase the *volatility* of banks' balance sheets, possibly reducing their ability to react to adverse shocks. Indeed, for assets and liabilities held to maturity, the resulting volatility from the introduction of increased fair values is purely artificial and ultimately misleading given that, irrespective of the interim fluctuations, the values will converge to the same result as under the CAF.

Furthermore, the pro-cyclicality of bank lending could be enhanced, especially if the extension of fair values occurs with approximately the same timing as the New Basel Accord. In fact, in the presence of shocks embodying a significant price component, such as an interest rate shock, a real estate crisis or a stock market crash, the immediate recognition of unrealised value changes under fair value accounting might aggravate the effects of the shock. Banks may be encouraged to react by panic selling and tightening lending standards, thus contributing to a further deepening of the crisis.

Increased use of fair values may also embody incentives for banks to modify their portfolio mix in a direction that may move them away from their traditional liquidity transformation role, thus reducing their contribution to intertemporal smoothing. Notwithstanding that the use of fair values may support increased recourse to securitisation (and other risk-transfer instruments), thus distributing risks more evenly throughout the economy, the shock-absorbing features of the financial system might be lost. Indeed, once a systemic disturbance unfolds, its macroeconomic effects are likely to be more direct and severe.

Relevant *supervisory concerns* are such that further work and adjustments are called for in the current proposals of accounting standard-setters (although the issue is not a move towards FFVA, but encompasses a wider application of fair values). The elaboration of accounting standards should aim at achieving consistency with internationally agreed prudential standards, by recognising sound risk management techniques. In this context, major areas of divergence remain, namely with regard to the treatment of *own credit risk*. From a supervisory perspective it does not seem reasonable to accept an accounting treatment of bank's liabilities that would generate profits and possibly an increase of regulatory capital due to a deterioration of the bank's creditworthiness. Moreover, the aim of achieving consistency is also important from an efficiency standpoint. If accounting and prudential requirements diverge, and possibly also move away from sound internal risk management practices adopted by banks, the *compliance burden* for credit institutions would be unduly inflated. Consistency with statistical requirements for monetary policy purposes should also be considered more thoroughly. Indeed, there is the risk that the very same transaction would have to be recorded using three or four different valuation criteria, thereby increasing the reporting burden of banks.

The debate on *macro-hedging* mirrors the difficulty of achieving a common understanding between accounting standard-setters and the industry. Although the new draft of IAS 39 recognises portfolio hedging of interest rate risk and is considered an improvement with respect to previous versions of the standard, it still falls short of properly acknowledging sound risk management practices followed by banks and supported by supervisors. One of the main concerns put forward relates to the treatment of demand deposits. In particular, the behavioural maturity of core demand deposits differs from the contractual one, and banks take this into account in their asset and liability management practices. This seems sensible, as banks collect savings from disparate depositors

and a sudden and contemporaneous withdrawal of funds is highly unlikely, which allows banks to engage in their typical liquidity and maturity transformation function. While it is advisable that accounting standards be aligned with best practices in risk management, it is understandable that some limits need to be placed on bank discretion in the allocation of deposits in maturity bands. In this context, supervisory principles thus far developed could provide relevant guidance, once again stressing the benefits of closer coordination between accounting standard-setters and supervisors.

The *empirical results* of the investigation conducted on share prices seem to indicate that, by and large, the introduction of FFVA standards had no significant impact on volatility. The results, however, need to be interpreted with caution for several reasons and call for further research. First, the choice of the cut-off dates on which banks changed from one accounting standard to the other is far from clear-cut. Second, towards the end of the 1980s and in the early 1990s, the relative weight of the trading book – to which the FFVA standard applied – vis-à-vis the overall stream of income was relatively modest.

Conversely, however, market discipline may be significantly hampered by reliability and data comparability issues. Indeed, the *reliability* of fair values for several financial instruments is highly questionable. In particular, market credit spreads or internal models still seem to deliver large and varied outcomes for instruments with comparable risk features. The information content of balance-sheet data could be adversely affected. Furthermore, given the proliferation of different internal valuation models, the *comparability* of balance-sheet data across financial institutions could be severely jeopardised. Therefore, for the market to be in a position to reap the benefits resulting from the introduction of fair values, the existence of deep and liquid markets and the use of generally accepted models are considered an important prerequisite.

Another important feature that the analysis undertaken has revealed is the added value gained from using FFVA for the treatment of credit risk when compared to the CAF and backward-looking *provisioning*. In fact, provisioning tends to be backward-looking in the EU, since in several Member States accounting rules compel banks to put aside loan-loss provisions only when the losses have already materialised. As a result, provisioning practices tend to have a pro-cyclical impact, as prudent provisioning does not constrain lending behaviour in the upper part of the cycle and a major correction usually occurs when the economy enters into recession, with the result that lending standards are further tightened. In this context, the concern of accounting standard-setters to limit the ability of managers to manipulate the P&L by means of opaque provisioning practices is understandable.

However, the analysis provided some reassuring elements, not least from a financial stability perspective. FFVA would introduce forward-looking elements in the valuation of credit risk and would allow for a timelier recognition of the deterioration in asset quality. This indication is conditional on the quality of banks' internal ratings systems and credit risk models, which is not yet satisfactory. Nevertheless, it is acknowledged that credit risk models will develop, driven also by changes under way in the supervisory approach to credit risk, and they will be increasingly used for the pricing of loans. Supervisors will validate these valuations and there seems to be no strong argument against reflecting such information in the financial statements in order to provide bank stakeholders with a more precise picture of their bank's quality, thus supporting market discipline.

It should be emphasised that the analysis has shown that the benefits of the forward-looking elements of FFVA can also be achieved by complementing the CAF with a forward-looking provisioning system, which would be currently more favourable from a financial stability point of view.

An increasing reliance on fair values would also pave the way for financial statements properly accounting for derivatives transactions, thus amending a major element of opaqueness in the financial system that is presently hindering a proper understanding of the real distribution of risks to both market participants and public authorities. This is an element that should be strongly supported by the central banking and supervisory community.

*In any case*, the outcome of the analysis undertaken and the results presented in this report clearly identify grounds for concern from a financial stability point of view regarding the transition from the CAF to a wider application of fair values, in particular by means of a general option for financial institutions to measure at fair value any financial instrument. As the changes may have a significant impact on income volatility and pro-cyclicality, it cannot be ruled out that a systemic disturbance hitting the banking sector during the transition could be unduly amplified. As a matter of fact, systemic crises in the past were frequently associated with significant reforms, liberalising markets and a change in the environment in which banks operated.<sup>36</sup> The transition to the new regime might be accompanied by significant structural changes in bank behaviour that are very difficult to foresee, and hence some of the effects presented in this analysis may not materialise. Nevertheless, the issues raised are too important to be neglected and should be addressed in a pre-emptive manner.

<sup>36</sup> Goldstein, M. and Turner, P., "Banking Crisis in Emerging Economies: Origins and Policy Options", BIS Economic Papers No 46, pp. 17-18, Bank for International Settlements, October 1996.

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