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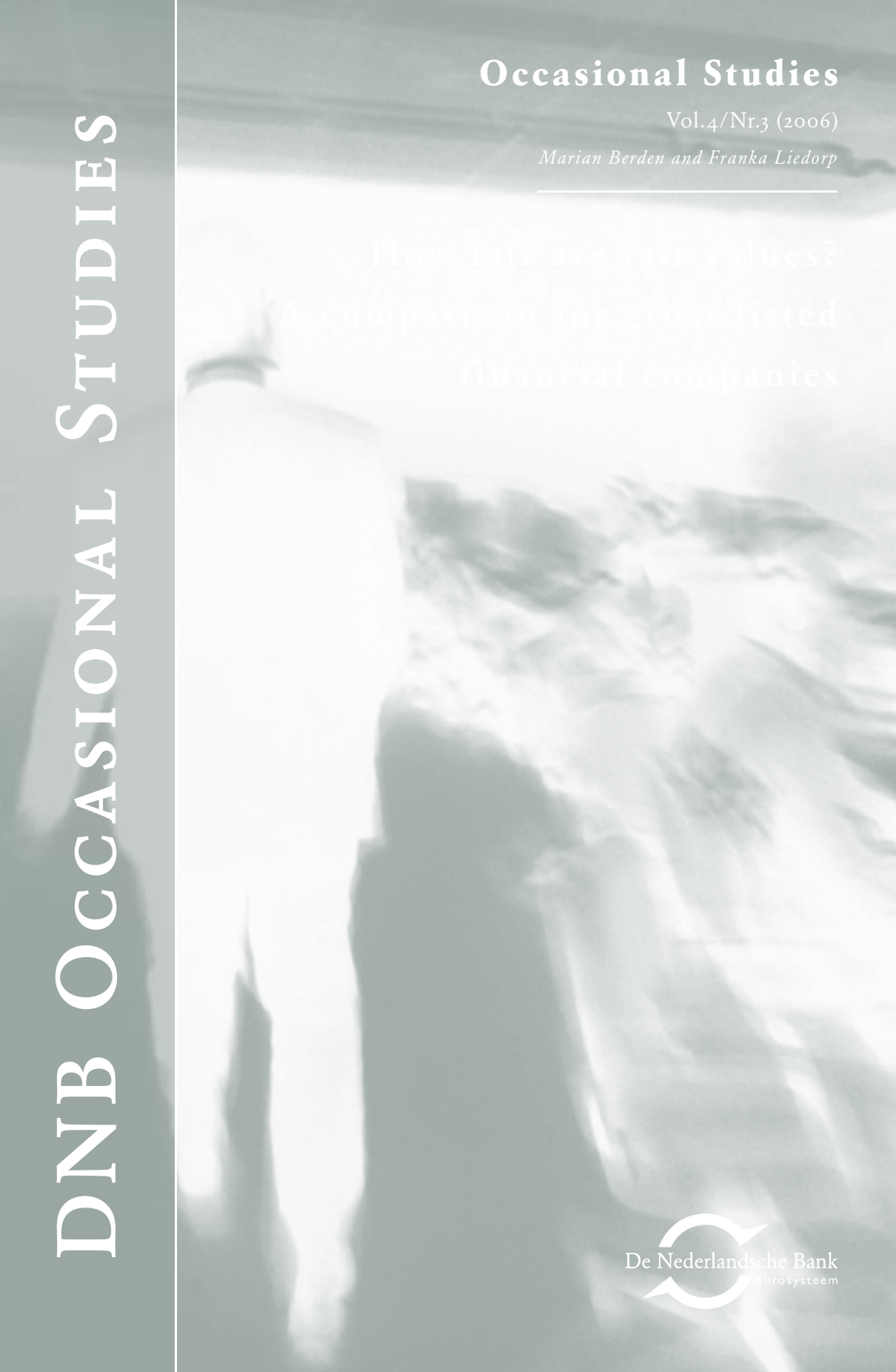

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How fair are fair values? A comparison for cross-listed financial companies

Marian Berden[1] and Franka Liedorp[2]

Abstract

Fair value accounting and IAS 39 are at the core of a debate between regulators, institutions and supervisors. We add to this debate at a conceptual and empirical level. First we discuss the advantages and disadvantages of fair values for banks and insurance companies. Then we explore the differences between fair values and book values and the implications thereof based on a group of institutions with a listing on a stock exchange in both the home country (on book value) and the US (on fair value). We find that the initial impact of using fair values can be large and that reported income fluctuates more. However, we do not find an increase in volatility of institutions 'total assets or shareholders' equity, implying that the solvency ratio of institutions remains largely unaffected.

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Corresponding author: F.R.Liedorp@dnb.nl. The views expressed in this paper are the authors' own and do not necessarily represent those of de Nederlandsche Bank. We would like to thank Jaap Bikker, Kees Camfferman, Michael Dobbyn, Maarten Gelderman, Aerdt Houben, Jan Kakes, Klaas Knot, Bernie Komduur and two anonymous referees for useful comments and suggestions.

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Executive summary

One of the major drawbacks of fair value accounting is an expected increase in (artificial) volatility of income and equity of financial institutions. Especially for long-term assets and liabilities, which are sensitive to changes in market values such as the interest rate, the use of fair value is considered by many as irrelevant. Next to that, it is argued that the standards for fair value accounting and especially for hedge accounting are not able to provide a good and reliable view of the activities of financial institutions. On the other hand, fair values are viewed by others as providing more (relevant) information to the market. It is not clear whether an increase in information disclosure outweighs the increase in volatility.

An analysis of the differences between book values and fair values based on data of 14 financial European institutions with a listing on a stock exchange in both the home country and the US, shows that a change to fair values leads to a considerable revaluation in terms of shareholders' equity. However, the size of this revaluation differs per institution and per year. From this, it becomes clear that a change to fair value has different impacts on different sectors and institutions. The main source of this difference lies in the revaluation of deposits, loans and securities. For bank oriented institutions, the former two are the most important, while the latter is most important for insurance oriented institutions. One could view these differences though also as the result of the different accounting regimes used in different countries. In that sense, fair value accounting removes these differences, making accounts more comparable. Volatility related to the use of fair values is mainly reflected in the net income of an institution; and affects total assets and shareholders' equity to a lesser extent only. This implies that the solvency ratio of institutions remains largely unaffected. However, again large differences exist between institutions and over time. Finally, it is not found that fair values provide more information to financial markets.

The success of IAS 39 and fair values depends heavily on the way financial markets (and supervisors) will interpret the annual accounts of an institution. Volatility in the income of financial institutions will be strongly related to risk management practises (i.e. the use of hedge accounting) and also to the use of the fair value option. Analysts and investors need to be aware of these effects. If financial markets are able to interpret the information contained in annual accounts properly, the

use of fair values should not pose a problem. Thus, investors should not take just increased volatility in income into account, but should understand the underlying factors that cause this volatility. In other words, investors and analysts should look at the fundamentals of an institution.

1 Introduction

Until recently, accounting standards varied considerably between countries, as every country formulated its own rules. By contrast, capital markets are liberalised and internationally integrated. Because of this, institutions, investors and other market participants will benefit if annual accounts are based on similar accounting standards (see box 1). The International Accounting Standards Board (IASB) aims to harmonise financial reporting standards and to align the information from annual accounts with market developments. To this end, the Board issues International Financial Reporting Standards (IFRS) and amended International Accounting Standards (IAS).

In the new accounting rules (IAS/IFRS), which are of force in the EU as of January 1, 2005 for institutions listed on a European stock exchange, a prominent place is reserved for IAS 39: the standard covering the valuation of financial instruments. Following IAS 39, many financial instruments will, at least initially, be valued at fair value. Changes in fair values have to be accounted for in the income statement or in equity. This standard has a major impact on financial institutions' reporting since the largest part of their balance sheet consists of financial assets and liabilities. Financial institutions however generally view (an increase in) the use of fair values with scepticism. This reflects their expectation that fair value accounting will lead to more volatile income and equity, as well as the uncertainty regarding the reaction of investors and supervisors to this increased volatility. But other issues also play a role in the debate about the merits of fair value accounting. For example, fair value accounting may lead banks to supply less long-term loans, since such loans would be an important source of volatility. It is also questioned to what extent fair values can be measured, since active and liquid markets do not exist for all financial products. Fair values, though providing recent and relevant information, may furthermore lead to complex accounts which are difficult to interpret. This may also be the case though for traditional accounting standards. In sum, an increasing use of fair values raises several intriguing questions.

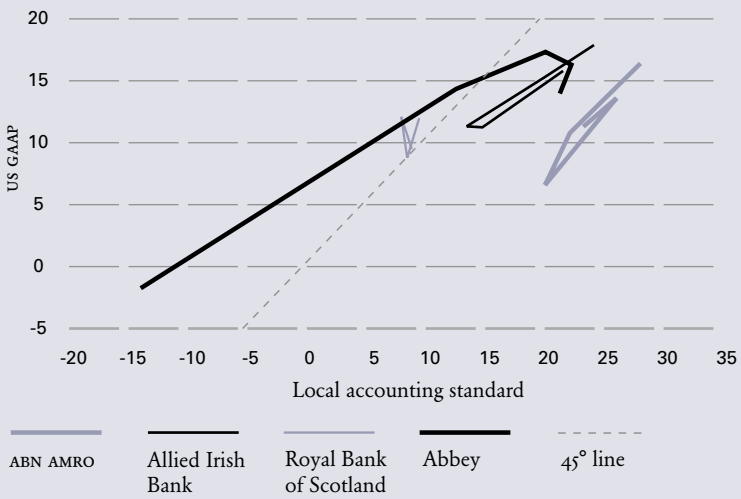
In this paper we discuss fair value accounting at a conceptual and empirical level. In Section 2.1 we explore the concept of fair values, while the advantages and disadvantages of fair value accounting are presented in Section 2.2. The specific implications for banks and insurance companies are discussed in Sections 2.3 and 2.4 respectively. In Section 3 we address the effects on volatility and the informational content of fair values for the annual accounts of several European financial

institutions. Section 3.1 describes the data, Section 3.2 examines any difference between book and fair values, while the effects on volatility and information disclosure are presented in Sections 3.3 and 3.4. Section 4 concludes.

Box 1 profitability under different accounting regimes

One of the measures often used in assessing the performance of a company is *return on equity* (RoE). This ratio combines information from the balance sheet and the income statement, and provides a good measure of the profitability of a company and the efficiency with which resources have been used. Ideally, RoE should be equal under different accounting regimes.[1] The graph below compares the RoE under both US GAAP and local accounting standards for several European financial institutions over a number of consecutive years.[2]

Graph RoE under US GAAP and local accounting regimes



Source: Form 20-F (2000-2003) for ABN AMRO and Royal Bank of Scotland and 1999-2002 for Abbey and Allied Irish Banks.

It can be seen that the various accounting regimes lead to different outcomes: the curves do not match with the 45°-line. In most cases, RoE under local standards is higher than under US GAAP. This reduces transparency and may increase uncertainties in financial markets. Different ratios could be interpreted in different ways and might misrepresent the performance of a company.[3] Internationally harmonised accounting standards may solve this problem. On the other hand, the graph also shows that the ratios move more or less linearly. This implies that in both markets, performance is measured consistently, albeit in a different way.

2 Fair values

According to the IASB definition, a fair value is the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction. The latter implies it is not a forced or liquidation sale. In practice fair values are determined in different ways. The existence of an active and liquid market producing quoted market prices is important in that respect. These quoted prices determine the fair value of items for which such markets exist (i.e. mark-to-market). However, since active and liquid markets do not exist for all financial instruments, market values are not always the same as fair values. In the absence of such markets, observable prices in similar market transactions are used as proxies to determine fair values. If this is not possible either, valuation techniques, such as discounted cash flow analyses and option pricing models, are applied (i.e. mark-to-model). These techniques are based on a number of assumptions, for example regarding future cash flows, the time-value of money and other estimated contingencies, which may have implications for the reliability of the outcomes.

2.1 Factors influencing fair values

Since fair values are usually derived from financial markets, changes in fair values are generally caused by market factors. This section examines four factors that are likely to have a significant impact on the fair value of financial instruments: shifts of the yield curve, adjustments in equity prices, a deterioration of asset quality and a real estate crisis.

i) An upward (downward) shift of the yield curve causes a decrease (increase) in the value of long-term assets and liabilities with fixed interest rates, as the discounted value decreases. Next to the size of the shift of the yield curve, the total effect of this valuation change on the accounting books depends on the composition of the portfolio (maturity and fixed versus variable rate contracts), the extent to which risks are hedged and the correlation between hedging instruments and hedged items. The larger the hedged risks and the better the quality of the hedge (i.e. the higher the correlation), the smaller the effect on a financial institution's income or equity. Fair value accounting takes these effects directly into account. Under the old accounting framework, valuation changes resulting from downward interest rate changes, which increase fair values, are usually not recognised. A change in the

long-term interest rate, through a flatter or steeper yield curve, will mainly affect contracts with longer maturities. The impact, though smaller since contracts with short-term interest rates are not affected, is comparable: a lower long-term interest rate increases fair values, but is generally not recognised under the old accounting framework. A higher long-term interest rate decreases values both under fair value accounting as well as under the old accounting framework.

ii) Changes in equity prices are treated differently under fair value accounting and the old accounting framework. With fair value accounting, changes in share prices, even if unrealised, are recognised directly. However, the old accounting framework treats valuation changes asymmetrically. Under the LOCOM (lower-of-cost-or market) principle, only downward value changes are reported in the accounts. Increases in market value are not recognised. Therefore, increasing share prices are only taken into account under fair value accounting. The effect of downward value changes under fair value accounting and the old accounting framework depends on the holding period of the equities. Given the historical upward trend of stock prices, an institution may, under the old accounting framework, hold equities at a considerable lower value in its accounts than the market value of these equities (these unrealized gains are also called 'hidden reserves'). Depending on the size of these unrealised gains, even a decrease in market value of equities may not have any effect on the accounts under the old accounting framework.

iii) A decrease in the creditworthiness of bank's debtors generally leads to a decrease in value of the loan portfolio and debt securities. The calculated risk premiums on credit need to be raised in the new situation. The opposite occurs if the *own credit risk* of an institution increases: if the creditworthiness of the institution diminishes, the risk premium on its new borrowings increases, thereby reducing the market value of its debt. As a consequence, the institution can record a profit. This may give perverse incentives. The main difference between fair value accounting and the old framework is the timing of recognition of the effects. Under fair value accounting, a decrease in value is directly recognised and taken to the P&L account. By contrast, under the old framework, a change in value is only reported in the accounts in case of impairment (to which strict rules apply) of an asset and will a provision be created. Hence, fair value accounting has a more forward-looking character, yet volatility may increase.

iv) A real estate crisis leads to a decrease in both the value of collateral (which implies that the fair value of the credit attached to this collateral also diminishes) and the value of real estate investments of the institution. Often, a correction on the real estate market is accompanied by an interest rate increase and decreasing creditworthiness of borrowers. Such a correlation between risks amplifies effects. Under fair value accounting, these effects are recognised immediately. Under the old accounting rules, a change in value is only reported in case of actual impairment or default. Fair value accounting is hence more forward-looking, allowing for a more timely correction. However, it may also result in higher volatility.

All in all, fair value accounting can be characterised as more forward-looking as

value changes are recognised immediately. This may also increase volatility however. Obviously, the magnitude of the different effects depends on the composition of the balance sheet. Moreover, financial institutions will probably adjust their behaviour and risk management practices as a result of the new rules and their implications.

2.2 Fair value accounting: the debate

The use of fair value accounting is not without prejudice. There are many advocates and opponents. In this section, we give an overview of the main arguments in the discussion.

2.2.1 *Advantages*

The main advantages of the use of fair values are the improvement of the quantity and quality of disclosed information, the increase in transparency of financial statements and the possible development of markets for financial instruments.

Under fair value accounting, additional and more relevant information is disclosed in financial statements, which contributes to the working of financial markets by providing a greater flow of information. This is needed to guide market decisions and put investors in a position to readily identify a decrease in the soundness of a financial institution. The discipline exercised by informed and uninsured investors is complementary to supervisory control.[4] Moreover, the use of fair values diminishes the possibilities for manipulation and improves the transparency of financial institutions' operations by requiring the recognition of derivatives on the balance sheet. With markets for complex financial instruments growing rapidly in recent years, it is counter-intuitive that these instruments did not show up in a prominent place in the accounts yet. IAS 39 will facilitate the assessment of information disclosed in the accounts. This, together with the extra disclosure provided by fair values, will provide a better picture of the performance of an institution and improve the market's ability to price risks. Furthermore, volatility arising from the use of fair values does not necessarily have to be regarded as a negative signal. If risks are appropriately priced by the market, fair values in itself provide the most relevant information about risk management policies. Any resulting volatility is not (artificially) created; IAS 39 merely discloses it. Markets can then use this additional information which can provide an early warning for the build-up of excessive risks.[5] In addition, proponents of fair value accounting claim that it will lead to the improvement of markets for financial instruments. Whilst active and liquid markets exist for financial instruments such as debt securities, derivatives and equity shares, there is no market of substance for loans and deposits throughout Europe. IAS 39 can provide an incentive for the development of these active and liquid markets. This will contribute to a better spread of risks over the financial system, thereby increasing its stability and strength.

2.2.2 *Disadvantages*

The disadvantages of fair value accounting and IAS 39 can be found in the areas of measurement and reliability, pro-cyclicality, volatility and in the more fundamental discussion about the role of banks in maturity transformation.

As mentioned, Europe lacks active and liquid markets for numerous financial instruments. The application of models and techniques to estimate fair values for these instruments implies reliance on assumptions. However, inadequate models and assumptions as well as manipulation can lead to false or irrelevant values and 'artificial' volatility that could erroneously affect conclusions and decision-making. Moreover, banks claim that IAS 39 does not reflect the way they manage risks. Thus, fair value accounting will lead to reports that do not provide a relevant picture of the risks banks encounter. Besides, the fact that IAS/IFRS is still a mixed-measurement model[6] will also lead to 'artificial' volatility. The use of full fair value accounting eliminates this volatility. However, volatility resulting from fluctuations in market values and models and techniques still remains then. Furthermore, unrealized profits or losses are included in the accounts. Hence, the volatility arising from the introduction of IAS 39 is a combination of real economic risks and valuation methods and it is very difficult, if not impossible, to discern the two. On the other hand, one could also argue that it is also difficult to discern these effects under a more traditional accounting system, where little volatility is present.

In addition, opponents of the use of fair values claim that the increased 'economic' volatility of income and equity can amplify the pro-cyclicality of the financial system. For instance, in times of recession when income declines, market participants may judge a bank's creditworthiness less favourably under fair value accounting. This could then result in lower bank stock prices, leading to a higher cost of capital and possibly a bank run. These effects are amplified when *bubbles* are formed on the market and fair values deviate strongly from fundamental values.

Moreover, as a result of fair value accounting the returns of financial institutions become more sensitive to interest rate movements. An interest rate change influences the fair value of long-term financial instruments more than the value of shorter-term instruments. Valuation changes are taken directly to the P&L account, so the use of short-term instruments becomes more attractive under IAS 39. On the one hand this leads to more stable balance sheets, as the duration of assets and liabilities are better matched. However, if financial institutions provide less long-term financial instruments, their traditional role in maturity transformation diminishes. A decline in the supply of long-term finance causes risks previously taken by financial institutions to be transferred to individuals, who in general are less able to carry these risks. This may negatively affect the growth and stability of the economy.

Box 2 derivatives

According to old standards, derivatives are classified as off-balance sheet instruments. Derivatives held for trading purposes were valued at fair value, while derivatives held for risk management (hedging) were valued similar to the hedged item (mostly at book value). According to the new accounting standards practically all derivatives have to be recorded as on-balance sheet instruments at fair value. The attention for the treatment of derivatives in IAS/IFRS can be attributed to the growing use: the market for OTC-derivatives increased by more than 80% between 2000 and 2003.[7] Also, the build-up of speculative positions through derivatives may not have been visible under the old standards, as highlighted by recent accounting scandals.

The largest part of the derivatives portfolio of six large European financial institutions is held for trading purposes (table below). As the core business of both banks and insurance companies implies running interest rate risk, it is not surprising that most derivatives are related to interest-rate transactions. Derivatives related to currency- and other transactions[8] represent only a small part of the total derivatives portfolio. As these data are based on *contracted* amounts (which are commonly used as an indication for the size of derivatives activities), they do not however provide a good risk measure. Contracted amounts do not represent the actual exchanged amounts between market parties and hence do not give a reliable indication of the exposure with respect to derivatives.[9] Contracted amounts therefore overrate the possible credit- and market risk related to derivatives. The actual risk consists of the costs related to the default of a counterpart. This is only a fraction of the contracted amounts.

Table Composition of derivatives portfolio (2003)

Per cent

	Abbey	ABN AMRO	Barclays	Fortis	ING	RBS
Trading	**83**	**95**	**95**	**64**	**76**	**98**
- interest rate	87	79	85	83	73	81
- currency	6	19	10	12	23	18
- other	7	2	5	6	4	1
Non-trading	**17**	**5**	**5**	**36**	**24**	**2**
- interest rate	76	15	95	97	92	82
- currency	23	85	4	2	7	16
- other	1	0	2	1	1	2

Source: Form 20-F (2003)

Although the treatment of derivatives for risk management purposes in IAS/IFRS receives a lot of attention, these derivatives only form a small part of the total derivatives portfolio of these six institutions. The effects of the new standards on these derivatives therefore depend mainly on the regulations concerning hedge accounting (see section 2.3). Derivatives held for trading purposes will become on-balance sheet instruments, but are already accounted for at fair value, implying no effective change under IAS/IFRS.

2.3 Implications for banks

Fair value accounting (IAS 39) will have a considerable influence on banks' accounts. This is mainly due to the duration mismatch of assets and liabilities, which causes the two sides of the balance sheet to be affected differently by interest rate changes. Especially in the field of risk management (and more specifically hedge accounting) changes are significant. The way banks will interpret the new standards and to what extend hedge accounting and the fair value option will be used is not yet clear. It thus remains difficult to predict the full consequences of IAS 39.

Firstly, derivatives held for risk management purposes can be classified as hedge instruments under the new standards. But only under strict circumstances can derivatives be recognised as 'effective hedge instruments'[10]. Under hedge accounting, three categories of effective hedge instruments are distinguished: fair value hedges, cash flow hedges and net investment hedges. In the case of fair value hedges, IAS 39 requires changes in the fair value of the *derivative* to be recognised in income, while for cash flow hedges and net investment hedges changes are to be recognised in equity. *Hedged items* must be stated at fair value under a fair value hedge with changes recognised in income, while under cash flow hedges and net investment hedges these items are stated at book value. The actual characteristics of the financial instrument influence the possibility to apply a cash flow or fair value hedge though. Still, the choice to apply hedge accounting is a strategic one for banks. For example, in the short run volatility in income can be reduced in the case of cash flow hedges. Value increases are more pronounced in both the balance sheet and the income statement when fair value hedges are used. This different treatment makes statements more difficult to compare (see box 3 for an explanation).

A second implication concerns the categorisation of assets. There exist four classes of financial instruments. The classes consisting of held-to-maturity investments and loans and receivables are valued at amortised cost. Financial instruments measured at fair value with value changes accounted for in income consist of financial assets and liabilities held-for-trading, derivatives and instruments designated by the entity at inception as at fair value through profit and loss. The last category of available-for sale instruments is formed by all other non-derivative financial instruments that do not fall in any of the other categories, and are valued at fair value though equity.[11] It can be expected that this category will largely consist of interest-bearing

securities, which were part of the investment portfolio under the old system. On the liability side there exists one category called non-trading liabilities, (and which are not designated at fair value through profit and loss) which is also measured at amortised cost. This categorisation implies first of all a change in reporting format. But more importantly, it also implies a change in management practises as banks will manage this categorisation more strictly.

Thirdly, the fair value option is one of the most discussed implications of IAS 39. Initially, this option gave banks the possibility to value any (interest-bearing) financial instrument at fair value, with changes reported in income. The option however can only be applied at acquisition or creation of an asset or liability, and is irreversible. Many parties have criticised such an 'open' fair value option.[12] It is for example conceivable that the option will not be used for risk management purposes, but under pressure of investors will be applied to larger parts of the balance sheet. In addition, the non-verifiable nature of the fair value of many instruments has been criticised. In June 2005, the IASB has adopted a revised version of the fair value option. Now, a link to a documented risk management or investment strategy is one of the requirements for applying the option,[13] while also the importance of reliable fair values is stressed. The Basel Committee on Banking Supervision stressed the high importance of sound risk management and control processes for banks using the fair value option in its consultative paper on 'Supervisory guidance on the use of the fair value option' (July 2005).

Lastly, implementation of the new accounting rules requires substantial efforts (for example in the form of disclosure requirements) and a higher administrative burden.

Box 3 Cash flow hedges vs. fair value hedges under IAS 39

The treatment of hedge accounting under IAS 39 implies a strategic choice for banks. The distinction between the treatment of fair value and cash flow hedges[14] prescribed by IAS 39, complicates the management of hedges and the comparability of accounts, as the impact of these hedges on equity and income differs considerably. The following example illustrates this.

A bank finances a fixed-rate asset with a variable-rate liability. To hedge the interest rate risk on the variable rate, an interest rate swap is bought. The swap consists of the payment of a fixed rate and the receipt of a variable rate. Under old accounting standards the swap is valued in the same way as the hedged item. Under IAS hedge accounting, the bank is obliged either to 1) hedge any value changes of the interest rate risk (fair value hedge) or to 2) stabilise cash flows (cash flow hedge). Consider the following: at T_0 the values of the asset and liability are equal to 5000. This is the historical cost or book value. At T_1 the *fair value* of the asset decreases to 4500 en the value of the swap becomes 400. Turnover and operating expenses are supposed to be equal and hence do not affect income.

Fair Value Hedge

With fair value hedging both the swap and the asset are valued at fair value. Value changes are taken to income. The decrease in value of the asset then forms a loss. The fair value change of the swap represents a gain. On balance a loss of 100 remains; this is also called *hedge ineffectiveness* as the interest rate risk is not completely hedged. IAS 39 sets strict requirements with respect to hedge ineffectiveness. The loss however is not realised (as long as the asset is not sold) and is only an accounting loss. Thus, fair value hedges may lead to more volatile income statements (table 1a).

Table 1a Accounts at T1 with fair value hedge

Balance Sheet				P&L-account	
Asset	4500	Liability	5000	Value change asset	-500
Interest Rate Swap	400	Profit/Loss	-100	Value change swap	400
	4900		**4900**		**-100**

Cash Flow Hedge

With cash flow hedging the volatility of future cash flows is hedged. Value changes of the interest rate swap (the hedge) are taken directly to equity, while the hedged item is stated at book value on the balance sheet. At first only the equity value increases by 400 because of the increase in value of the swap, and there is no effect on income. In fact, in this case not the asset, but the liability is hedged. The value change of the swap is only taken to income at maturity or sale of the asset. Thus, cash flow hedges may lead to more volatile balance sheet statements (table 1b).

Table 1b Accounts at T1 with cash flow hedge

Balance Sheet			
Asset	5000	Liability	5000
Interest Rate Swap	400	Equity	400
	5400		**5400**

If, based on the characteristics of the financial instrument, a choice between a cash flow hedge or a fair value hedge is possible, this implies a strategic decision for more volatile income or balance sheet statements. Next to that, as a result of the different choices made by banks, hedge accounting will complicate the comparability of income and equity for users of annual accounts.

2.4 Implications for insurance companies

The new international accounting standards have a different impact on insurance companies, since the structure of their balance sheet differs from that of banks. While banks mainly set long-term assets (such as mortgages) against short-term liabilities (such as current accounts deposits), insurers' balance sheets primarily reflect relatively liquid assets (investments) and long-term liabilities (claims of policyholders).

Under current standards, large parts of assets are already measured at fair value, while provisions related to insurance contracts are recorded at book value. However, under current accounting standards, recognition of assets and liabilities generally needs to be based on similar grounds. Under the future IFRS 4, which deals with insurance contracts and is to be applied to *all* insurance contracts[15], this principle is abandoned and assets and liabilities are to be measured separately.

Although the insurance standard of the IASB is not yet finished, it is clear that fair value accounting will be more common under the new standards. Insurance contracts will have to be measured at fair value, implying that technical provisions (reservations for future payments) will have to be marked-to-market/market-to-model. This should give a more transparent view of the actual risks. However, doubts have arisen over the relevance of these fair values: insurance is a long term business and fair values only present point in time valuation. Also, there is no reliable market for many insurance contracts. Valuation will therefore heavily rely on models based on for example expected cash flows, taking into account specific actuarial risks, surrender values and probability estimates. Additionally, valuation at fair value is difficult for insurance contracts not sold (and analysed) in large numbers.

Like banks, insurance companies fear an increase in the volatility of income and equity as a result of the new standards, and it is not yet clear how investors will respond to this volatility. Given the nature of their obligations (which are difficult to manage and predict), the reports of insurance companies are already difficult to interpret; especially since national accounting standards vary considerably. The new standards will make accounts easier to compare, but the response to a possible increase in volatility remains crucial. In addition, it can be expected that insurance companies will change their policies in order to minimise volatility. To achieve a better match between assets and liabilities, insurance companies are likely to develop a more risk-averse investment policy. On the one hand this

implies lower profitability, but on the other hand it also means a better protection of policyholders against large fluctuations in income and equity of the insurance company. Still, such a strategy implies investment in long-term products, which at the moment do no exist on a large scale. In the Netherlands the Financial Assessment Framework (FTK, Financieel Toetsingkader), which applies to pension funds as of 2007, already requires the use of fair values for liabilities and investments. It also lays out regulations intended to lead to improved transparency and comparability of accounting information.

To conclude, fair value accounting will also have a significant impact on insurance companies. The exact consequences are difficult to predict, because IFRS 4 is still under discussion. It can be expected however that the accounts of insurance companies will become more volatile, leading to (risk-management) policy changes.

3 Comparative analysis of European institutions with a US listing

As becomes clear from the second Section, the main disadvantage of the use of fair value accounting is the expected increase in (artificial) volatility of financial institutions' income and equity. The main advantage that fair values are anticipated to bring is their higher informational content compared to book values. In this section, we assess the importance of both issues empirically.

For financial markets and supervisory authorities it is important to gain insight in the sources of financial statement volatility in order to properly assess the risks of an institution. Estimating the (additional) volatility that could arise under IAS 39 is troublesome, because of the lack of comparable public data on the valuation of financial instruments under the new standards. Next to that, use of the fair value option is still under discussion. As said, it is also expected that financial institutions will change their risk management-policies in order to mitigate the effects of the new rules.

In the United States, disclosure of the fair values of financial assets and liabilities is required since the introduction of SFAS 107 in 1992, while the impact of derivatives needs to be recognised in equity or in income. Because of this, US GAAP is, with regard to fair values, in many aspects comparable to IAS (see table 1 for an overview). However, one drawback of US GAAP is that it is a mixed-measurement system as well. Any volatility arising from a comparison of the different systems may be attributed to this mixed-measurement, and may not be related to the use of fair values. On the other hand, IAS/IFRS is also a mixed-measurement system. Non-US firms listed on a US stock exchange need to file their annual account with the SEC, in which the regulations are met and any deviations between local accounting standards and US GAAP are explained (Form 20-F). In addition, various key figures (net income, shareholders' equity and total assets) need to be measured following US GAAP, and any deviations with local standards need to be accounted for as well. The expected impact of fair value accounting on volatility of equity and income, ceteris paribus, can therefore be estimated using the 20-F files from institutions with a listing on both an US and a local stock exchange.

Table 1 Differences between IAS/IFRS, US GAAP and Dutch GAAP

	IAS/IFRS	US GAAP	Dutch GAAP
Basis	principle-based	rule-based	principle-based
Financial Instruments			No specific guidelines
- *Trading purposes*	Fair value via income statement	Idem IAS/IFRS	Trading: fair value Non-trading: historical cost
- *Available for sale*	Fair value via income statement or shareholders' equity (non-reversible choice at initial recognition)	Fair value via equity	
-- *Originated loans/deposits*	(Amortised) cost	(Amortised) cost	(Amortised) cost
- *Held to maturity* - *Created by other institution* - *Other*	(Amortised) cost	(Amortised) cost	(Amortised) cost
Derivatives	Fair value via income statement	Idem IAS/IFRS	- Trading: fair value - Non-trading (risk-management): (amortised) cost
Hedge Accounting	Hedge accounting only if highly effective	Idem IAS/IFRS	Valuation hedging instrument similar to valuation hedged item
- *Fair value hedge*	Hedging instrument and hedged item at fair value via income statement	Idem IAS/IFRS	
- *Cash flow hedge*	Hedging instrument at fair value with effective part initially to equity (later to income) and ineffective part to income statement	Idem IAS/IFRS	
- *Net investment hedge*	Hedging instrument at fair value with effective part initially to equity (later to income) and ineffective part to income statement if derivative; otherwise ineffective part via equity	Idem IAS/IFRS; ineffective part always to income	

Source: KPMG (2002)

3.1 Data

We collected 20-F files for 14 European financial institutions containing data for the years 1998-2003. From these files, we used the statement *Fair value of financial instruments*, in which both the book value and the fair value of financial instruments are stated (2000-2003). Also the book value and fair value of total assets, shareholders' equity and net income (1998-2003) were collected.

The financial assets from the statement are classified into five categories: *cash and interbank lending*, *loans*, *securities*, *derivatives* and *other*. Financial liabilities are classified into four categories: *deposits and interbank lending*, *securities*, *derivatives* and *other*. With respect to derivatives, no distinction has been made between derivatives held for trading and derivatives held for risk management purposes.

The institutions differ considerably in terms of activities. Aegon and AXA are predominantly active in insurance; their banking activities are limited. Banco Comercial Portugues (BCP), ING Group and Allianz can be defined as 'real' financial conglomerates, since the division of their banking and insurance activities is roughly 50/50. The insurance arm of Fortis amounts to approximately 20% of total assets. The remaining institutions, Allied Irish Banks (AIB), Royal Bank of Scotland (RBS), Abbey National, ABN AMRO, Banco Santander Central Hispano (Santander), Barclays, Deutsche Bank and National Bank of Greece (NBG) are mostly active in banking.

Data have been stated per institution. Because of the differences in size and composition of their activities, aggregation of data could influence results, possibly leading to false conclusions. Besides, the methods for determining fair values may differ between countries and institutions as a result of differences in accounting standards. Furthermore, US GAAP differs in other aspects from IAS/IFRS, such as the treatment of goodwill and pension liabilities. Also, the period under investigation was a turbulent period with a downturn in financial markets and M&A activity. Therefore, comparisons between institutions can only be made with caution and the above considerations need to be taken into account when interpreting the results.

3.2 Book and fair values

An analysis of the differences in the valuation of financial instruments at either book value or fair value shows that considerable differences between book and fair values exist. Table 2 shows the size of these differences in book and fair values of net financial assets related to shareholders' equity and total assets. As a large part of financial institutions' total assets consists of financial instruments, large differences in valuation could theoretically have a relatively large impact on the balance sheet total. However, the revaluation of net financial assets is small in terms of total assets, while in nearly all cases, when compared to shareholders' equity, the

magnitude of the revaluation is significant, ranging from -48% (Santander in 2001) to +93% (NBG in 2003). Positive numbers imply that financial assets are undervalued when compared to fair value. Negative ratios imply that fair values are lower than book values. This may also be the case though if the revaluation of the liabilities of an institution is larger than the revaluation of the assets. It turns out that this is the case for a number of banks.

There are large differences between institutions. In 2003 the revaluation to fair value leads to an effect (in terms of shareholders' equity) varying from -38% for Fortis to +93% for NBG. But also differences over the years come forward. In 2000 the revaluation for Aegon has a magnitude of 9% in terms of shareholders' equity, while in 2002 this increase is 54%. This implies that the moment of switching to a new regime is an important determinant of the effects of this change.

The revaluation change in net financial assets depends on the valuation changes of both financial assets and liabilities. As mentioned before, a higher valuation change of financial liabilities may offset a change in financial assets, resulting in

Table 2 Relative difference of fair value compared to the book value of net financial assets

	% shareholders' equity (book value)				% total assets (book value)			
	2000	2001	2002	2003	2000	2001	2002	2003
Abbey	-9	-18	-14	-16	0	-1	0	0
ABN AMRO	28	51	43	36	1	1	1	1
Aegon	9	30	54	34	0	2	3	2
AIB	8	7	-42	3	0	0	-2	0
Allianz	106	31	28	2	5	0	0	0
AXA	32	13	10	20	2	1	1	1
Barclays	28	8	5	-7	1	0	0	0
BCP	6	-7	17	N/A	0	0	1	N/A
Deutsche Bank	3	-45	5	5	0	-2	0	0
Fortis	-22	68	74	-38	-1	2	2	-1
ING	14	34	54	46	1	1	1	1
NBG	6	6	42	93	0	0	1	2
RBS	-6	-10	-1	1	0	-1	0	0
Santander	0	-48	-37	9	0	-3	-2	0

Calculation: $(NFA_{FV,t} - NFA_{BV,t})/SHE_{BV,t}$
$(NFA_{FV,t} - NFA_{BV,t})/TA_{BV,t}$
where NFA stands for net financial assets, SHE for shareholders' equity,
TA for total assets, FV for fair value, BV for book value and t represents the time dimension.
Source: Form 20-F of the financial institutions (2000-2003).

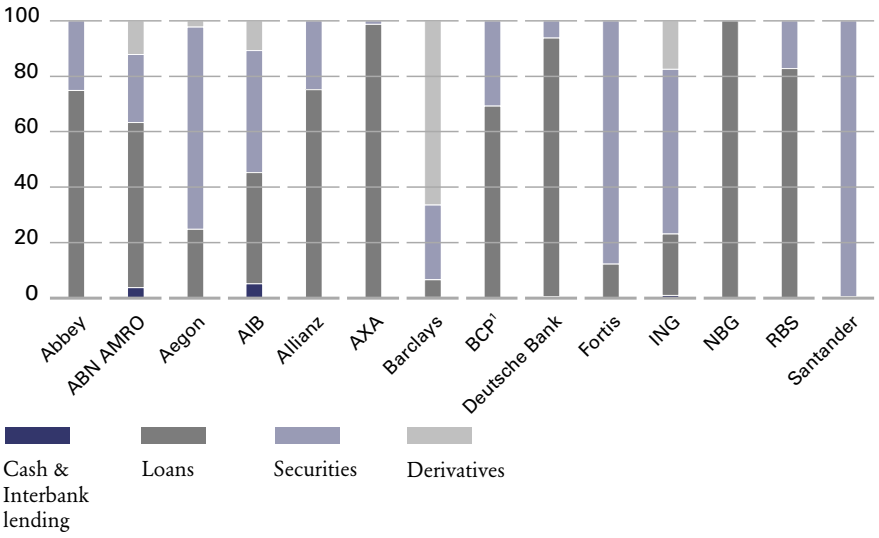
a lower valuation change of net assets. On average though, financial assets show a larger difference between book and fair value than do financial liabilities. An explanation for this result is threefold: 1) deposits are generally valued at nominal value, implying no effective change; 2) for banks the maturity structure of assets is generally longer, implying a larger effect of decreasing interest rates on the value of assets; 3) for insurance companies the discount rate for valuing liabilities is under current circumstances close to the market rate, implying a relative small change from book value to market value. However, this outcome does not hold for all institutions, while also over time differences are apparent.

A closer look at the valuation differences from book to fair value of financial assets and liabilities shows to which components of the balance sheet these differences can be attributed. In graph 1 these differences are depicted for the components of financial *assets* in 2003. To a large extent, valuation differences of loans and securities determine the total difference: cash and interbank lending and derivatives have only a limited influence. Only in the case of Barclays derivatives represent over 60% of the difference between book value and fair value. This composition is plausible, as the fair value of cash and interbank lending is in most cases equal to the nominal value, while large parts of the derivatives portfolio are already stated at fair value (see box 2). Furthermore, securities form a larger part of the difference for institutions having considerable insurance activities, such as ING, Aegon, Fortis and AXA, than for more bank-oriented institutions. For the latter, loans make up a large part of the difference. The relative importance of valuation changes in the loan portfolio suggests that financial institutions (banks) actively monitor this portfolio to identify the bad risks.

Graph 2 shows the composition of differences between book values and fair values of financial *liabilities* in 2003. Differences are primarily the result of deposits and interbank lending and securities. Derivatives form a larger part of the differences for some institutions, but do not dominate in most cases. This outcome is mainly due to the size of the deposits and interbank lending portfolio. A small change in the discount rate leads to a larger revaluation impact of deposits and interbank lending on equity, than is the case for a smaller portfolio. Again large differences are found between the institutions, although the distinction between institutions with and without substantial insurance activities is not as clear as before.

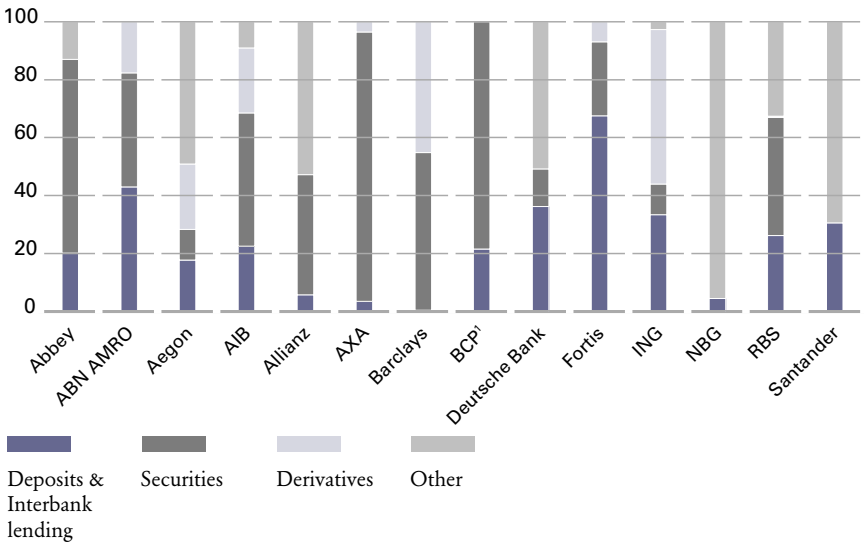
These graphs show, not unexpectedly, that valuation differences are most important for loans, deposits and securities. Especially for the former two instruments, deep markets generally do not exist to provide reliable fair values. As a result, institutions rely on estimation models and other valuation techniques, which differ considerably between institutions. All in all, the revaluation change of loans and securities assets is generally larger than the revaluation change of deposits and interbank lending. Therefore, the revaluation change of financial liabilities is smaller than the change of financial assets.

Graph 1 Composition of the difference between fair value and book value of assets (2003)



1 For Banco Comercial Portugues (BCP) accounts for 2002 are used.
Source: Form 20-F (2000-2003).

Graph 2 Composition of the difference between fair value and book value of liabilities (2003)



1 For Banco Comercial Portugues (BCP) accounts for 2002 are used.
Source: Form 20-F (2000-2003).

Next, the change in the difference between the fair value and book value over the periods 2000-2001, 2001-2002 and 2002-2003 has been calculated to see whether the gap between book values and fair values increases (table 3). A positive ratio indicates an increase in the difference (compared with the year before), implying a larger effect on either equity or income. A negative ratio vice versa indicates a smaller difference and a smaller effect on equity or income. Frequently changing signs as well as changes in the size of the difference indicate volatility.

Table 3 shows no clear increase or decrease in the gap between book values and fair values. For example, ratios increased for NBG, but decreased for Aegon and ING. Furthermore, ratios go from positive to negative between years. For example Santander shows large fluctuations, ranging from +53% to -27%. However, in 2000-2001 only 3 out of 14 ratios are negative, while for 2001-2002 this is 9 out of 14 and for 2002-2003 7 out of 14. Hence in general, the gap between book values and fair values increased in the first period (possibly the result of increasing fair values), while in

Table 3 Changes in the difference between book value and fair value of net financial assets

	% shareholders' equity (book value)			% total assets (book value)		
	2000-2001	2001-2002	2002-2003	2000-2001	2001-2002	2002-2003
Abbey	10	-17	1	0	0	0
ABN AMRO	21	-12	0	0	0	0
Aegon	28	19	-20	1	1	-1
AIB	0	31	-39	0	2	-2
Allianz	-84	-4	-25	-4	0	0
AXA	-18	-3	10	-1	0	1
Barclays	-19	-4	3	-1	0	0
BCP	3	10	-17	0	0	-1
Deutsche Bank	38	-41	0	2	-2	0
Fortis	40	-8	-32	2	0	-1
ING	15	13	-1	1	0	0
NBG	0	32	62	0	1	1
RBS	5	-9	0	0	-1	0
Santander	53	-14	-27	3	-1	-2

Calculation: $((NFA_{FV,t} - NFA_{BV,t}) - (NFA_{FV,t-1} - NFA_{BV,t-1})) / SHE_{BV,t-1}$

$((NFA_{FV,t} - NFA_{BV,t}) - (NFA_{FV,t-1} - NFA_{BV,t-1})) / TA_{BV,t-1}$

where NFA stands for net financial assets, SHE for shareholders' equity,

TA for total assets, FV for fair value, BV for book value and t represents the time dimension.

Source: Form 20-F (2000-2003).

the other periods this gap decreased. This seems related to economic developments, as markets peaked in 2000-2001 while the downturn followed in subsequent years. This illustrates the volatility in the valuation of financial instruments, but does not show whether these differences can be attributed to fluctuations in fair values, book values or both.

3.3 Fair values and volatility

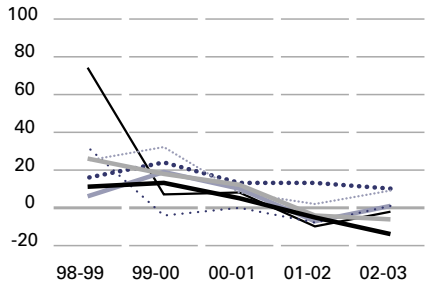
To investigate whether the volatility in the valuation of financial instruments can be attributed to either book values or fair values, the development of total assets, shareholders' equity and net income has been depicted for both book values and fair values over the period 1998-2003 (graphs 3-8).[23] Both shareholders' equity and net income are important in the discussion about volatility and fair value accounting. Graphs 3 and 4 show that the annual changes in *total assets* are similar for both valuation methods, also indicated by a nearly equal standard deviation (0.16 using book values vs. 0.18 using fair values). Graphs 5 and 6 show the annual changes in *shareholders' equity*. Although larger differences between institutions appear, there is no substantive difference in volatility between book values (0.22) and fair values (0.20). Graphs 7 and 8 depict the changes in *net income*. Although the development is comparable, the fluctuations using fair values are much larger than those using book values. In fact, the standard deviation for net income at fair value (1.82) is almost three times as large as the standard deviation for net income at book value (0.57). This difference is mainly driven by the development of net income of Aegon and AXA, showing large decreases in income in case of fair values. But even if these institutions are not taken into account, the volatility of income measured at fair value is still considerably larger (0.75) than if measured at book value (0.59).

Concluding, fair value accounting is not likely to lead to more volatility in total assets and shareholders' equity, but net income is indeed likely to fluctuate more.[24] These pictures also imply that for supervisors, the solvency ratio of financial institutions is not expected to fluctuate more under IAS/IFRS since both capital (shareholders' equity) and total assets do not become more volatile.

3.4 The informational content of fair values

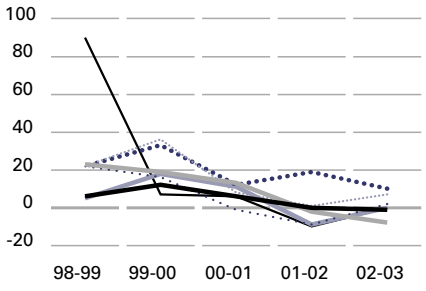
Under fair value accounting more extensive and better measurement of values will take place. Nevertheless the question remains if this measurement results in information that is useful to users of the accounts. Proponents of fair value accounting claim that this is the case and that one of the most important merits of fair values is that they contain more relevant information than book values. However, empirical evidence for additional explanatory power of fair values provides mixed results.[25] On the one hand, significant explanatory power is found for fair

Graph 3 Annual change (%) in book value of total assets



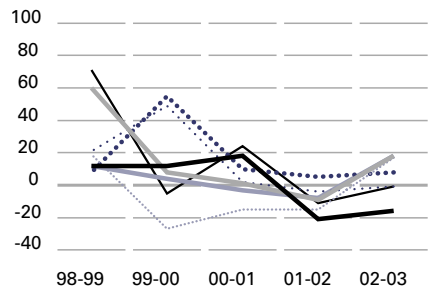
Standard deviation book values: 0.16

Graph 4 Annual change (%) in fair value of total assets



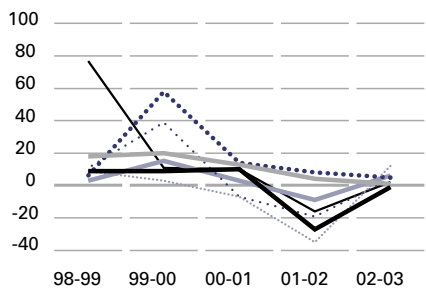
Standard deviation fair values: 0.18

Graph 5 Annual change (%) in book value shareholders' equity



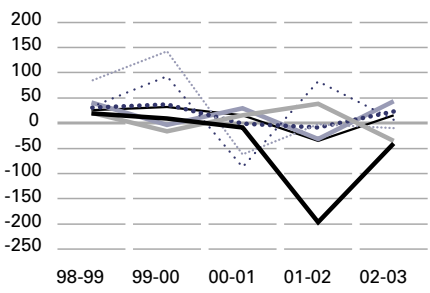
Standard deviation book values: 0.22

Graph 6 Annual change (%) in fair value shareholders' equity



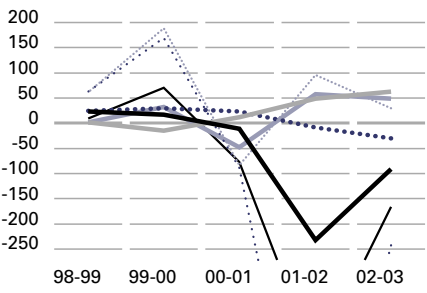
Standard deviation fair values: 0.20

Graph 7 Annual change (%) in book value of net income



Standard deviation book values: 0.57

Graph 8 Annual change (%) in fair value of net income



Standard deviation fair values: 1.82

Abbey ABN AMRO Aegon AIB AXA Barclays ING

value estimates of loans, securities and long-term debt, but not for deposits and off-balance sheet items. Furthermore, loans' fair values provide incremental explanatory power if combined with nonperforming loans data and interest-sensitive assets and liabilities. This implies that fair values of the loan portfolio do not completely reflect the default and interest rate risk. On the other hand, it is also found that the fair value of investment securities is only relevant for the market value of banks' common equity if proxies for future profitability are not included. Proxies of future profitability (such as RoE, growth in book value of common equity) turn out to be a more important determinant for the market value of banks' common equity than the fair values of financial instruments such as investment securities, loans, deposits, long-term debt and off-balance sheet items.

To investigate whether fair values in our sample provide more information than traditional measures, consider the following identity:[26]

$$MVE_{i,t} \equiv BVE_{i,t} + (NA_{FV,i,t} - NA_{BV,i,t}) \qquad (1)$$

where MVE denotes the market value of equity, BVE the book value of equity, NA represents net assets, BV and FV represent the book value and fair value respectively of the figures, i represents a financial institution and t the time dimension, running from 2000-2003.[27] The portion of the market value of an institution's equity not captured by the traditional accounting framework may stem from three sources: 1) the difference between market and book values, 2) certain intangible assets and liabilities, that are not taken into account under local GAAP, primarily off-balance sheet financial instruments, and 3) intangible net assets such as future growth opportunities. The different requirements under US and local GAAP may give an indication of the difference between book and fair values stemming from the first two sources, but not from the latter. Hence, correcting for size and focusing on financial instruments, we estimate the following simple regression model:

$$\frac{MVE_{i,t}}{BVE_{i,t}} = \beta_0 + \beta_1 \frac{(NFA_{FV,i,t} - NFA_{BV,i,t})}{BVE_{i,t}} + \beta_2 * RoE_{i,t} \qquad (2)$$

We are especially interested in the first independent variable, as it reflects the informational content of fair values above that of book values. We expect coefficients β_1 and β_2 to be positive, as larger valuation differences and higher RoE (as a measure of future growth opportunities) are presumed to lead to a larger difference in market value above book value.

If we estimate the model, we find that coefficient β_1 is insignificant and has the wrong sign (table 4). The influence of RoE is significant though. From this we cannot conclude that fair values provide more information to financial markets than traditional measurements as book values, although future growth opportunities seem to play a role.[29]

Table 4 Regression outcomes

	Model 1
β_0	1.51
	(7.26)
β_1	-0.21
	(-0.45)
β_2	0.06
	(5.52)
Number of obs.	50
F(2,47)	15.37
Prob>F	0.00
R-squared	0.40
Adj R-squared	0.37
Root MSE	0.90

Note: t-values between brackets

4 Conclusions

One of the major drawbacks of fair value accounting is an expected increase in (artificial) volatility of income and equity of financial institutions. Especially for long-term assets and liabilities, which are sensitive to changes in market values such as the interest rate, the use of fair value is considered by many as irrelevant. Next to that, it is argued that the standards for fair value accounting and especially for hedge accounting are not able to provide a good and reliable view of the activities of financial institutions. On the other hand, fair values are viewed by others as providing more (relevant) information to the market. It is not clear whether an increase in information disclosure outweighs the increase in volatility.

An analysis of the differences between book values and fair values based on data of 14 financial European institutions with a listing on a stock exchange in both the home country and the US, shows that a change to fair values leads to a considerable revaluation in terms of shareholders' equity. However, the size of this revaluation differs per institution and per year. From this, it becomes clear that a change to fair value has different impacts on different sectors and institutions. The main source of this difference lies in the revaluation of deposits, loans and securities. For bank oriented institutions, the former two are the most important, while the latter is most important for insurance oriented institutions. One could view these differences though also as the result of the different accounting regimes used in different countries. In that sense, fair value accounting removes these differences, making accounts more comparable. Volatility related to the use of fair values is mainly reflected in the net income of an institution; and affects total assets and shareholders' equity to a lesser extent only. This implies that the solvency ratio of institutions remains largely unaffected. However, again large differences exist between institutions and over time. Finally, it is not found that fair values provide more information to financial markets.

The success of IAS 39 and fair values depends heavily on the way financial markets (and supervisors) will interpret the annual accounts of an institution. Volatility in the income of financial institutions will be strongly related to risk management practises (i.e. the use of hedge accounting) and also to the use of the fair value option. Analysts and investors need to be aware of these effects. If financial markets are able to interpret the information contained in annual accounts properly, the use of fair values should not pose a problem. Thus, investors should not take just increased volatility in income into account, but should understand the underlying factors that cause this volatility. In other words, investors and analysts should look at the fundamentals of an institution.

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Notes

1 Although the accounting regime may play a different role in different countries due to the fiscal use.
2 Given the limited availability of data.
3 Michael (2004).
4 Enria, A. et al. (2004). If shareholders, uninsured depositors and other debtholders are able to readily identify a decrease in the soundness of a financial institution, their reactions, either by interfering directly in managerial choices or by exiting from the investment, could put pressure on bank's management to take corrective measures in time.
5 In the United States the 'Savings and Loan Crisis' was one of the main arguments for the increased use of fair values, as the historic cost framework failed to bring the magnitude of problems to light timely.
6 A mixed-measurement model uses different valuation methods for assets and liabilities.
7 Stulz (2004)
8 For example contracts related to equity or to different indices.
9 ABN AMRO (2003)
10 This holds only if changes in the fair value or cash flow of the hedging instrument are expected to offset, prospectively as well as retrospectively, the variation in the fair value or cash flows of the hedged item within a range of 80 to 125 percent.
11 IAS 39 Financial Instruments: Recognition and Measurement.
12 Among others, the ECB has expressed concerns about the implications for financial stability. See Enria et al. (2004). Also, the Basel Committee has expressed its concerns with respect to the link with Basel II (see for example 'Comments on the IASB Exposure Draft of proposed amendments to IAS 39 Fair Value Option', 30 July 2004; www.bis.org).
13 I.e. the option may only be applied when: 1) a financial instrument contains one or more embedded derivatives that meet particular conditions; 2) it results in more relevant information because a) it eliminates or significantly reduces a measurement or recognition inconsistency (accounting mismatch) or b) a group of financial assets or liabilities or both is managed and its performance evaluated on a fair value basis, in accordance with a documented risk management or investment strategy (IASB, Amendments to IAS 39 Financial Instruments: Recognition and Measurement, The Fair Value Option, June 2005).
14 A third hedge distinguished by the IASB, net investment hedging, is used less frequently by banks for risk management purposes and is therefore not taken into account here. Furthermore, net investment hedges are treated more a less similarly to cash flow hedges under the accounting standards.
15 'All' implies all contracts carrying a significant insurance risk, where other contracts are classified as financial instruments or service contracts.
16 Book value is measured as the value as stated under home accounting standards (i.e. traditional accounting standards).
17 For Fortis, no 20-F files were available. Therefore, annual reports have been used. The same holds for Abbey National for the years 2002 and 2003 and for Barclays for 2000. Allianz already reports on IFRS.
18 When no division was made between lending to other banks and lending to clients, the whole amount has been placed under 'loans'.
19 Moreover, differences in local accounting standards, though important, are not taken into consideration.
20 Calculated as financial assets minus financial liabilities. This implies that in general the financial assets that an institution holds are larger than its financial liabilities.
21 For lack of data, only eight institutions have been used.
22 Although this higher volatility may also be related to the fact that income is a flow, while total assets and equity are balance sheet items.
23 See Nelson (1996) and Barth, Beaver and Landsman (1996).
24 Nelson (1996)
25 Unfortunately, the number of observations is limited because of the lack of data.
26 Profit is measured at fair value here, measurement at book value changes the outcomes only marginally.
27 Explaining the change in the relative share price (defined as the share price controlled for the financials index), by the change in equity and by profits, where these are either measured at book value or fair value, does however provide evidence that fair values provide more information, but very limited, than book values. It turns out though that the financials index, and hence general market circumstances as the interest rate, inflation level, economic growth, is the most important determinant in explaining changes in the share price of individual institutions.

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