

APPLYING MACRO-PRUDENCE IN FINANCIAL STANDARD SETTING

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***Abstract.** The systemic crisis has shown that far from being an obscure and arcane debate about measurement, accounting issues take on a huge significance for financial stability. This paper presents a macro-prudential model outline of financial standard setting, i.e. the idea that fair value accounting's prior aim is no longer to correctly depict market values but to capture the broader impact of accounting on economic and financial systems. This approach differs from current accounting research in two ways: It addresses the possibility that fair value accounting can be, at least, a partial solution to the problem of systemic crises, rather than a mere problem contributor or crisis accelerator. Additionally, it questions the acclaimed role of accounting standard setters to provide decision-useful information and thereby concentrate solely on ensuring that accounting values reflect current terms of trade between willing parties rather than cooperating with the prudential regulators in their endeavor for financial stability. The paper is thus able to offer a vision for how a new bank accounting regime for systemic stability could be designed.*

***Keywords:** macro-prudence, bank accounting, systemic, stability, fair value, prudential, regulation*

Introduction

The International Monetary Fund (IMF) argued in 2008 that accounting standard setters will increasingly need to take into account the implications of their accounting practices and guidance for financial stability. Research should investigate the degree to which decision-making rules based on fair value may compound a crisis, and identify strategies that could mitigate these adverse effects. The IMF suggests that such strategies could involve defining decision rules on the basis of fair value milestones that trigger a review of the elements underlying fair value rather than compulsory sales. The results of such research should inform the decisions of banking regulators as well as the decisions of accountants and auditors. This will potentially require some fine-tuning of existing guidance. (IMF, 2008)

Sapra is one of the first researchers who have taken up on the IMF's demand. Yet his appeal that "much more formal economic modeling is needed" in this regards (Sapra, 2010), has up to now mainly been followed by economic researchers, such as Adrian and Shin in a paper from 2010, but only very few accounting researchers have taken interest in this issue (see Bleck and Gao, 2010 for an exception). This is not so much of a surprise when one takes into consideration that the primary objective of the accounting framework is defined as "to provide financial information about the reporting entity that is useful to existing and potential investors, lenders, and other creditors in making decisions about providing resources to the entity." (FASB Concepts Statement No. 8, Conceptual Framework for Financial Reporting, p. 1) Hence, the role of accounting is seen as a source of information and not as an enforcer of

financial stability. Accounting standard-setters as well as most accounting academics view it as the role of prudential regulation to strengthen the stability of the banking sector. Financial reporting therefore does not claim to detect and take measures against rising risk levels in the financial market. Nevertheless, they believe that ignoring market prices and only focusing on historical costs could provide a foundation for a more solid banking system is commonly regarded illusory. But most accounting researchers admit that the trade-off between transparency and financial stability as well as the interactions between accounting and prudential regulation need further analysis. (Landsman, 2005; Laux and Leuz, 2009)

Many economic and legal scholars have argued that a weakness of the existing framework is that it is largely micro-prudential (e.g. Kashyap and Stein, 2004; Hanson et al., 2011). As defined by Hanson et al. (2011) a micro-prudential approach is one in which regulation is a partial-equilibrium in its conception, and is aimed at preventing the costly failure of individual financial institutions. By contrast, a macro-prudential approach recognizes the importance of general-equilibrium effects, and seeks to safeguard the financial system as a whole. They thereby agree with the majority of policymakers that the overarching orientation of financial regulation needs to move in a macro-prudential direction. (Hanson et al., 2011, p. 4)

In order to operationalize the macro-prudential approach in a sensible way—i.e., to translate it into a set of specific accounting policy prescriptions—I am going to begin with a historical literature review of what goes wrong in a financial crisis. Moreover, this review is supposed to identify the key market failures at work: It must spell out why individual financial institutions, acting in their own interests, deviate from what a social planner would have them do. Once the market failures are clear, I will go on to propose various concrete steps to remedy them.

I am going to argue that in boom times, fair value accounting suffers from some serious conceptual flaws, such as an amplification mechanism resulting in pro-cyclicality, too many overpriced, low quality financial instruments as well as a too high reliance on one attained asset price as a price indicator for unsold assets. However, I am hypothesizing that in crisis times the flaws attributed to fair value accounting are actually mainly of an economic nature. So, fair value accounting discloses volatile and inefficient markets and reflects market overreaction (Sapra, 2008). In the same sense, the SEC comments in its study on mark-to-market accounting that from a systemic point of view, forced sales in illiquid or distressed markets “may further weaken the market for the securities and reduce the resulting price for the observed trades, compelling additional sales to raise capital”. (SEC, 2008, p. 182) Hence, I am going to show that accounting standard setters, up to now, may take the easy way out by playing down their own influence in the financial market's environment. As long as prudential regulation is founded on the output of financial accounting, accounting standard setting appears to be in the duty to include in their own focus the stability aspects of the financial markets.

The paper is structured as follows. The next section reviews the historical evolution of the fair value accounting regime which was believed to overcome the flaws of the historical cost accounting regime. Section 3 sets out the conceptual flaws of fair value accounting in boom times, while Section 4 concentrates on the economic flaws of fair value accounting in crisis times. Section 5 presents the macro-prudential model outline for systemically sensitive prompt correction actions. Section 6 suggests some policy solutions for an effective cooperation between accounting standard setting and prudential regulatory bodies. Finally, Section 7 concludes by adumbrating why a macro-prudential bank accounting theory is capable of avoiding prudential relativism while still yielding informative suggestions for the betterment of society – and is thereby reforming fair value accounting so that it can avoid its major deficiencies.

From Historical Cost to Fair Value and Back Again?

The systemic crisis, which started in 2007 as the so-called subprime crisis and still endures as the sovereign states' crisis, puts high demands on bank accounting in general and on the target setting of financial measurement in particular. This crisis has shown that far from being an obscure and arcane debate about measurement, accounting issues take on a huge significance for financial stability. Quality of fair value disclosure seems to have eroded precisely when regulations should have actually "bitten". And prudential regulators and standard setters have appeared happy to play along in recent years. It is no wonder then that never before in modern accounting history so many people and policy institutions have discussed the merits and faults of accounting measurement. Since the outbreak of the financial crisis the question whether fair value accounting, also called marking-to-market¹, or historical cost accounting is the proper accounting method has almost become a war of creeds. The accounting standard-setters themselves still believe in the merits of fair value accounting. The former Chairman of the Financial Accounting Standards Board (FASB) commented: "I think it's hard to argue with the conceptual merits of fair value as the most relevant measurement attribute. Certainly, to those who say that accounting should better reflect true economic substance, fair value, rather than historical cost, would generally seem to be the better measure." (Reason, 2003, p.1) On the other side, insiders of many financial institutions such as the influential Steve Forbes not only doubt the panacea of fair value accounting but turn the argument upside down: "Marking-to-market accounting is the principal reason why our financial system is in a meltdown." (2009)

What is all the fuss about? The question on the boons and banes of the currently adopted fair value accounting evolves, so my contention, around the belief that fair value accounting closes the gap between the accounting equity and the value of the bank and thereby delivers the latest market valuation of the bank which is, in turn, decision-useful information. Under this view, which hinges on a considerable trust in market efficiency, fair value accounting should be fully implemented so that as much information as possible is provided to the public. Opponents, however, believe that fair value accounting provides some major obstacles to objectivity which have amplified the recent financial crisis. People favoring this second view – such as the already mentioned Steve Forbes – would like to get rid of fair value accounting mainly because they view the market as highly inefficient and see, hence, no use for an accounting standard that aims at reflecting market prices as closely as possible.

Critics of fair value accounting unavoidably argue for the method of historical cost accounting as this is the only viable alternative to fair value accounting. Historical cost accounting is not just a castle in the air but was the predominant accounting measurement in place for financial institutions until the middle of the 1980s. Hence it is necessary to investigate why it was at the time believed that historical cost accounting ought to be replaced as the predominant valuation measure. The idea of historical cost accounting is to measure assets at the cost by the time of their acquisition. This yields a gross capital value that is relatively easy to verify, however, when financial asset prices fluctuate it ceases to be a good price indicator. Even worse, when the market price of an asset rises above the historical cost of the asset, the manager of the financial firm has an incentive to sell the asset, in order to realize the capital gain. In other words, when the price of the asset *rises*, the incentive is to *sell* it. (Plantin et al., 2008a) For that reason it is a fair assumption that historical cost

¹ Unless indicated otherwise, I will use the phrases *mark-to-market accounting* or *fair value accounting* synonymously. While mark-to-market accounting is the use of observable market prices to measure the value of an asset, fair value accounting is a broader term than mark-to-market accounting in the sense that it may use both observable and/or unobservable inputs to measure the value of a claim.

accounting was one of the major contributors to the downfall of the United States Savings & Loans crisis in the mid-1980s as it hindered the recognition of interest rate risk, which in turn, allowed systematic over-reporting of the health of the thrifts. It is probable that the sales pressure induced by historical cost accounting has even increased in the meantime due to the evolution of high-frequency trading and loan securitizations.

Another reason for replacing historical cost accounting by fair value accounting is the latter's potential to minimize the manipulation of accounting numbers. Market-based values are, almost by definition, a non-management based referent and this is consistent with early standards on audit evidence quality hierarchies which prioritize sources of evidence which are independent of both auditee and auditor. So an important aspect of the 'fair value' concept is to establish distance from entity views of value and to locate reliability as far as possible in the collective judgment of the market. The International Accounting Standards Board Chairman even argues that the "current credit crisis has to a large extent been caused by a lack of transparency in the financial markets. Huge risks were allowed to be built up on and off the balance sheet without being noticed". (Hoogervorst, 2011, p. 3) Put in this way, the problem is not fair value accounting but – rather the opposite – that its scope was limited in that off-balance sheets (the notorious Special Purpose Vehicles) were allowed to grow. Moreover stakeholders, especially regulators, have been very enthusiastic about valuing firms to market prices. Many thought this would help a big deal against earnings management. The idea behind the fair value approach has been that the general public provides the correct valuation of an asset since it can base its valuation on a much broader basis than a single manager who, in addition, may be biased for his personal benefit. It was thought that the general public invests long-term and cares for the true value of the company, while the manager as the agent has very limited and short-term interests in the company, such as maximizing his earnings bonus.

So in abandoning fair value accounting and going back to historical cost accounting we might jump out of the frying pan into the fire, where we originally came from in the 1980s. We have the choice between fair value accounting which tries to reflect market prices, the biases of which accounting ought to correct in the first place and historical cost accounting which provides a huge incentive to manipulate asset values and to sell assets too early. Both accounting standards have arguably caused or at least worsened huge crises. A real dilemma.

Conceptual Flaws of Fair Value Accounting in Boom

This section aims to study why accounting standard setters and prudential regulators disagree in their opinion about the role of mark-to-market (MTM) accounting² in the run-up to the recent financial crisis. Such disagreement, so my contention, has its origins in the diverging objectives of the two regulating bodies: The accounting standard-setters seek standards which incentivize the most efficient use of assets with regards to value maximization, while the prudential regulators seek a handling of assets which yields the least systemic risk. It seems as if the more efficient MTM gets in terms of the accounting conceptual framework (i.e. no inefficient sales for window-dressing reasons (Plantin et al., 2008b), the riskier the assessment based on MTM accounting becomes for the aims of the bank regulators. To address this potential trade-off, risks to welfare are considered which arise both on the level of individual inefficiency and on the level of the overall system.

According to Barth (2006), the IASB *Framework for the Preparation and Presentation of Financial Statements* (IASCB, 1989) states that the objective of financial reporting is to

² Here, the notion of mark-to-market (MTM) accounting is used instead of the more formal fair value accounting notion to make it clear that the majority of problems highlighted in the research apply to marking-to-market only, and would not apply to marking-to-model.

provide information useful to financial statement users in making economic decisions. She argues “It seems self-evident that financial statement amounts that reflect current economic conditions and up-to-date expectations of the future will be more useful in making those decisions, which are made in the current economic environment. However, it also seems self-evident that not all expectations of the future should be recognized in financial statements today, particularly those that do not arise from events or transactions that have occurred.” (Barth, 2006, p. 272) The extent to which bank regulators can rely on market discipline to perform their supervising role depends on the quality of information available to the capital markets. Thus, if accounting standard setters fail to keep the informational needs of capital markets as their first priority, an unintended consequence is that the effectiveness of market discipline as a regulatory tool could be undermined. (Barth and Landsman, 2010) Critics towards fair value accounting note the paradox of pursuing a close alignment of accounting and markets since, if this alignment were possible, accounting would become unnecessary (Power, 2010).

Even if one accepts the previous propositions, disagreement over appropriate accounting measures can still arise because the portrayal of the best (average) approximation to an unbiased view may generate tension with the objectives of other standard-setting authorities. For instance, it might be agreed that, for items for which liquid markets exist, fair value accounting is the most objective measure of realizable value. Nevertheless, this might be seen as generating excessive time variation in the recorded value of the firm from the perspective of financial stability, either at high frequencies (short-term volatility) or, arguably more importantly, at business cycle frequencies (“procyclicality”). (Borio and Tsatsaronis, 2005)

Adrian and Shin (2010) show that far from being passive, financial intermediaries adjust their balance sheets actively. This leads to high leverage during booms and low leverage during busts. Leverage is procyclical in this sense. “The accounting regime affects the degree to which such procyclical actions lead to amplification of the financial cycle. When balance sheets are marked to market continuously, changes in asset values show up immediately as increases in the marked to market equity of the financial institution, and elicit responses from them.” (Plantin et al., 2008a, p. 7) Hence, it is important to note that rising asset prices have the opposite — and equally procyclical — effect. As market values rise for homes, stocks, commodities, or any item that has a readily available price, more and more credit becomes available to carry these assets. As more credit is available, more money is chasing fewer assets and prices rise. From the standpoint of institutions, a rise in the value of assets is recognized in earnings under fair value principles if the assets were held for trading and recognized in the institution’s capital or equity position if the assets were treated as available for sale. In both cases, the growing earnings and strengthening capital induces more borrowing and the acquisition of more assets, so the upward spiral—also known as a bubble—continues. (Wallison, 2008, p. 6)

Existing literature mainly focuses on the amplifying effect of MTM accounting on market fluctuations in illiquid, declining markets, while there is relatively little research³ on the potential inefficiencies of MTM accounting in liquid, booming markets. This little attention is consistent with the assumption that MTM is efficient (or at the very least, more efficient than historical cost (HC) accounting) in such markets. In contrast to this belief, I examine whether MTM accounting can nevertheless create a strategic behavior by financial institutions in which it is preferable to hold on to a liquid asset for window-dressing reasons only. If this strategic behavior is possible, MTM would result in higher valuation gains

³ Among those who do put their focus on booming markets are Adrian and Shin (2010). They show that MTM accounting can lead to an amplification mechanism in boom markets by adding more and more securities to the balance sheet as soon as their value increases (upward sloping demand curve).

compared to HC accounting. The latter accounting regime can generate the same unrealized valuation gains as MTM only if the asset is first sold and then immediately repurchased (Laux and Leuz, 2009, p. 832). However, for these transactions to happen under HC accounting, all assets actually need to be sold and the quoted transaction price would correspond to a market clearing price built on total supply. The MTM quoted price, on the other hand, is higher since it is based on the proportionally scarce supply of actual transactions which take place under the MTM accounting regime.

Also, one major problem, the declining quality of assets, in the course of the business cycles, is often neglected in existing literature. Shin (2008) notes that for the banking sector, an increase in the balance sheet while maintaining the same high asset quality may not be a problem. However, if the accumulated surplus in assets would have been detected by the different stakeholders, the assets should have been rated much lower. Furthermore, for securities, the fair value accounting may become a bubble maker, instead of an instantaneous reflector of active markets. When one firm experiences a profit growth, its securities' price will rise. All other firms which hold this firm's securities will also earn an (unrealized) income because of the increase of the securities values based on the fair value accounting. Similarly, their securities' prices will also increase. (Yuan and Liu, 2011) As asset prices rise, agents may be more inclined, and find it easier, to take more risks (increase their leverage), as their perceived wealth increases and financing constraints are relaxed. This in turn tends to raise asset prices further. If this process goes too far, asset values and leverage are taken beyond sustainable levels, and the resulting overextension at some point has to be corrected, with the process going into reverse. Unless the system has built up sufficient cushions during the expansion phase, considerable financial strains and broader financial instability can emerge. (Borio and Tsatsaronis, 2005; Sinn, 2010)

Magnan (2009) brings forth another important problem concerning the use of fair value accounting in monopolistic seller markets. He notes that the Enron case illustrates the potential negative consequence from dropping conservatism and replacing it with mark-to-market accounting, with management strategically selecting bid or ask prices to value its energy contracts. Enron was a key market-maker or, sometimes, the only market-maker, in some markets, thus facilitating managerial discretion. (Magnan, 2009) Hence, if the purpose of the exercise is to assess the soundness of the aggregate balance sheet, then the marked-to-market value of the total stock (assessed at the current marginal transaction price) may not be a good indicator of the soundness of the aggregate balance sheet. Instead, it would be better to ask how much value can be realized if a substantial proportion of the stock were to be put up for sale. The value realized in such a sale would be much smaller than the current marked-to-market value. This is one instance in which marking to market gives a misleading indicator of the aggregate position. (Plantin et al., 2008a)

Lastly, existing literature does not fully account for the fact that a liquid market cannot by itself guarantee an efficient and correct pricing of MTM securities. MTM offers the advantage that a single instance of actual realization is sufficient proof for the realizability of the whole group of comparable securities. Hence, the entity characteristics and the competitive advantage of the actual selling bank are disregarded. Since the accounting rules merely ask for the management's intent on how long the fair-valued assets will be held on the balance sheet (trading vs. available-for-sale securities), the actual holding period will not influence the valuation basis of the assets. According to Credit Suisse's Annual Report 2010, 57% and 43% of their total assets and total liabilities, respectively, are measured at fair value (p. 60). These figures seem to point out that the aggregate degree of maturity transformation being performed by large banks has reached a tremendously high level in the past years. However, as soon as one takes a closer look, another picture arises. Most of these securities are available-for-sale and can be held for periods between one and five years, with 10% of all debt securities even only due in 10 years (p. 245). This indicates that the financial system has

become extensively reliant on the assumption that a large amount of assets could be counted as liquid because they would theoretically be sellable in liquid markets (Turner, 2009). In reality, it is common for an asset to be supplied exceeding the equilibrium trading volume. Many firms may not want to sell out all their assets, like financial assets and real estates, but continue to hold them for a better profit. A direct result of this decision is that the current market price could be maintained at a higher level than the clearing price at which all existing assets could be sold out. If the market price is taken as a reliable evidence of the fair value and the assets are measured based on MTM accounting, a large “income from changes in fair value” may be recognized. In fact, the market is efficient for every investor, but not efficient for all investors as a whole or for the whole society. Yuan and Liu (2011) comment that this gain can be regarded as a “fair value trap” because it cannot be changed into cash flow in the present circumstances in the near future.

Economic Flaws of Fair Value Accounting in Bust

Nevertheless, it is commonly regarded an illusion to believe that ignoring market prices or current information provides a foundation for a more solid banking system. According to Ryan (2008) “amortized cost accounting raises three main issues, all of which arise from its use of untimely historical information about future cash flows and risk-adjusted discount rates.

1. Income typically is persistent for as long as firms hold positions, but becomes transitory when positions mature or are disposed of and firms replace them with new positions at current market terms. This can lull investors into believing that income is more persistent than it really is.
2. Positions incepted at different times are accounted for using different historical information and discount rates, yielding inconsistent and untimely accounting for the constituent elements of firms’ portfolios. This obscures the net value and risks of firms’ portfolios.
3. Firms can manage their income through the selective realization of cumulative unrealized gains and losses on positions, an activity referred to as gains trading.” (Ryan, 2008, p. 5)

Currently, banks are required to record the value of some of their financial instruments, specifically derivatives and marketable securities, at fair value, or the price (or estimated price) the asset would fetch upon sale in an orderly market. They are allowed to record the value of other financial instruments, including loans and some debt securities, at amortized cost—essentially the historical cost at which they were acquired or originated. These costs are adjusted only when management determines that credit losses are probable or that the assets are otherwise impaired. As a result, in both the most recent crisis and previous crises in the banking sector, credit and impairment losses—particularly on loan portfolios—have been consistently and dramatically underestimated. Historical cost accounting with impairment estimates provides insufficient warning of these changes. The longer those losses go unrecognized, the bigger the problem becomes as ailing banks continue to take on new risks and underwrite business they cannot support. (Linsmeier, 2011, p. 411) Ryan (2008) argues that the limitations of historical cost accounting become more significant in illiquid markets, because it is then that investors mostly need to be able to assess firms’ value and risks accurately and that firms’ incentives to manage their owners’ equity and net income through gains trading are highest. (Ryan, 2008, p. 17)

Bank bondholders differ from shareholders in that they have a fixed claim on the bank's assets, without upside. As such, bondholders share with the government an interest in keeping the bank's capital ratio high. Therefore, bondholders would be hurt if, as according to the regulatory forbearance hypothesis, the dominant effect of the fair value relaxation rule change was to allow banks to mask a deteriorating capital ratio from regulators. Bondholders have an interest in a deteriorating capital ratio getting exposed to regulators as quickly as possible, because once that happens regulators force the bank to reduce leverage, benefiting bondholders. (Kolasinski, 2011, p. 176) Though historical cost accounting may benefit banks' shareholders, it can reduce bondholder wealth if the rule changes allow banks to continue operation and engage in asset substitution. This implies a negative market reaction by bank bonds. However, by increasing the likelihood of solvency, the accounting rule changes permit continued bank access to short-term credit and other government subsidies (e.g., access discount window borrowing and TARP), thereby exposing taxpayers to uncompensated financial risk. Thus the rule changes can transfer wealth from taxpayers to banks' shareholders and bondholders. This implies a positive market reaction by bank bonds. Given these offsetting effects, the market reaction for bank bonds is uncertain a priori. (Bhat et al., 2011, p. 157) In accordance with this theory, Bhat et al. (2011) empirically found an increase in stock and bond prices associated with the impairment rule relaxation which they label the "regulatory forbearance hypothesis"⁴. The rule change can help banks report higher earnings as long as they do not sell securities with unrealized losses. Consequently the newly amended mark-to-market rule could discourage banks from selling the distressed securities. (Bhat et al., 2011, p. 155)

Adrian and Shin (2010) suggest that there may be some relevance to capital structure after all. However, they do not explain the drastic differences in capital structure decisions between non-financial firms and banks. After all, similar tax and financial distress considerations apply to all types of firms. We would therefore expect them to behave similarly. So why do banks behave so differently? As a percentage of their assets, banks' capital cushions are extraordinarily thin both from a historical perspective and when compared to other industries. In other words, capital appears to be much more expensive for banks than for other non-financial firms. Diamond and Rajan (2000) assume that the decline in bank capitalization may be due to the decrease in the advantage of banks relative to arm's length lenders. They see the root cause for this declined advantage in the financial development because of improvements in information availability, the size of market, and the legal environment (p. 2444). Banks in recent years have bought assets using only a thin sliver of equity capital capable of absorbing losses and a huge amount of debt. Leverage ratios of 30 and more were common. But this means that even small variations in asset values turn into much larger fluctuations in the value of their equity. It is that risk which needs to be compensated for with a higher average return on equity (Miles, 2010). However, many economists claim that banks do not play at arm's lengths since they use deposit protection and the too-big-to-fail doctrine to lever up even more (e.g. Miller, 1995). From an overall economic point of view, banks may tend to hold too little capital. Miller (1995) prominently said about this issue: "An essential message of the M&M Propositions as applied to banking, in sum is that you cannot hope to lever up a sow's ear into a silk purse. You may *think* you can during the good times; but you'll give it all back and more when the bad times roll around." (p. 486).

As mentioned before, one major critique on fair value measurement is that financial intermediaries' economic leverage is procyclical, which could be a problem for the financial system. Since the fire sales become relevant "marks" for other banks, downward spirals as

⁴ The changes proposed on March 16, 2009 to fair-value accounting would allow companies to use "significant judgment" in valuing assets and reduce the amount of write-downs they must take on so-called impaired investments, including mortgage-backed securities.

well as contagion have been blamed as being caused by fair value accounting. There are many sources of procyclicality for highly leveraged financial institutions, such as market-value-based bank management, haircuts and margin requirements or collateralization requirements. Therefore banks are forced to raise capital or sell assets in a financial crisis. Some market participants also hold the view that, in such markets, the unrealized losses recorded due to fair value accounting may create a loss of confidence in investors and analysts, adding uncertainty and a further decline to the market. In other words, “headline risk” from disclosure of “bad news” itself influences future behavior. (SEC, 2008). Increased use of fair values may also embody incentives for banks to modify their portfolio mix in a direction that may move them away from their traditional liquidity transformation role, thus reducing their contribution to intertemporal smoothing. Notwithstanding that the use of fair values may support increased recourse to securitization (and other risk transfer instruments), thus distributing risks more evenly throughout the economy, the shock-absorbing features of the financial system might be lost. Indeed, once a systemic disturbance unfolds, its macroeconomic effects are likely to be more direct and severe. (Sinn, 2010) As Adrian and Shin (2010) show asset price changes show up immediately on balance sheets when balance sheets are marked to market. This elicits response from financial market participants. Even if exposures are dispersed widely throughout the financial system, the potential impact of a shock can be amplified many-fold through market price changes. (Adrian and Shin, 2010) Theory suggests that banks can be forced to sell securities when prices fall in an illiquid market and that mark-to-market accounting can accentuate this “feedback” effect (Plantin et al., 2008a; Allen and Carletti, 2008). When liquidity shocks depress prices, mark-to-market accounting can force banks to recognize other-than-temporary impairments on securities holdings, leading to reduced earnings and regulatory capital. Because of the possibility of regulatory intervention or because of the focus on accounting performance, managers are concerned about these effects. Such concerns can prompt managers to sell securities into liquidity shocks to avoid these consequences. In the case of banks, relaxing mark-to-market accounting rules allows banks to reduce the amount of unrealized losses recognized in their income statements alleviating managers’ incentives to sell. (Bhat et al, 2011, p. 154)

While many view fair value as the best indicator of asset value at the time of measurement, taken on its own it may not be the best measure for making long-term, value-maximizing decisions. This arises because fair value reflects a single, point-in-time exit value for the sum of all the risks the market assigns to the asset, including credit and liquidity risks. If the market overreacts in its assessment of any risk component, then fair value will reflect this. Hence, the heavy discounting during the crisis of any asset containing securitized instruments produced fair values much lower than their underlying expected future cash flows would imply, even allowing for the possible impairment of subprime elements. (IMF, 2008) On the other hand, pro-cyclicality mainly arises from the market effects of deleveraging, which is an economic decision. For example, in addition to record rates of poorly performing assets as a result of the bursting of the housing bubble, a market aversion developed towards complex structured products, some of which may have been previously liquid, due to uncertainties about their continued performance and a flight to more conventional high-quality instruments. Further, institutions that were holding assets on an original short-term basis with the intent to securitize them found their holding duration increased due to the reduced demand for securitized products. However, Laux and Leuz claim that this is not a matter or a result of fair value accounting per se. They argue these things alone (without any specific accounting regulation) would have been sufficient to cause the downward spirals. (Laux and Leuz, 2009 and 2010)

Even though most accounting researchers now agree that fair value accounting may have its flaws in illiquid markets and crisis times, they nevertheless concur that fair value

accounting helped to bring economic problems to light more easily and hence, was a mere “messenger of bad economic news”. (e.g. Barth and Landsman, 2010; Laux and Leuz, 2010) Accordingly, IASB Chairman, Hans Hoogervorst, argues that preventing a crisis through full risk transparency is much less costly than letting things go and cleaning up afterwards. He also comments that accounting standard-setters are sometimes suspicious that they are being asked to put a veneer of stability on instruments which are inherently volatile in value. (Hoogervorst, 2011) Because of its timeliness and informational richness, fair value accounting and associated mandatory and voluntary disclosures should reduce uncertainty and information asymmetry faster over time than historical cost accounting would, thereby mitigating the duration of the credit crunch. (Ryan, 2008, p. 16)

Hence, it is not clear that procyclical lending should be addressed by adjusting the accounting rules. For instance, fair value accounting could be combined with dynamic prudential regulation, i.e., forcing banks to build up larger reserves in good times and to draw on them in bad times, in order to counter the procyclical effects of capital requirements on lending (e.g., Kashyap and Stein, 2004). Put differently, it might be more appropriate to adjust banking regulation, rather than the accounting system, given that accounting numbers are used in many other contexts. (Laux and Leuz, 2009) Barth and Landsman (2010) even comment that although bank regulators may choose to use general purpose financial reporting information in meeting their objectives, one should expect that bank regulators would not limit themselves to information contained in general purpose financial reports. Last but not least, a sharper distinction may have to be made than has been the case until now between the requirements of financial accounting, as they apply to listed companies in particular, and the prudential requirements imposed by supervisors on financial firms. The accounting measure of shareholders’ equity has not proven to be the best way to track bank capital for prudential purposes. The procyclical effect of fair value accounting does not impair its relevance for the purposes of investors, who need a measure of a company’s financial position at a given point in time under that moment’s market conditions. (see e.g. Véron, 2008)

A Macro-Prudential Framework for Systemically Sensitive Prompt Corrective Action

In the following, I will build a case for fair value accounting subject to severe revisions within this regime. My main direction of impact will be the avoidance of fair value accounting’s one-sided and uncommented reflection of market prices by introducing a macro-prudential approach, i.e. the idea that fair value accounting’s prior aim is no longer to correctly depict market values but to capture the broader impact of accounting on economic and financial systems. For this, both accounting standard setters and prudential regulators have to overcome their own tight responsibility understandings and need to cooperate closely in their endeavor for a stable financial system.

Since one can always argue against fair value in an imperfect real world, casting the debate in terms of whether fair values are “good” or “bad” is inappropriate. The more appropriate question to ask is whether fair value-based financial statements improve information investors receive relative to information provided by historical cost-based financial statements, and whether regulation of bank capital will be more efficient under one accounting system or the other. (Landsman, 2005) Hence, it is important to ask how the most efficient use of assets can be ensured on the one hand, and what the best choice of accounting system is with respect to least systemic risk on the other. For the former question, mainly accounting standard setter’s expertise is needed, while for the latter, mainly prudential regulator’s knowledge is required. In any case, both types of information are complementary.

Accounting standard setters prefer fair value accounting due to its capacity to provide investors with transparency and hence, an early warning mechanism in times of crisis. They argue that a fair value approach would highlight the economic downfall much earlier, and resolve a potential crisis at lower fiscal costs. In line with this string of argument, transparency should remain the priority aim of accounting standard setters, with financial stability arising as a consequence of transparency. (Hoogervorst, 2011) It is believed that the best that accounting standard setters can contribute to the social goal of stability of financial markets is to provide as much transparency as possible so that active and potential investors can base their decisions on the provided information. Additionally, it is believed that also creditors prefer to have an undistorted picture of the firm's wealth and therefore, market values should be disclosed as quickly and as reliably as possible.

My model outline proposes that, if the bank as well as the regulating supervisor pay attention, e.g. via having current fair values at hand, they are enabled to manage positions better at the beginning of the crisis compared to willfully ignoring current market signs by applying historical cost accounting values. Hence, there will be differences in the credit risk, liquidity and capital positions of banks entering the crisis depending on the accounting measurement regime they apply and are supervised by. The crisis then originates from holding risky and opaque assets with insufficient capital against it. In case of fair value accounting, the capital regulation is binding. This can be equalized with a creditor control over the financial decisions in case of debt covenants which are linked to capital ratios. Hence, fair value accounting alleviates the inefficiencies arising from asset substitution. Creditor control in this case is efficient ex-ante since it will lead to an abandonment of the risky and negative NPV projects.

Moreover, I argue that two further possible outcomes of creditor control when applying fair value accounting should be taken into consideration as well. In my analysis, I am going to show the following: First, creditor control may lead to excessive abandonment due to "false alarms", which corresponds to the "fire sale" prices under fair value accounting. Since creditors cannot participate in the upside potential of high future cash flows (a high continuation value), they tend to abandon even positive NPV projects to be able to realize their maturity value securely. However, at the time of the binding capital regulation, abandonment values are estimated at the then-valid market conditions with stable demand and supply. In this calculation, it is not taken into consideration that all banks invest in similar assets, banks are interconnected and therefore, bank failures typically collude. Consequently, the assumed abandonment value will be calculated on too favorite assumptions. It would have been better to assume the so-called "market-clearing price" at which many assets are sold at the same time. Second, fair value accounting offers the advantage that a single instance of actual realization is sufficient proof for the realizability of the whole group of comparable securities. Hence the fair value abandonment price is quoted too high since it is based on the proportionally scarce supply of actual transactions which take place under the fair value accounting regime.

In order to make a compelling case for macro-prudential regulation, it is necessary to answer the two questions raised by Hanson et al. (2011): "First, what exactly are the costs imposed on society when many financial firms shrink their assets at the same time? And second, why do individual banks not properly internalize these costs? That is, why do they not choose to raise fresh capital ex-post when a bad shock hits, thereby alleviating the need to shrink?" (p. 6) I develop a theory of a financial institution to show how accounting measurement rules and prudential capital regulation interact to affect agency conflicts between shareholders and debtholders, as well as systemic risks. In my model environment – similar to the one of Lu, Sapra and Subramanian (2012) – shareholders may act opportunistically by engaging in asset substitution. The regulator imposes a solvency

constraint to ensure that the institution's leverage does not become too high. If the prudential constraint is satisfied, shareholders maintain control in the second period and therefore could engage in asset substitution. If the prudential constraint is violated at an interim date, transfer of control to the regulator occurs. Hence, the regulator is able to mitigate the asset substitution, but demands the liquidation of the financial assets. Two different accounting regimes are analyzed in the model: The historical cost regime in which the balance sheet and solvency constraint are measured using the origination or book values of claims; and the fair value regime in which the balance sheet and solvency constraint are "marked to market" every period.

From the model I derive that the solvency constraint has bite in the fair value regime so that a transfer of control to the regulator can occur if it is violated. Therefore, once the bank applies fair value, it has to question its valuations which generate a timelier initiative-taking by the fair valuing bank compared to the one applying historical costs. Furthermore, I intend to show that in order to offset the write-downs caused by fair value accounting for their investment securities, a bank may be compelled to sell securities in illiquid markets. The model outline also displays that relative to a historical cost accounting regime, fair value accounting could alleviate the inefficiencies arising from asset substitution, but exacerbate those arising from excessive abandonment due to conceptually as well as economically induced fire sales. Hence, it is not at all clear that the statement "anything one can do with historical cost, one can do strictly better with fair value by just setting the regulatory trigger so that it binds only in extreme circumstances" really holds. Asset substitution and excessive abandonment therefore work in opposing directions – the increase in one mitigates the other. Consequently, shutting down asset substitution via a change in control in the fair value regime has a significant negative impact on the efficient project continuation choice in the second period. These cases highlight the fact that transparency may be efficient ex-ante, but not necessarily ex-post, which challenges the accounting standard setter's view that financial stability should arise as a consequence of transparency. Optimal choices of the prevailing accounting regime and prudential regulation should balance inefficiencies due to asset substitution and excessive abandonment. The model approach therefore intends to incentivize supervision by the regulator in different ways, e.g. by analyzing whether there is a better way of providing efficient continuation incentives than permitting asset substitution; or by allowing asset substitution, but not liquidating the financial institution inefficiently, but monitoring it more closely ex-post. Furthermore, the model intends to answer the question how a privately optimal debt covenant set by the creditors differs from a publicly optimal trigger set by the prudential regulator. The model may thus be able to offer a vision for how a new bank accounting regime for systemic stability could be designed.

Policy Suggestions for an Effective Supervisory Cooperation

In the previous sections, it has been argued that in boom times, fair value accounting suffers from some serious conceptual flaws, such as the amplification mechanism resulting in pro-cyclicality, too many "lemons" that are valued at ridiculously high prices and a too high reliance on "one" transaction price for a huge portfolio of similar assets in the books. However, in crisis times, the flaws attributed to fair value accounting have been detected to be mainly of economic nature. So, fair value accounting discloses volatile and inefficient markets, and reflects market overreaction. Nevertheless, in illiquid or distressed markets, forced sales may further weaken the market for securities and reduce the resulting price for the observed trades, compelling additional sales to raise capital. Hence, the above analysis has made clear that a close cooperation between the two supervisory bodies, the accounting standard setters on the one side and the prudential regulators on the other side, is needed to be

able to overcome these deficiencies and build up an alternative bank accounting theory for financial stability.

Interestingly, Borio and Tsatsaronis already acknowledged in 2005 that accountants and prudential regulators give different weight to the different kinds of information. According to them, accountants have traditionally focused on information about the financial condition and performance of firms while prudential regulators have naturally paid more attention to their risk profile. They conclude that both appear to have paid far less attention to the uncertainty that surrounds those estimates. (Borio and Tsatsaronis, 2005) In response to this critique, the IMF (2009) strengthens the point that accounting rules and valuation practices should be strengthened to reflect a broader range of available information on the evolution of risks through the cycle. So far, a natural division of labor seems to have emerged in the allocation of responsibilities for standard-setting in information, with accounting and securities regulators largely focusing on first moment information and prudential authorities de-facto advancing disclosure practices concerning risk information in the regulated segment of the financial sector. At the same time, as the previous analysis makes clear, the intimate relationship between risk measurement and valuation puts a premium on an intense dialogue between the two sets of standard-setters in elaborating the ideal information set. Accounting standard setters and prudential authorities should collaborate to achieve these objectives, with particular emphasis on enabling higher loan loss provisions during periods of rapid credit expansion, evaluating approaches to valuation reserves or adjustments when valuation of assets on the trading book are highly uncertain, and examining other ways to dampen adverse dynamics potentially associated with fair value accounting. (IMF, 2009)

In line with Borio and Tsatsaronis (2005), I have argued that the various types of information are complementary, and therefore it should be possible to overcome differences in perspective while at the same time not compromising the achievement of the objectives that each standard-setting authority is pursuing. To accomplish the reconciliation of different perspectives in this area, I suggest a broad strategy, based on three principles:

Firstly, if the bank as well as the regulating supervisor pay attention, e.g. via having current fair values at hand, they are enabled to manage positions better at the beginning of the crisis compared to willfully ignoring current market signs by applying historical cost accounting values. Hence, there will be differences in the credit risk, liquidity and capital positions of banks entering the crisis depending on the accounting measurement regime they apply and are supervised by. According to Epstein and Henderson (2009) risk matters less when assets are valued on the basis of historical cost, precisely because old information is not updated, for regulatory purposes, in response to the most recent events. Therefore, shocks are somewhat blunted by an accounting rule designed to tie formal, regulatory value to an old and somewhat arbitrary number. It is, of course, possible for regulators to look past accounting conventions to actual value, but in practice the prompt corrective action rules are not triggered in these cases. (Epstein and Hendersen, 2009) Because the balance sheet is not re-measured in the historical cost regime, the institution automatically meets the solvency constraint at date 1 if it meets it at date 0. Because there is no possibility of a transfer of control at date 1, the solvency constraint has little bite. (Lu et al., 2012, p. 4) Consistent with the intuition expressed by proponents of fair value accounting that market prices play a disciplining role, Lu et al. (2012) show that the fair value regime on the other hand does alleviate the asset substitution inefficiency pervasive in the historical cost regime. Because claims are marked to market in the fair value regime, the solvency constraint has bite at the intermediate date 1 so that transfer of control to the regulator occurs if it is violated. Further, such transfer of control occurs when the institution's leverage is above a threshold. However, according to historical cost accounting asset substitution can continue unnoticed. (Lu et al., 2012, p. 5) To enable this systemically effective prompt corrective action, accounting needs to move beyond its

traditional role of recording economic events and transactions and must eventually encompass and reflect underlying risks. Such an expanded role entails not just reporting traditional point estimates, but also estimates of risk profiles, and measures of the uncertainty surrounding transactions.

Secondly, inefficiencies from fair value accounting's conceptual flaws may be minimized by monitoring realized asset turnovers, for which mainly accounting standard setter's expertise is needed. The FASB defines "fair value" as "the price at which an asset or liability could be exchanged in a current transaction between knowledgeable, unrelated willing parties" (FASB, 2004). As the FASB notes, "the objective of a fair value measurement is to estimate an exchange price for the asset or liability being measured in the absence of an actual transaction for that asset or liability." As Landsman (2005) notes, implicit in this objective is the notion that fair value is well defined so that an asset or liability's exchange price fully captures its value. That is, the price at which an asset can be exchanged between two entities does not depend on the entities engaged in the exchange and this price also equals the value-in-use to any entity. For such a bank, Barth and Landsman (1995) note that this is a strong assumption to make, particularly if many of its assets and liabilities cannot readily be traded. According to current accounting standards about financial assets, both "trading financial assets" and "financial assets available for sale" should be measured by their fair values. Hence, the question arises why firms keep on holding financial assets available for sale but make ready to sell trading financial assets. The reason must be that the utility of holding financial assets available for sale continuously is larger than that of selling them out in the current period. Therefore, only trading financial assets are exchanged in the market and the market price is formed based on the supply of the trading financial assets only. Yuan and Liu (2011) conclude that, for financial assets, a "fair value trap" always exists due to the existence of "financial assets available for sale". A corresponding critique about fair value accounting claims that fair value misrepresents management's intent. However, empirical observations (e.g. Adrian and Shin, 2010) show that fair values allow users of financial reports to evaluate the effects of a decision to hold an asset or owe a liability. Accordingly, holding a financial asset to maturity that pays a below-market rate subjects the entity to an opportunity loss which is then recognized by fair value measurement. Hence, accounting standard setters may monitor the ratio of unrealized versus realized asset turnovers to be able to tell inflated selling prices due to an artificial shortage of supply as well as a rising systemic risk if a too high proportion of assets is not sold out to the market.

Thirdly, inefficiencies from fair value accounting's economic flaws may be minimized by monitoring counterparty risk, for which mainly prudential regulator's expertise is needed. Due to the long financial trading chains the counterparty risk wins in importance. The high interconnectivity of financial institutions has first resulted in a high liquidity and safety appearance since the counterparty could theoretically liquidate the collateral value even above its fundamental mark-to-market value. Hence, during the boom any worries about counterparty defaults did not exist. (e.g. Shin, 2008) A very good example of the markets' beliefs at that time is given by Chuck Prince, the then-CEO of Citigroup, in his interview to the Financial Times on July 9, 2007: "When the music stops, in terms of liquidity, things will be complicated. But as long as the music is playing, you've got to get up and dance. We're still dancing." Kolasinski (2011) comments on what actually happened when "things got complicated": If the involved financial institutions sell early enough, their loss could plausibly be less bad than the accounting "other-than-temporary-income loss" they would have to recognize if they did not sell, and hence the sale mitigates their deterioration in regulatory capital. Nevertheless, banks still destroy value by selling into negative liquidity shocks. Selling when liquidity is drying up necessarily involves selling at below fundamental value (e.g., Morris and Shin, 2004), which implies the banks are reducing the value of their assets and hurting shareholders. On the other hand, such sales do not in any way reduce the

amount of creditor claims on the bank, so they effectively increase the bank's leverage, worsening the position of all creditors. (Kolasinski, 2011, p. 175) Hence, only months after Chuck Prince's open-hearted expression, many accounting researchers believe that cross-holding securities are the source of bubbles under fair value accounting. Accordingly, Yuan and Liu (2011) would like the prudential supervisors to restrict the cross-holding securities proportion by listed firms.

With debt financing, there's an additional effect on the balance sheet of the lender, the bank. Moreover, as the bank is financed by other banks, or more generally, has obligations to other banks, there's also an effect on the balance sheets of other banks. In a banking system where all agents' balance sheets are interconnected, the effect of a change in the price of fundamental assets is transmitted to several agents' balance sheets. As a consequence, the value of their assets depends on "the level and seniority profile of debt, the structure of balance sheet interconnections, and (crucially) the current marginal transaction price of fundamental assets." (Shin, 2008, p. 317) In accordance to Shin's (2008) remark, Bleck and Gao (2010) claim that attempting to resolve accounting measurement problems via a market-based solution could lead to unintended and sometimes undesirable consequences. A firm's business model is viable only if it has some competitive advantage over the market in conducting its activities. As a result, the core assets and liabilities on a firm's balance sheet, dictated by its business model, are often subject to the same market frictions that sustain the business model. Market prices in these markets are thus endogenously linked to the firm's activities that are guided partially by accounting measurement. Both accounting standard setters and prudential regulators therefore should not only focus on the individual financial institution or firm, but take into consideration their complex and sometimes even unregulated business relation network.

Conclusion

This analysis has made clear that some of the problems that arise with the introduction of fair value accounting are not due to the accounting rule in itself, but rather stem from the interaction of fair value accounting and the definition of capital requirements. Over time, capital requirements are periodically revised by bank regulators, as is the FASB's definition of capital, but the two types of regulatory action are not coordinated. In fact the recent trend towards more comprehensive fair value accounting does not seem to have been accompanied by a rethinking of capital requirements and how they should be harmonized with a fair value accounting regime. Heaton et al. (2010) conclude: "For any change in the FASB definition of capital it should be possible to specify an offsetting change in the definition of the capital requirement that makes the accounting change neutral with respect to economic outcomes. If fair value accounting has advantages in other contexts, then a sensible solution to the problems caused by the interaction of volatile capital measures and a static capital requirement is to redefine the capital requirement rather than to back away from a fair value accounting standard." (p. 73)

As I have argued, the pro-cyclical effect of fair value accounting in itself does not impair its relevance for the purposes of investors, who need a measure of a company's financial position at a given point of time under that moment's market conditions. However, it would make sense to correct certain multi-year-cycle effects when financial information is analyzed in a prudential framework. (Véron, 2008) The extent to which such fair value "triggers" are either encouraged or mandated in regulation and supervisory guidance would need to be re-evaluated. It is the role of prudential supervision to judge the reliability of various methods used to establish fair values, especially when a marked-to-model approach is used. In addition,

accounting standard setters will increasingly need to take into account the financial stability implications in their accounting practices and guidance. (IMF, 2008)

Finally, accounting standards-setters and prudential supervisors should work together to identify solutions that are consistent with the complementary objectives of promoting the stability of the financial sector and of providing transparency of economic results in financial reports (G20, 2009). My analysis strongly suggests that prudential authorities can have a very useful role in helping to develop not just risk and measurement error information, but also first-moment information, leveraging their expertise in risk measurement and validation. This dialogue is especially important now that accounting standard-setters have begun to pay closer attention to risk information, too. While the dialogue has intensified in recent years, a further intensification is desirable. This would serve multiple purposes. It could foster a greater common understanding of the issues. It could limit the risk of inconsistencies and excessive information burdens. And it could strengthen the “bite” of the disclosure practices encouraged by prudential authorities, at present confined to regulated financial institutions. In particular, the involvement of accounting standard-setters could help to spread sound information disclosure principles beyond currently regulated financial enterprises. (Borio and Tsatsaronis, 2005)

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