

FAIR VALUE ACCOUNTING IN BANKS AND THE RECENT FINANCIAL CRISIS

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The introduction of *fair value* accounting is frequently mentioned as an important link in the string of events which led to the recent financial crisis. The present study briefly introduces the concept of *fair value* accounting and discusses the controversial topic of trade-offs with historical cost accounting, which it replaced. We summarise the findings reported in the academic literature on the consequences of the entry into force of this new accounting regulation in the case of banks, with particular emphasis on the role played by *fair value* accounting during the recent financial crisis. So far, there is no consensus in the conclusions drawn from the different studies. For some authors it is obvious that *fair value* accounting accelerated the recent turmoil, inducing pro-cyclicality and contributing to close the vicious circle of asset fire sales during the crisis. The opposing opinion is that *fair value* accounting did not play a significant role in closing the vicious circle, because in practice the current system is neither pure nor full *fair value*, and regulators are adjusting or neutralizing the inputs from the accounting information. Additional efforts are needed to accurately determine the role of *fair value* accounting during the crisis period, a knowledge of which would also help standard setters to devise improved accounting regulation.

1 Introduction

The recent financial crisis of unprecedented size and dire consequences is a major concern throughout today's society, from the popular press to policy-makers, regulators and academics around the world.

The collapse of prestigious financial institutions such as Bear Stearns, Lehman Brothers, Merrill Lynch and Wachovia followed by the near paralysis of the financial sector with negative consequences for the real economy, makes the past crisis a singular point in the series of modern crises and unquestionably qualifies it as the most severe one after the Second World War.

The uniqueness of the crisis has prompted efforts to identify its determinants and the solutions to cope with it. The crisis is frequently attributed to the bursting of the US housing bubble, but such a complex event definitely presents a multidimensional profile.

As De la Dehesa (2009) points out, one can cite a list of macro and micro events leading up to the crisis: the emerging countries' current account surpluses, the easy availability of loans in developed countries, the flourishing house-buying activity and the complexity of the financial instruments linked with mortgage activity. To this set of factors contributing to the unprecedented size of the recent crisis can be added the excessive leverage and excessive risk-taking of managers due to moral hazard and the way their compensation depended on profits. Moreover, the excessive risk-taking attitude was incorrectly measured both internally and externally by rating agencies. Also, theoretical factors (the belief that the markets are efficient and that agents are completely rational, contradicting the findings of various recent Nobel laureates [see Akerlof and Shiller (2009)] and leading to the conclusion that financial markets should not be excessively regulated), or psychological ones (market agents show over-optimistic behavior in boom periods and are overly pessimistic during busts) contributed to the last crisis.

Apart from the factors mentioned above, another event frequently referred to as an important determinant of the recent crisis was the introduction of so-called *fair value* accounting. The adoption of International Financial Reporting Standards (IFRS), "one of the most significant regulatory changes in accounting history" according to Daske et al. (2008), radically changed

the importance of the *fair value* concept in accounting. These changes were set out in IAS 36 and IAS 39, and recently the replacing standard IFRS 9. This represents a changeover in accounting regulation from historical cost to *fair value* accounting; moreover, the accounting switch almost coincides with the onset of the crisis.

In the long series of financial crises, the most recent one is hence the first one in which the accounting systems in force have embraced a *fair value* approach on a worldwide scale. The magnitude of the recent crisis calls for a serious analysis to determine whether the introduction of the new accounting framework merely coincided with the crisis or whether it is a cause. This makes the study of *fair value* accounting highly topical.

In the last few years, the academic literature has tackled the vital issue of the role played by *fair value* accounting in the stability of financial markets: the models developed during the pre-crisis period by Freixas and Tsomocos (2004) or Plantin et al. (2008a) warned about the possible negative outcomes of using *fair value* accounting for banks in the event of a decline in financial assets values.

Recently, after the financial crisis commenced, the interest of the academic community¹ in the consequences of *fair value* accounting increased. Renowned scholars like Barth and Landsman (2010) or Laux and Leuz (2010) scrutinized the exact influence of *fair value* accounting in the mix of factors assumed to contribute to the crisis, motivated by the fact that, in the words of Laux and Leuz (2010), “many have called for a suspension or substantial reform of *fair-value* accounting because it is perceived to have contributed to the severity of the 2008 financial crisis”.

The present study is organized as follows: the next section briefly introduces the concept of *fair value* accounting and discusses the hot topic of trade-offs with historical cost accounting, which it replaced. Section 3 summarises the findings reported in the academic literature on the consequences of the entry into force of this new accounting regulation in the case of banks. Section 4 focuses on research into the role played by *fair value* accounting during the recent financial crisis. Section 5 concludes by setting out the main findings of the academic literature and identifying future avenues of research which may assist standard setters to devise improved accounting regulation responsive to concerns about banking system financial stability.

2 The fair value debate

The debate on the relative merits of this “new” method of reporting financial instruments compared with the replaced or “old” method of historical cost accounting has attracted a lot of attention in recent years, making it a controversial issue even before the financial crisis broke out. In 2005, the compulsory or voluntary adoption of IAS/IFRS by about 100 countries around the world fuelled the debate, because the IAS/IFRS standards are perceived to rely significantly on *fair value* measurement compared with the previous systems of national standards that they have replaced. In Europe alone there are 7,000 listed companies for which IFRS application has been mandatory since 2005.

Also, the potential area of application has made *fair value* accounting an important issue in the last few years: one of the declared long-term goals of the financial regulators is to have all fi-

1. The dispute over the role played by this regulatory change in the past turmoil is an important topic not only for academic researchers, but also in the financial press and on politicians' agendas. The dispute has seen allegations that *fair value* accounting was to blame for “exacerbating the credit crunch” by the US presidential candidate McCain [The Economist (September 2008)], that “*mark-to-market* accounting has helped to destabilize markets for illiquid assets” by B. Bernanke [Reuters (2008)] or that *fair value* accounting is in “urgent need of revision” according to a recent G 20 Summit [G 20 London Summit (2009)]. In particular, the adoption of IAS 39 (and its US equivalent SFAS 133) and recently IFRS 9 (the replacing standard), which extend the use of *fair value* to a large set of financial assets, including derivatives, has been particularly controversial.

financial assets and liabilities recognized in statements of financial position at *fair value*, instead of at historical cost [e.g. FASB (2000)].

Briefly, the idea of the recently introduced *fair value* accounting framework consists in using “as much as possible” the market prices of financial instruments in accounting reports, instead of their acquisition cost, sometimes adjusted as was done until *fair value* accounting was introduced.

According to the standard setters FASB and IASB, the *fair value* of a financial instrument is defined, with small variations depending on the particular standards, as “the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm’s length transaction”, other than in a forced or liquidation sale [e.g. FASB (1991) or IASB (2010)]. When market prices quoted in an active market are not available, the owner of the asset or liability should provide the best available estimate of a current market price, by exercising judgments about the methods and assumptions to be used. That way, “the *fair value* represents the management’s estimate of the present value of the net future cash flows embodied in the asset or liability, discounted to reflect both the current interest rate and the management’s assessment of the risk associated with those cash flows”, as Khurana and Kim (2003) note.

Technically, the standards consider three levels of *fair value* measurement: Level 1 is applied when the current price in a liquid market for exactly the same instrument can be obtained (*mark-to-market*), Level 2 represents the current price in a liquid market for a similar instrument, which has to be adjusted to obtain the *fair value* of the instrument to be valued, and finally Level 3 uses valuation models (*mark-to-model*).

The term *fair value* encompasses hence the market value, when available (the *marking-to-market* technique), and the estimated value, using models “*marking-to-model*”, when the financial instrument is not traded in an active market.

In the last few years, the heated debate on the introduction of *fair value* accounting derived from its topicality and intended global application has been further intensified by the lengthy but as-yet inconclusive dispute over the preponderant effects to be expected: positive, according to proponents, and negative, according to opponents.

To sum up the debate, as a study by leading researchers notes [Plantin et al. (2008a)], the *fair value* accounting proponents argue that the use of market prices for preparing accounting reports is beneficial to investors and authorities because it transmits more relevant information on the firm’s current risk profile than the historical cost of the instruments. According to the *fair value* supporters’ logic, this will induce higher market discipline and will allow financial statement users to make better capital allocations. Moreover, the market-oriented models used internally by firms are assumed to explain the firm’s reality to outsiders better than the previous book value system. These founding arguments in favor of *fair value* measurement coincide with the efficient market and rational expectations agents’ hypotheses, two assumptions identified above to be important fallacies of the financial markets and to have contributed to the financial crisis independently of accounting regulation.

In another study, the same authors reveal a very important characteristic derived from *fair value* accounting transparency [Plantin et al. (2008b)]: “[b]y shining a bright light into the dark corners of a firm’s accounts, *fair value* accounting precludes the dubious practices of managers in hiding the consequences of their actions from the eyes of investors. Good corporate

governance and *fair value* accounting are seen as two sides of the same coin.” *Fair value* accounting thus acts as a watchdog for outsiders to give them early warning of the possible problems in a financial institution, before they transform into a crisis. The proponents of *fair value* accounting contend that if it had been applied earlier, the negative consequences of Japan’s crisis in the 1990s or the savings and loans crisis (S&L) would have been reduced [see the analyses of Michael (2004) or André et al. (2009)].

Another more pragmatic argument in favor of the usefulness of *fair value* accounting was the treatment of derivatives. The treatment under historical cost accounting was to record their original acquisition cost, which is close to zero, whereas the exposure is very high. Only *fair value* accounting for these instruments informs outsiders of the firm’s actual exposure, according to the supporters of the new accounting regime.

Fair value accounting is also seen as an opportunity to do away with the profit-smoothing manipulation which was possible during the historical cost accounting era. Under *fair value* accounting all gains and losses are recognized immediately in the financial statements instead of being smoothed over the entire life of the instrument, thereby ruling out this earnings management activity. Accounting reports will thus present a more realistic view of the current operations of the company.

In contrast, the opponents of *fair value* accounting signal the unreliability of the new accounting numbers. The critics of the *fair value* accounting reporting system, mainly European banks and insurance companies, base their arguments precisely on the standard setters’ assumptions. When the secondary markets for firms’ assets and liabilities are not efficient (i.e. are not deep and liquid), *fair value* accounting would decrease rather than increase the reliability of the financial statements. This is exactly the case of banks and insurance companies with “soft” secondary markets [ECB (2004)]. Plantin et al. (2008a) cite as an example the OTC market for loans. Also, as the ECB (2004) notes, complications may arise in the case of credit risk models and valuation methods of illiquid or non-traded instruments, not suitably developed to date. The unreliability of the models’ assumptions, sometimes incompletely known by outsiders, has moved some analysts to rebaptise the procedure as “*mark-to-myth*” instead of *mark-to-model* [see Leijonhufvud (2009), with reference to Warren Buffett’s words: “in extreme cases, *mark-to-model* degenerates into what I would call *mark-to-myth*” – Buffett (2003) –].

The European Commission (2001), a staunch supporter of financial institutions in their dispute with the *fair value* initiators, considers that “substantial additional evidence needs to be assembled to support the underlying assertion that fair value is superior to historical cost for all financial instruments and that *fair value* can (subject to a minor exception) always be determined reliably”².

A second argument against *fair value* accounting is that it will bring “artificial” or additional volatility into financial reports, and hence into financial markets. This “artificial” volatility is supposed to be a consequence of the adoption of *fair value* accounting, without reflecting the underlying fundamentals [Plantin et al. (2008a) and ECB (2004)]. To get an idea of the per-

2. It is worthy of mention that French banks led the opposition to the introduction of *fair value* accounting. According to the Financial Times (31 March, 2004), the ex-president Chirac “made an unusual foray into accounting last year to say the IASB’s rules could have “nefarious consequences” for Europe’s economies”. J. Laurent, CEO of Crédit Agricole, France’s second largest listed bank, said it will not implement IAS 39 without changes. “You are going to have banks where no one will understand the accounts”, he said, adding that “The managements are not going to be able to manage the business”. D. Bouton, chairman of Société Générale, France’s third largest listed bank, said: “The IASB adopted rules that are not only inappropriate and misleading for users of financial statements, but also will have a very significant negative impact on the financial statements and possibly on the economy as a whole.”

ceived impact of this new source of volatility, one can cite for example the Danish regulators' fear that the induced "artificial volatility" could even destabilize their financial system [The Economist (October 2004)].

The third argument against the adoption of *fair value* accounting, used by some financial institutions, is that the *fair value* system does not properly reflect the way they manage their core business, focused especially on long-term decisions and less concerned with short-term variations [Geneva Association (2004)]. Life insurers and pension funds strongly support this idea, in contrast to brokers, dealers and hedge funds. The first category of investors usually hold their investment until maturity and they affirm that they can neglect the short-term variability of the assets in their portfolios, while the second category changes portfolios frequently and is used to accounting for their instruments at market value.

Not only companies express concern about *fair value* reporting: regulators are aware of the opportunity for managers to manipulate earnings which is implicit in the freedom to make estimates when market prices are not available [ECB (2004)]. The same report also mentions another worry about the new accounting regime, i.e. that *fair value* reporting could magnify economic cycles through its pro-cyclical effects. Other discussions of *fair value* accounting and pro-cyclicality have been published by Banque de France (2008), IMF (2008), and Banca d'Italia (2009).

3 Academic literature on fair value accounting

A topic as important as *fair value* reporting for financial instruments has naturally attracted the interest of the scientific community, and increasingly so during the recent crisis. Since banks are major users of financial instruments affected by the *fair value* accounting rules, and they have recently acted as an important link in the financial crisis, it is not surprising that these financial institutions have come under close scrutiny in the academic literature.

We can distinguish two categories of research work. The first group of studies sought to predict or discover the general consequences that the introduction of *fair value* accounting had *before* the financial crisis occurred. These pioneer studies launched the debate about trade-offs in accounting regulation and posed the main hypotheses.

The second category consists of more recent studies (the majority in early-stage versions, due to their recentness) undertaken *during* the financial crisis to identify the particular influence of *fair value* accounting on the financial crisis. The studies in this second category differ from the first stream of literature not only chronologically, but also in their particular interest in the financial crisis, since they possess what Caplin and Leahy (2004) called "wisdom after the fact". They benefit from the experience of the hypotheses launched by the pre-crisis studies during the first years of the *fair value* accounting implementation period and focus on testing the hypotheses concerning the financial crisis. Mainly, they revisit the pro-cyclicality and illiquidity issues. However, their task is not easier than that of their predecessors.

We present in this section a brief review of the studies from the first category.

Much of the research effort in the last decade was devoted to value relevance studies to test whether *fair value* disclosure/recognition is helping financial statements users. This is a natural research question as it forms the basis of the argument in favour of the accounting change. The application of *fair value* accounting in the case of banks is analyzed in studies like Barth (1994), Bernard et al. (1995), Barth et al. (1996), Beatty et al. (1996), Eccher et al. (1996) and Nelson (1996). Barth (2000), Barth et al. (2001) and Landsman (2006, 2007) conduct comprehensive reviews of the measurement and the value relevance issues in the *fair value* literature.

While the Joint Working Group of standard setters concludes that the “case for the superior relevance of *fair value* measurement is supported by a growing body of market-based research” [JWG (2000)], the academic literature finds that additional efforts are necessary to support the relevance and reliability of *fair value* indicators, especially in the case of instruments not traded in liquid markets.

In recent years, academic researchers have drawn attention to a general phenomenon that bears on the previously described arguments for and against *fair value* accounting: the lack of neutrality of accounting regulation. They predict that the adoption of *fair value* accounting will have economic consequences in terms of the real decisions of firms. This concern is stressed, for example, by Shin (2007), who considers that “the key to the debate on *fair value* accounting is how behavior is affected by the accounting regime”.

It is important to mention that when accounting policy-makers design new standards, they focus on the quality, transparency and comparability of the accounting numbers so as to help *the users* of financial reports to make economic decisions, without explicitly considering the interaction between accounting and managers’ decisions. The IASB’s main declared objective is “to develop, in the public interest, a single set of high quality, understandable and enforceable global accounting standards that require high quality, transparent and comparable information in financial statements and other financial reporting to help participants in the world’s capital markets and other users make economic decisions” [IASB (2010)].

However, as Beatty (2007) remarks, “standard setters should be interested in how economic behavior changes as a result of their standards even if the standards do not take these changes of behavior into account”, making reference to the viewpoint expressed by the former vice-chair of the Financial Accounting Standards Board [Leisenring (1990)]. In another research study, Barth (2006), considers the following unsolved problem a “motivating question for future research”: “How will greater use of *fair value* in financial statements affect investor or management behavior? Are these effects simply a natural consequence of providing neutral and transparent information, or do they reflect a lack of neutrality in *fair value*? If the latter, what is the cause of the lack of neutrality?”.

As long as the financial decisions induced by different accounting standards are not the primary concern of standard setters and hence not completely estimated when designing accounting standards, there is a pressing need to study them among regulators, practitioners and the academic community. This is why such studies were undertaken in the years before the financial crisis.

A pioneering research paper on the consequences of *fair value* application is O’Hara (1993), and the particular issue analyzed is the effect of *fair value* on loan maturity. The author finds that, when asymmetric information exists, *fair value* reporting introduces a bias into asset valuation against longer-term illiquid assets (such as loans). The bias arises because of the difficulty in establishing market prices for assets in the presence of private information, a well-known characteristic of bank operations, requiring specific information and expertise.

Burkhardt and Strausz (2004) also analyse bank loans subject to either historical cost or *fair value* accounting treatment. The paper, like the previous one, is an extension of Akerlof’s lemons problem and finds that the historical cost regime can induce underinvestment.

Freixas and Tsomocos (2004) study the effects of *fair value* accounting on the banking system and its ability to act as a facilitator of intertemporal smoothing. The study looks at another way

in which banks are affected by the two accounting regimes: profits are more variable under *fair value* than historical cost accounting. However, the assumptions are quite different from the usual arguments of *fair value* supporters and opponents, making the study singular: in this case, profit smoothing is viewed as a desirable action. This disagrees with the classical critics of historical cost accounting, who disapprove of allowing managers to manipulate firm performance by smoothing profits in order to present a more stable activity. The main result is that from the banking theory perspective, “book value ex ante dominates *fair value*, as it provides better intertemporal smoothing”.

The Geneva Association (2004) conducted a survey of insurance company CEOs. It predicts that *fair value* accounting will have a negative impact on insurance activity by shortening their planning horizons, changing their risk management practices and reducing their risk appetite. One of the conclusions of the study is that “the introduction of a full *fair value* reporting system would significantly change the business strategies, corporate policies and systems over time in a way that most companies consider would reduce their competitiveness”.

Plantin et al. (2008a) study the costs and benefits of the two accounting regimes: historical cost versus *fair value*. Their paper is notable for the unique complexity of answers to the hypothesized effects of *fair value* accounting application and the way it anticipated the fire sale spiral during the financial crisis, developing from the initial versions of the study in 2004. The authors present a model whose outcomes explain why, in general, a financial institution should be distressed by the introduction of a *marking-to-market* regime. Both accounting regimes are found to have their own inefficiencies; in particular the historical cost regime results in counter-cyclical trades with a stabilizing effect on prices. By contrast, *fair value* accounting amplifies the movements in asset prices relative to their fundamental values: when the price decreases, the incentive is to sell, and the opposite behavior appears when the price increases. Thus, *fair value* accounting results in pro-cyclical trades that destabilize prices. This way *mark-to-market* pricing can increase asset volatility and induce sub-optimal real decisions due to feedback effects. The induced “artificial volatility” of prices most strongly affects institutions whose portfolio consists of long-term, illiquid, and senior (i.e. limited upside risk, but a possible downside risk) assets. These are the major characteristics of bank assets (loans) or insurance liabilities (in the reinsurance market), which explains why banks and insurance companies were the most vocal opponents of the *fair value* regime.

The issue of additional volatility caused by *fair value* accounting is analyzed by another researcher, with a distinct conclusion: Barth (2004) identifies three main sources of volatility associated with *fair value* accounting as compared with (modified) historical cost accounting. The first source of volatility is the true underlying economic volatility, reflected in changes of assets’ and liabilities’ *fair values*. This is considered a “good” volatility, needed for earnings to be informative to investors.

The second source of volatility is induced, and results from the use of a mixed-measurement accounting model (measuring some assets and liabilities at *fair value* and others at modified historical cost). However, in the latest versions of standards, this source of artificial volatility is not problematic because it is not significant, as long as the standard setters allow all financial instruments to be recognized at *fair value*.

Thirdly, volatility can arise from measurement error in estimates of *fair value* changes. Barth (1994) provides evidence of this in banks’ investment securities. The author emphasizes that this last source of volatility also exists in any accounting measurements relying on estimates, including those based on modified historical cost. Consequently, for Barth (2004) the criticism

that *fair value* information makes earnings “too volatile” is unfounded, unlike in the previous study by Plantin et al. (2008a).

Another research paper, Allen and Carletti (2008), looks at the link between accounting regime and the functioning of financial markets and warns that *fair value* may affect the stability of these markets.

The aforementioned studies question the supposed superiority of the “new” *fair value* regime with respect to the “old” historical cost method. By contrast, in an agency framework Bleck and Liu (2007) prove the superiority of the *fair value* regime as an incentive device. The use of historical cost allows “bad” managers to hide the results of their poor strategy, whereas *fair value* enables a quicker reaction from shareholders.

Zhang (2009) studies how corporate risk-management behavior was affected in the USA by the adoption of SFAS 133, a standard requiring the use of *fair value* accounting for derivatives. The author takes a sample of US companies that use derivatives as part of their risk management strategy and divides them into “Effective Hedgers” and “Ineffective Hedgers/Speculators”. It is found that after IFRS adoption the volatility of cash flows and risk exposures related to interest rate, foreign exchange rate and commodity price decreases significantly for “Ineffective Hedgers/Speculators” firms, but not for “Effective Hedgers”.

The same topic is tackled by Lins et al. (2010) through a worldwide survey with 358 valid responses from non-financial firms. They find that a significant amount of the respondent companies altered their risk-management strategies as a consequence of the introduction of *fair value* accounting for derivatives. According to the results, the overall level of hedging activities and the use of non-linear hedging instruments decreased.

The empirical studies and analytical models cited show that the switch in accounting regulation from a model based on historical cost to one based on *fair value* accounting changes the behavior of financial firms. However, in none of the studies so far are the observed behavioral changes in financial decisions considered in a framework consistent with the classical finance literature on portfolio selection.

Glavan and Trombetta (2010a) describe an analytical environment where financial firms are concerned about negative accounting profits (i.e. losses) and have an interest in distributing part of their economic surplus, similar to the objectives of pension funds or life insurance companies. Profit recognition is a prerequisite for the firms in this framework in order to be able to distribute dividends needed for consumption. The accounting regimes analyzed are pure historical cost and *fair value* accounting and the financial assets are assumed to be log-normally distributed. The authors find that, compared with the theoretical optimal portfolio decisions (first best), both pure historical cost and *fair value* accounting regimes lead to inefficiencies, but *fair value* is ex-ante worse than pure historical cost accounting in terms of consumption smoothing and the welfare loss is higher for companies focused on long-term business than for those with short-term horizons.

Regarding portfolio allocation rules, the authors prove how the optimal myopic allocation rule that is valid without accounting restrictions is fundamentally modified by the accounting regulation. The optimal rule depends on the inter-temporal time preference of the investor (long-term vs. short-term oriented). Also, the portfolio allocation profile changes with accounting restrictions. Under pure historical cost (*fair value*) the investor will choose a more (less) risky portfolio than the portfolio chosen without restrictions. Moreover the portfolio chosen under

pure historical cost is always riskier than the portfolio chosen under *fair value*, proving that the accounting regulation lacks neutrality.

In an empirical study, Glavan and Trombetta (2010b) analysed an extensive sample of European banks, monitored over a time interval which included the adoption of IFRS. The first result obtained in the IFRS adoption year is that the application of *fair value* accounting leads to a significantly riskier trading portfolio than if banks had continued to present financial statements according to historical cost accounting, a result supporting the value relevance of *fair value* accounting. For the same year, the accounting profits corresponding to the trading portfolio are higher with *fair value* accounting than with the historical cost accounting regime. After IFRS adoption, banks are slowly adjusting their trading portfolios year by year towards more conservative portfolios, a trend which is consistent with the prediction of the analytical model developed by Glavan and Trombetta (2010a) that portfolio allocation will depend on accounting regulation,

4 Studies on the role of fair value accounting during the recent crisis

The analysis of a controversial topic like *fair value* accounting at a very special time like the financial crisis can hardly be expected to yield a single predominating point of view.

There are two opposing viewpoints in the academic literature about the role played by the new accounting regime during the financial crisis. For some authors there is no doubt that the application of *fair value* accounting had some importance in exacerbating the crisis. In contrast, other scholars consider that this accounting regime played no direct role in the current crisis.

After analyzing how the crisis developed, De la Dehesa (2009) concludes that *fair value* accounting accelerated the recent turmoil. The *fair value* accounting rules permitted banks to finance their investments in the short run using the assets as collateral, measured at high market values when the economy was booming. During the crisis a vicious circle was set up. Banks had to recognize a reduction in the value of some of their financial assets, generally linked to sub-prime loans. The value of the assets in their portfolios was thus adjusted to lower levels. Banks considered that the adjustment was not justified by economic fundamentals, arguing that their intention was to keep the instruments until maturity. This reduction diminished shareholders' equity. In order to maintain their solvency ratios at the required level, banks were faced with the following dilemma: they were forced either to raise new capital under depressed valuation conditions, to sell part of their assets, or to reduce lending with the resulting negative effects on the economy as a whole. Moreover, the sale of assets during the crisis depressed their market value even more and contaminated, due to *fair value* accounting, the balance sheets of other banks not participating in this fire sale spiral. This analysis is defended in particular by the above-cited Plantin et al. (2008a), but also by other academic authors such as Sapra (2009), De Grauwe (2008) or Ivashina and Scharfstein (2009). See also the conclusions of the American Bankers Association (2008), Wallison (2008a, 2008b), Whalen (2008) and Forbes (2009).

The vicious circle described above also heightens the pro-cyclicality of banking regulation. It is documented that Basel II induces pro-cyclicality [Repullo and Suárez (2008) or Repullo et al. (2009)], and the additional pro-cyclical effects of *fair value* accounting imply unhappy consequences for the economy.

Regarding Basel II, it is important to note that *fair value* accounting leads to inconsistent application across countries. As De la Dehesa (2009) (p. 400) remarks, the same bank could present a given amount of trading assets under US GAAP and more than double that amount

under IFRS. Hence this inconsistency could affect not only the reliability of *fair value* measurement, but also the effectiveness of Basel II regulation.

Two recent studies discuss the role played by the introduction of *fair value* accounting in the increase in banks' leverage. Leijonhufvud (2009) shows that a high level of leverage coupled with *fair value* accounting can be dangerous when the minimum capital requirements act as crisis amplifiers, due to pro-cyclicality. It is a case of positive feedback: during good times, accounting profits, measured at *fair value*, are increasing, and companies can raise their leverage. As long as all companies are moving in the same direction and buying at the same time, asset prices continue rising even more. Keeping them on the balance sheet at their *fair value* allows companies to use them as improved collateral and increase leverage still further.

Gros (2009) provides some examples of another type of increase in leverage due to *fair value* accounting, but this time it acts through intangible assets like goodwill or knowhow. During the good times some banks acquired other banks at high prices, and the difference between the book value and the price paid was recorded as goodwill. When the crisis spread, these intangibles became just another type of toxic asset and had to be recognized at a value close to zero due to *fair value* accounting, thereby pushing up the leverage ratio.

Bischof et al. (2010) are analyzing the amendment to IAS 39 in October 2008, namely the option whereby the IASB allowed the non-application of *fair value* accounting for selected financial assets, at the peak of the financial crisis. Their sample consists of 302 publicly listed IFRS banks and they discover that "banks used the reclassification option to forgo the recognition of *fair value* losses and ultimately, due to the link between *fair value* accounting and regulatory capital, regulatory costs from supervisory interventions." The real objective of the amendment was, in the authors' opinion, to help international banks with very serious financial problems and save them from otherwise going bankrupt, rather than to reduce competitive disadvantages with respect to their US competitors, as officially proclaimed. Banks used the reclassification option to avoid regulatory costs, political costs and a decrease in depositors' confidence. Without the *fair value* accounting moratorium banks would have suffered even more during the crisis. However, the study makes an important point supporting *fair value* relevance: from the stock market reactions the authors observe that a small number of the most troubled banks benefited from reclassifications.

A different point of view is held by other authors. Basically, while not neglecting the vicious circle described above, they argue that *fair value* accounting did not play a significant role in closing it.

Barth and Landsman (2010) analyze the role played during the financial crisis by the financial reporting of *fair values*, asset securitizations, derivatives and loan loss provisioning. Their conclusion is that "*fair value* accounting played little or no role in the Financial Crisis", in line with other studies such as Ryan (2008), the US Securities and Exchange Commission (2008) and Laux and Leuz (2010). Similar conclusions supporting *fair value* accounting during the crisis period are drawn by Ball (2008), Turner (2008) and Veron (2008).

Barth and Landsman (2010) take the view that although accounting standard setters and bank regulators should have some common ground, there should be also a clear separation: "it is the responsibility of bank regulators, not accounting standard setters, to ensure the stability of the financial system". The objective of financial reporting is to provide information useful to present and potential investors and creditors. In contrast, the objectives of bank regulation are

prudential and to mitigate systemic financial risks. Given the separate objectives, the information required from banks should be different.

The authors recognize that bank regulators use information provided in bank financial statements as inputs for calculating regulatory capital measures and rely on capital markets. However they make a variety of adjustments to financial reporting information. For example, the accounting bodies require recognition of some unrealized gains and losses, in line with their objective of enhancing the information banks provide to outsiders, while bank regulators often neutralize the unrealized gains and losses in regulatory capital, considering it more useful for prudential supervision. In this respect, while both US GAAP and IFRS require banks to measure available-for-sale investment securities at *fair value* and to recognize cumulative unrealized gains and losses in accumulated other comprehensive income, tier 1 capital is computed in the USA after removing these cumulative unrealized gains and losses.

Regarding the assumed pro-cyclicality of *fair value* accounting, the authors consider it unlikely. The hypothesis of bank asset values decreasing and necessitating recognition of impairments in banks' financial statements is not supported by Barth and Landsman (2010) for two reasons.

The first argument is that this claim can only apply to those bank assets that are measured at *fair value* or for which *fair value* applies when determining impairment. However, the proportion of bank assets for which this is the case is limited. The recent studies of Laux and Leuz (2010) and Shaffer (2010) provide evidence supporting the view of Barth and Landsman (2010) in this respect. According to Laux and Leuz (2010), during the 2004–2006 period banks held approximately 50% of their assets in loans and leases, which are not subject to *fair value* accounting and hence not impaired to *fair value*. Also, for the 14 largest US commercial banks, Shaffer (2010) reports that the decline in tier 1 capital during the financial crisis arising from loan impairments was around 15.6% and those impairments were based on an incurred loss model and not on *fair value*.

The second argument is that the already discussed prudential filter used by bank regulators in many countries when calculating tier 1 capital neutralizes some *fair value* gains and losses. That way the temporary changes in *fair value* do not significantly affect tier 1 capital. According to Shaffer (2010) the reduction in tier 1 capital arising from impairment of available-for-sale and held-to-maturity assets at the 14 largest US banks during the crisis averaged only 2.1%, so this is the upper bound of the potential effect on tier 1 capital arising from recognition of impairment of these assets using so-called “artificially low” prices.

Another paper by eminent scholars makes the same inferences. According to the comprehensive study by Laux and Leuz (2010), the possible downward spirals or fire sales are not the consequence of *fair value* accounting. They also “find little support for claims that *fair-value* accounting leads to excessive write-downs of banks' assets. If anything, empirical evidence to date points in the opposite direction, that is, towards overvaluation of bank assets.”

The reasons given by Laux and Leuz (2010) for their conclusions are similar to those offered by Barth and Landsman (2010). First, the majority of bank holding companies' assets are not carried at *fair value* on the balance sheet. Also, when *fair value* accounting is applied, its form differs from pure *mark-to-market* accounting. Second, not all *fair value* changes enter into the computation of banks' regulatory capital. Like Barth and Landsman (2010), they consider that these provisions act as safeguards, “making downward spirals and contagion less likely to occur as compared to a regime of pure *mark-to-market* accounting”.

Citing the results of other recent empirical studies like Goh et al. (2009), Kolev (2009), and Song et al. (2009), the authors conclude that “there is little evidence that market valuations of *fair value* assets in 2008 exceeded their reported values, which might indicate excessive write-downs”.

Huizinga and Laeven (2009) performed another empirical study which investigates the possibility of excessive write-downs. The authors show that banks exercise substantial discretion in valuing their assets and doubt that banks were forced to write down their mortgage-related assets excessively. Upon analyzing the market pricing of banks’ real estate assets, they find that, in 2008, investors discounted the reported values of banks’ real estate loans by about 15% and of mortgage-backed securities by about 13%.

After reviewing the recent literature, Laux and Leuz (2010) conclude that “it is unlikely that *fair-value* accounting added to the severity of the 2008 financial crisis in a major way”.

However, the authors are aware of the limitations of their conclusions: “[i]t is possible that the role of *fair-value* accounting was limited precisely because its relevance for banks’ balance sheets and capital requirements was limited”.

5 Concluding remarks

An important concern of today’s society, from the popular press to policy-makers, regulators and academics around the world, is the recent financial crisis, due to its unusual magnitude and negative consequences.

The introduction of *fair value* accounting is frequently cited as an important link in the mix of crisis determinants. Coincidentally or not, this is the first financial crisis in which the accounting system in force takes a *fair value* approach at worldwide scale, which heightens interest in this accounting topic.

However, *fair value* accounting was a much debated issue even before the financial crisis commenced. For its supporters, the use of market prices for preparing accounting reports is beneficial to investors and authorities, as they provide more relevant information. Its opponents, however, are concerned about the valuation of illiquid financial instruments and induced artificial volatility and pro-cyclicality.

The academic literature has reflected the debate from the outset: the initial studies focused on value relevance, attempting to discover whether *fair value* accounting adds relevant information to financial reports. Additional evidence of the superiority of *fair value* accounting seems to be needed, especially in the case of illiquid instruments. The more recent stream of studies is devoted to the lack of neutrality of accounting regulation. They note the trade-offs between the “old” historical cost accounting and the “new” *fair value* accounting and spell out the main hypotheses regarding the application of *fair value* accounting under different scenarios, showing how the behavior of financial institutions varies with the accounting regulation in force.

During the crisis period, academic efforts concentrated on studies to determine the role played by this new accounting regulation in propagating the crisis. The conclusions diverge. For some authors it is obvious that *fair value* accounting accelerated the recent turmoil, inducing pro-cyclicality and contributing to close the vicious circle of asset fire sales during the crisis. The opposing opinion is that *fair value* accounting did not play a significant role in closing the vicious circle, because in practice the actual system is neither pure nor full *fair value*, and regulators are adjusting or neutralizing the inputs from accounting information.

Clearly, additional efforts are necessary to accurately assess the role of *fair value* accounting during the crisis period. The task of separating the responsibility of accounting regulation for aggravating the crisis from the other effects is obviously difficult. Since we do not know how the crisis would have unfolded under the “old” historical cost or another alternative accounting system scenario, the academic community has to find feasible research alternatives.

One line of research may be concentrating on studies of particular accounting events during the crisis, such as optional reclassifications or temporary suspension of *fair value* accounting. Also, revisiting the value relevance studies and the frameworks developed in the literature on the lack of neutrality of accounting regulation and applying them to the financial crisis period may contribute to our understanding of the direct consequences of *fair value* accounting in the recent financial disaster.

Ultimately, the future research findings may assist standard setters to devise improved accounting regulation. Regarding consistency with regulators’ financial stability concerns, Laux and Leuz (2009) suggest a future avenue for regulation: “it may be better to design prudential regulation that accepts FVA [*fair value* accounting] as a starting point but sets explicit counter-cyclical capital requirements than to implicitly address the issue of financial stability in the accounting system by using historical costs. It is an illusion to believe that ignoring market prices or current information provides a foundation for a more solid banking system”.

To conclude, despite the fact that *fair value* accounting is an imperfect measure, the academic community cannot at this moment unanimously propose a feasible better alternative.

Both supporters and opponents should accept the idea that *fair value* financial statements inform – not always in the most accurate way – about investment decisions, and financial institutions should not “shoot the messenger” until improved accounting regulation can be designed.

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