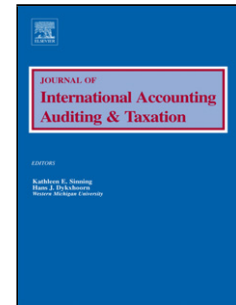# Journal Pre-proof

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Fair value accounting and value relevance of equity book value and net income for European financial firms during the crisis

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Abstract

This paper examines whether and how the level of exposure to fair value accounting moderates the changes in the value relevance of equity book value and net income during a crisis period. Using a sample of European listed financial firms over 2005-2011, our analysis confirms prior literature that the value relevance of book value of equity increases, while that of net income decreases during the financial crisis. More importantly, our findings offer robust support for the hypothesis that the impact of the crisis is less pronounced for firms whose financial statements are more exposed to fair value accounting. This evidence can be explained by the increased valuation weight placed by investors on the book value of equity relative to net income for firms with more exposure to fair value in the pre-crisis period.

*Keywords***:** Value Relevance; Fair Value; Financial Crisis; Financial Firms.

1. Introduction

Prior literature investigated the market valuation of accounting information when a firm's financial health deteriorates (e.g. Burgstahler & Dichev, 1997; Barth, Beaver, & Landsman, 1998; Davis-Friday, Eng, & Liu, 2006). The focus of these studies lies on the roles played by accounting aggregates, such as equity book value and net income, in underpinning firm valuation. Their evidence typically suggests that the value relevance of book value of equity increases, while that of net income decreases during a financial crisis as well as for individual firms in distress in normal times. This is explained by the notion that equity book value reflects the liquidation value of the firm, whereas net income reflects the future abnormal earnings. The former becomes more important for the valuation of firms in distress; however, the value relevance of accounting information can also depend on other factors, such as the accounting system, Research and Development (R&D) expenditures, and dividend-paying (Barth et al., 1998; Davis-Friday et al., 2006; Darrough & Ye, 2007; Jiang & Stark, 2013).

In this study, we conjecture that the level of exposure to fair value accounting is a significant factor that can moderate how a financial crisis impacts the value relevance of book value of equity and net income. Fair value accounting was at the heart of the debate about the reasons and consequences of the most recent financial crisis[1] (e.g. Hellwig, 2009; Badertscher, Burks, & Easton, 2012) and, to our knowledge, no prior studies take a similar methodological approach. The past few decades have witnessed an increased emphasis on fair value measurement by accounting standard setters. One important advantage of this approach is that it results in more up-to-date balance sheet figures that reflect market consensus on the economic value of assets and liabilities. In contrast, income can become

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[1] Throughout this paper, the terms 'the crisis' and 'the financial crisis' are used interchangeably to refer to the period from 2008 to 2011. This includes both the 2008 global financial crisis and the European sovereign debt crisis that started at the end of 2009.

more volatile and less persistent, and therefore, less attractive to investors for valuation purposes (Hung & Subramanyam, 2007; Tsalavoutas, André, & Evans, 2012). European listed firms adopted a fair value approach as part of the new IFRS rules several years before the start of the crisis in 2008.[2] More exposure to fair value accounting likely caused a shift in the valuation weight placed by investors in the pre-crisis period from net income to equity book value. Since it is plausible that this early shift had a comparable effect to that of the crisis, we expect the impact of this latter on the value relevance of equity book value and net income to be less pronounced for firms whose financial statements are more exposed to fair value accounting. This paper empirically investigates this prediction using a model that allows us to capture the impact of fair value accounting on the value relevance of the two accounting aggregates before the crisis as well as to what extent the exposure to fair value moderates the impact of the crisis.

We use data of 270 financial firms listed in the European Economic Area[3] and Switzerland over 2005–2011. We divide the sample period into two phases: (i) the pre-crisis period, from the IFRS introduction in 2005 to the last year of stable markets in 2007; and (ii) the crisis period from 2008 to 2011. The data on European financial firms provide a powerful setting to test the impact of the financial crisis and exposure to fair value accounting for two reasons. First, compared to firms operating in other sectors, these firms suffered the most from the 2008 global crisis as well as the European sovereign debt crisis that ensued in late

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[2] In 2002, the European Union (EU) adopted IFRS as the required financial reporting standards for the consolidated financial statements of all EU companies whose debt or equity securities trade in an EU regulated market, effective in 2005. For many EU firms, the new fair value requirements under IFRS implied substantial changes as they differed considerably from those in their national standards before 2005 (Street & Larson, 2004; Armstrong, Barth, Jagolinzer, & Riedl, 2010).

[3] The European Economic Area includes the countries of the EU as well as Iceland, Liechtenstein, and Norway.

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2009. Second, financial firms tend to hold more financial assets and liabilities measured at fair value than firms operating in other sectors.[4]

Our empirical results confirm that the financial crisis is associated with higher value relevance of book value of equity and lower value relevance of net income for a sample of financial firms in Europe. More importantly, the impact of the crisis period appears less evident for firms whose financial statements are more exposed to fair value accounting. Our results also show that the value relevance of equity book value tends to be higher, and that of net income lower, for firms with more exposure to fair value accounting before the crisis, which could explain the mitigating effect of fair value exposure during the crisis. In addition, we explored the impact of the crisis period on the value relevance of fair value and non-fair value components of book value of equity and net income. We find evidence of a significant increase (decrease) in the value relevance of non-fair value components of equity book value (net income) and no statistically significant impact on the fair value components. Again, these results confirm the role fair value accounting plays in mitigating the changes in the value relevance of book value of equity and net income in times of financial crisis.

There are still today debates about the role that the introduction of IFRS and the reliance on fair value accounting may have played in undermining the stability of the financial system. The evidence produced in this study underscores the impact of fair value accounting on the value relevance of the two summary measures underpinning firm valuation (book value of equity and net income) in tranquil and distressed periods. It also contributes to the growing body of literature on the factors affecting the valuation role of accounting information as a function of financial health (Davis-Friday et al., 2006; Darrough & Ye, 2007; Jiang & Stark, 2013). The focus of our study on financial firms is particularly relevant

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[4] Previous studies focusing on financial institutions, financial reporting practices, and the valuation of accounting information include, e.g., Anandarajan, Francis, Hasan, and John (2011); Alhaj-Ismail, Adwan, and Stittle (2019a; 2019b).

considering their major role in the global financial crisis, and those still advocating for a return to historical cost accounting.

The remainder of this paper is organised as follows. Section 2 reviews relevant prior research and identifies the research hypothesis. Section 3 describes the research methodology and data. Section 4 reports and discusses the empirical findings. Section 5 provides the robustness checks and additional analyses before Section 6 concludes.

2. Literature review and hypothesis development

The role of accounting information for firm valuation when a firm's financial health deteriorates is the subject of several studies in the accounting literature (e.g. Barth et al., 1998; Davis-Friday et al., 2006). These studies typically employ a valuation model in which the market value of equity is regressed on two accounting aggregates: book value of equity and net income. The former can reflect the liquidation value of the firm (i.e. the minimum amount available to the firm's debtholders in the event of an orderly liquidation) or the value of the adaptation option (adapting firm's net assets to other more profitable uses) (Burgstahler & Dichev, 1997; Collins, Pincus, & Xie, 1999). It can also be a proxy for the expected future normal earnings (Ohlson, 1995). On the other hand, net income reflects the future abnormal earnings (i.e. the unrecognized net assets) (Barth et al., 1998).

When a firm is in distress, investors will rely more on information about the liquidation value of the firm and the value of the adaptation option for firm valuation, and less on the information about future abnormal earnings. Consistently, the valuation model developed by Ohlson (1995), in which the market value of equity is regressed on the book value of equity and net income, implies that when the firm's financial health worsens, earnings become less persistent leading to the increased importance of equity book value relative to net income for valuation. Prior studies provide empirical evidence supporting this view. For example,

Burgstahler and Dichev (1997) find that for firms with low net income, book value is the

most important determinant of equity market value. Barth et al. (1998) shows that during the

five years before a firm's bankruptcy, the valuation coefficient of equity book value increases

while that of net income decreases.

Several previous studies also focused on the impact of financial crises on the value

relevance of equity book value and net income. For example, Graham, King, and Bailes

(2000) find that after the Asian financial crisis, listed Thai firms saw the incremental value

relevance of equity book value increase while that of net income decreased. Using a sample

of firms listed in a multi-country context, Davis-Friday et al. (2006) reveal that the effect of

the Asian financial crisis on the value relevance of book value of equity and net income

varies across countries.

Factors that could affect the value relevance of equity book value and net income as a

function of a firm's financial health have been the subject of a growing body of literature.

Davis-Friday et al. (2006) observe that country-level corporate governance characteristics, as

well as the accounting system, have an impact on the changes in the value relevance of equity

book value during the Asian crisis period. Darrough and Ye (2007) report that both R&D

expenditures and business sustainability proxies affect the value relevance of accounting

information for US firms reporting loss between 1962 and 2002. Specifically, they find that

R&D expenditures and business sustainability proxies mitigate the negative association

between the market value of equity and earnings.[5] Using a sample of UK firms reporting

losses over the period 1991 to 2010, Jiang and Stark (2013) find that R&D intensity and

dividend-paying have significant impacts on the value relevance of book value of equity. Our

paper adds to this line of literature by investigating another factor likely to have a

considerable impact on the value relevance of accounting information when a firm's financial

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[5] Throughout this paper, the terms "net income" and "earnings" are used interchangeably.

health deteriorates: the level of exposure to fair value accounting. Specifically, we investigate the effect of exposure to fair value accounting on the changes in the valuation roles of book value of equity and net income during the crisis.

The value relevance of fair value measurements is extensively studied in the accounting literature (for comprehensive reviews, see e.g., Landsman, 2007; Laux, 2012). Early studies focus on the disclosed fair value estimates of financial assets and liabilities. For example, Barth (1994) observes that disclosed fair value estimates of investment securities are positively associated with equity market value, while the results are mixed for fair value gains and losses of securities. Using the mandatory fair value disclosure based on Statement of Financial Accounting Standards No. 107 (SFAS No. 107), Nelson (1996) finds that only fair values of investment securities have incremental explanatory power relative to book value. However, no evidence was found for loans, deposits, long-term debt, or off-balance sheet financial instruments.

More recently, several studies investigated the value relevance of financial assets and liabilities recognized at fair value in the balance sheet under SFAS No. 157, which requires fair value hierarchy disclosure and became effective in November 2007 (around the onset of the financial crisis in the US). For financial firms listed in the US, both Kolev (2009) and Song, Thomas, and Yi (2010) show that fair value accounting provides investors with useful information for valuation purposes during the crisis period, with lower valuation weight placed by investors on the fair values estimated based on unobservable inputs. Goh, Li, Ng, and Yong (2015) find an improvement in the market valuation of fair value estimates as the market conditions improve for a sample of US banks over the period between 2008 and 2011.

Advocates of fair value accounting argue that fair values reflect market conditions at the measurement date and, thus, present timely information (see Barth & Landsman, 2010; Laux & Luez, 2009). Market-based fair value accounting reflects investors' consensus at the

measurement date on the expected future cash flows of an asset or a liability (Hitz, 2007), which is applicable in the pre-crisis period.[6] Barth (2006) argues that marking assets and liabilities at fair value is attractive as it meets many qualitative characteristics of useful financial statement information in the Conceptual Framework for Financial Reporting, such as relevance, comparability, and timeliness (IASB, 2018). These qualitative characteristics of useful financial reporting identify information that is useful to investors and other users in making economic decisions about the reporting entity. Recognizing more assets and liabilities in the balance sheet at fair value is likely to result in more up-to-date information that reflects the economic conditions at the reporting date, thus, establishing it as more useful for making economic decisions. Hence, the book value of equity will be more emphasized for valuation purposes with the increase in fair value accounting reflecting market consensus on the value of assets and liabilities under ordinary economic conditions.

Conceptually, with fair value accounting the balance sheet rather than the income statement is the primary vehicle for conveying information about a firm's value to investors (Penman, 2007). If all balance sheet items are measured at fair value, the income statement (profit and loss) will simply report the changes in fair values between reporting periods. As such, the income statement provides information mainly on managerial performance and risk exposure. The increased use of fair value accounting means more estimates of the future are incorporated into today's financial statements, resulting in less predictable income. This is because "more expectations of the future are recognized in today's financial statements, leaving fewer to be recognized in future financial statements" (Barth, 2006: 281).

As the changes in market values are unpredictable and with more financial statement items updated each period to market or fair value estimates, income becomes more volatile

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[6] In times of crisis, fair value (market-based) measures might reflect the liquidation values rather than future payoffs (Allen & Carletti, 2008).

and less persistent. This argument is supported by Dichev and Tang (2008), who examine the properties of earnings for a sample of US firms over the period from 1967 to 2003. The volatility of income is driven mainly by the changes in accounting rather than changes in the real economy. Givoly and Hayn (2000) observe an increase in the volatility of income that is not accompanied by corresponding changes in the volatility of cash flows. Since investors consider 'good earnings' to be earnings that are highly persistent and predictive of future earnings (Dichev, 2008), fair value accounting will result in income numbers that are at odds with what constitutes 'good earnings' to investors. Less persistent income is less predictable and is, therefore, less useful for equity valuation (Bhattacharya, Black, Christensen, & Larson, 2003; Dichev & Tang, 2009).

Interestingly, the valuation model developed by Ohlson (1995), in which the market value of equity is regressed on the book value of equity and net income, predicts that when earnings become less persistent, net income takes on decreased importance relative to the book value of equity. That is, even before the crisis, more exposure to fair value accounting is likely to result in net income being less emphasized for valuation purposes by investors (Hung & Subramanyam, 2007; Tsalavoutas et al., 2012). Collins, Maydew, and Weiss (1997) document a decrease over time in the value relevance of net income accompanied by an increase in the value relevance of book value of equity. The most likely reason for this result is the shift in accounting standards towards the use of fair value accounting as a basis for financial reporting. A similar interpretation is found in other studies including, for example, Hung and Subramanyam (2007), Dichev and Tang (2008), and Tsalavoutas et al. (2012). Our paper contributes to this line of literature by providing direct empirical tests on the impact of exposure to fair value accounting, notably before and during the crisis period.

As discussed above, fair value accounting is likely to result in a shift in the valuation weight placed by investors from net income to the book value of equity. As this shift is

comparable to the effect of the crisis period and already existed before the crisis, we

conjecture that the impact of the crisis on the value relevance of book value of equity and net

income will be less pronounced for firms that are more exposed to fair value accounting.

Accordingly, our research hypothesis is formulated as follows:

H1 The impact of the financial crisis on the value relevance of equity book value and net

income is less pronounced for financial firms that are more exposed to fair value

accounting.

If this hypothesis is valid, the crisis itself would hardly have any effect on investors'

perceptions of the relative informational value of book value of equity and net income with

more exposure to fair value, as they would have already placed more valuation weight on the

former prior to the crisis. By contrast, for firms less exposed to fair value accounting, the

impact of the crisis will be more apparent. This suggests that prior studies' findings on the

changes in the valuation role of equity book value and net income when firms' financial

health deteriorates (see Davis-Friday et al., 2006; Darrough & Ye, 2007; Jiang & Stark, 2013)

can be further investigated by considering the impact of the exposure to fair value

accounting.

3. Methodology and data

3.1 Empirical model

We begin our analysis with a baseline model that estimates the impact of the financial

crisis on the value relevance of book value of equity and net income (see, e.g., Barth et al.,

1998; Davis-Friday et al., 2006):

$$MV_{it+3m} = \alpha_0 + \alpha_1 BV_{it} + \alpha_2 NI_{it} + \alpha_3 Crisis + \alpha_4 Crisis * BV_{it} + \alpha_5 Crisis * NI_{it} \quad (1)$$
$$+ \alpha_6 ROE_{it} + \alpha_7 Growth_{it} + \delta D_t + \lambda Country_i + \varepsilon_{it}$$

where MV_{it+3m} is the market capitalisation of financial firm i three months following the end of the fiscal year t.[7] BV_{it} is the book value of equity for financial firm i at the end of the fiscal year t, while NI_{it} is the reported net income of financial firm i for the fiscal year t. Following prior research (e.g., O'Hanlon & Taylor, 2007; Manganaris, Spathis, & Dasilas, 2015; Gavana, Gottardo, & Moisello, 2020), to address the econometric concern regarding heteroskedasticity and scale bias, all accounting and market variables are scaled by lagged total assets for firm i at the end of the fiscal year, i.e. *t-1* (Kothari & Zimmerman, 1995). *Crisis* is a dummy variable coded 1 for the years of the crisis (2008–2011), which includes both the global financial crisis and the European sovereign debt crisis, and 0 for the pre-crisis period (2005–2007).[8]

Consistent with Barth et al. (1998) and Manganaris et al. (2015), two control variables are also included in the model: ROE_{it} and $Growth_{it}$. The former is the return on equity ratio of firm i for the fiscal year t, while the latter is the growth rate of firm i for the fiscal year t and is measured by the growth in total operating income (the sum of net interest income and non-interest income);[9] D_t is a time dummy variable for year t; and $Country_i$ is a country dummy variable based on the country in which financial firm i is domiciled. The signs and significance of the coefficients, α_4 and α_5 in Equation (1) reflect the direction and significance of the changes in the value relevance of book value of equity and net income when the financial crisis hits.

To test *H1*, we use the model specified in equation (2):

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[7] This three-month period is to ensure that the relevant financial statement information is publicly available to investors (Lang, Raedy, & Yetman, 2003; Barth, Landsman, & Lang, 2008).

[8] See also Section 5 for a sensitivity test.

[9] Growth is typically measured by growth in sales or in net loans. We use the total operating income to measure growth for two reasons. First, given the nature of their business, financial institutions do not report sales in their income statements. Second, growth in net loans cannot capture the growth in all our sample firms because we include a wide range of financial institutions that engage in various activities – i.e. not just deposit-taking and loan-making. We also measured growth by the ratio of market capitalisation to book value of equity as a robustness check and our results remain the same.

$$MV_{it+3m} = b_0 + b_1 BV_{it} + b_2 NI_{it} + b_3 Crisis + b_4 FV_{it} + b_5 Crisis * BV_{it} + \tag{2}$$

$$b_6 Crisis * NI_{it} + b_7 FV_{it} * Crisis + b_8 FV_{it} * BV_{it} + b_9 FV_{it} * NI_{it} + b_{10} FV_{it} * Crisis *$$

$$BV_{it} + b_{11} FV_{it} * Crisis * NI_{it} + b_{12} ROE_{it} + b_{13} Growth_{it} + \delta D_t + \lambda Country_i + \varepsilon_{it}$$

where FV_{it} is our measure of fair value exposure and all other variables are as defined in

equation (1). FV_{it} is a quintile ranking of firms based on the percentage of financial assets

measured at fair value to total assets for firm *i* at the end of fiscal year *t*. This is a similar

approach to the one followed by DeFond, Hung, Li, and Li (2014) and Xie (2016). Financial

assets recognized at fair value include: held-for-trading securities, financial assets at fair

value through profit or loss, available-for-sale financial assets, and derivatives. We create a

quintile rank that ranges from 0 for firms with the lowest level of exposure to fair value

accounting to 4 for those with the highest level of exposure, and then scaled by 4. In this way,

FV_{it} ranges from 0 to 1. The coefficients b_8 and b_9 reflect the impact of exposure to fair

value on the value relevance of equity book value and net income in the pre-crisis period. The

coefficients under scrutiny are b_{10} and b_{11}, which capture the effect of the financial crisis on

the changes in the value relevance of book value of equity and net income, respectively, as a

function of exposure to fair value accounting.

3.2 Data sources

Table 1 delineates the sample selection process. We use the Fitch Connect database to

identify financial firms listed in the European Economic Area and Switzerland that published

their consolidated financial statements under IFRS over the period 2005–2011. The initial

population includes 1,937 observations (293 financial firms). We extract all data on

accounting and market variables from DataStream, except for the data on fair value and total

operating income, which were extracted from Fitch Connect. We exclude 49 observations

relating to 16 firms with no market data for 2007 (one year before the crisis period) and 2008

(the first year in the crisis period) to capture the impact of the financial crisis. We also

exclude observations without accounting information (39 observations) and those without fair

value information (136 observations). Using a similar approach to one taken in recent studies

(e.g. Chan, Lin, & Mo, 2010; Marton & Runesson, 2017) to avoid the effect of extreme

outliers, we exclude 15 observations with absolute standardized residuals greater than 3 in the

baseline model (Warner, 2012). These procedures result in a final sample of 1,698

observations relating to 270 firms in 29 countries.

<Insert Table 1 around here>

The distribution of firms and observations across countries is shown in Table 2. France

and the UK have the largest number of financial firms in the sample (33) with a total of 206

observations in each country. At the other extreme, the Czech Republic, Latvia, and Slovenia

are represented by only one financial firm, with 7, 6, and 5 observations in total, respectively.

As expected, it is also possible to observe that for all countries under study the GDP growth

is lower during the crisis compared to the pre-crisis period.

<Insert Table 2 around here>

Panel A of Table 3 reports the descriptive statistics on accounting and market variables

for the entire sample, split into pre-crisis and crisis periods. It also reports tests for

differences in means between the two sub-samples. As expected, the mean and the median of

the market value of equity scaled by lagged total assets are lower during the crisis period

relative to the pre-crisis period. Similarly, the mean (median) of the book value of equity

scaled by lagged total assets decreases from 0.196 (0.083) in the pre-crisis period to 0.143

(0.074) during the crisis. The mean (median) of net income scaled by lagged total assets

drops sharply from 0.020 (0.011) in the pre-crisis period to 0.006 (0.005) during the crisis.

The differences in means of market and accounting variables between the two periods are

statistically significant.

<Insert Table 3 around here>

Panel B of Table 3 presents the correlation matrix between the variables used in our regression. The correlations between the market value of equity and the two accounting aggregates (book value of equity and net income) are positive and significant. In line with expectations, the crisis is negatively correlated with the market value of equity and the two key accounting aggregates.[10] It also shows that the crisis variable is associated with a lower return on equity ratio and lower growth.

4. Results

Panel A of Table 4 presents the results from estimating our baseline specification in Equation (1), that tests the impact of the financial crisis on the value relevance of book value of equity and net income. The coefficients that reflect the pre-crisis market valuation of book value of equity (α_1) and earnings (a_2) are positive and statistically significant. Most importantly, our evidence reveals a positive and statistically significant coefficient for a_4, the interaction term between the financial crisis and book value of equity, implying an increase in the valuation role of equity book value. In contrast, the coefficient a_5 is negative and significant which indicates a less-positive association between market value of equity and net income (i.e. a decrease in the valuation role) during the crisis. These findings are consistent with those of previous studies that investigate the value relevance of financial statements as a function of firm-specific financial health (Barth et al., 1998) and the Asian financial crisis (Graham et al., 2000; Davis-Friday et al., 2006). They also confirm the

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[10] To further investigate the degree of association between our variables, we regress the market value of equity on each of the following variables separately: crisis, book value of equity, and net income. In line with the results in Panel B of Table 3, the coefficient on the crisis variable is negative and statistically significant, while that on book value of equity is significantly positive. The coefficients on net income is positive, but statistically insignificant. Results are available from the authors upon request.

suitability of our methodological approach to test the hypothesis on the moderating effect of exposure to fair value accounting.

Results for *H1* are provided in Panel B of Table 4. Fair value is expressed as a quintile ranking of financial firms based on the level of exposure to fair value, where this latter is measured as the percentage of financial assets measured at fair value to total assets for each firm in any given year. The table shows that the coefficients on equity book value and net income for firms that fall in the lowest fair value exposure quintile before the crisis period, (b_1 and b_2) are positive and statistically significant. The estimated coefficient for the interaction term between the crisis and book value of equity is positive and marginally significant (b_5), and the corresponding result for net income is negative and significant (b_6).

Fair value accounting results in more up-to-date balance sheet numbers and more volatile and less persistent net income. Therefore, a shift should be expected in the valuation weight from net income to the book value of equity with more financial statement items measured at fair value (Hung & Subramanyam, 2007; Dichev, 2008; Tsalavoutas et al., 2012). The results in Panel B of Table 4 support this view as the interaction between the exposure to fair value and book value of equity before the crisis, b_8, is positive and statistically significant, while that on the interaction between fair value exposure and net income before the crisis, b_9, is negative and statistically significant. The shift in the valuation weight as a result of fair value accounting is comparable to the effect of the crisis and already occurred before the crisis period. This suggests that the impact of the crisis on the changes in the value relevance of book value of equity and net income is likely to be less pronounced for firms that are more exposed to fair value accounting.

<Insert Table 4 around here>

Indeed, estimates in Table 4 (Panel B) reveal that the coefficient of the three-way interaction term between fair value exposure, the crisis, and book value of equity, b_{10}, is

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negative and statistically significant. The above findings confirm our prediction that the impact of the crisis on the value relevance of book value of equity is moderated by the greater exposure to fair value accounting. Equally, the coefficient on the interaction between fair value exposure, the financial crisis, and net income, b_{11}, is positive and statistically significant. This result indicates that the impact of the crisis period on the value relevance of net income is attenuated by more exposure to fair value accounting. Therefore, we can accept *H1*. Thus, exposure to fair value accounting is a factor that should be considered when studying the valuation roles of equity book value and net income as a function of firm's financial health in addition to the factors examined in prior literature (e.g. Davis-Friday et al., 2006; Darrough & Ye, 2007; Jiang & Stark, 2013).

Our results on the three-way interactions also allow us to extrapolate beyond our hypothesis about how the valuation coefficient on the interaction between the fair value exposure and the two accounting aggregates varies between the pre-crisis and crisis periods. We observe that for firms more exposed to fair value accounting, there is a decrease (increase) in the value relevance of equity book value (net income) when the crisis unfolds. One potential reason for this shift in investors' focus is that the decrease in the market value of financial firms' assets as a result of the crisis obliged financial firms to write-down their assets in the balance sheet due to impairment, possibly forcing some banks to sell their assets to meet the capital regulatory requirements (Bignon, Biondi, & Ragot, 2009). Consequently, the decline in the fair value of some assets considered as unrealized losses in the balance sheet before the crisis are realized in the income statement when the crisis strikes. Beltratti, Spear, and Szabo (2013) report that the write-downs in financial assets reported in the income statement by financial firms in North America and Europe during the financial crisis were both timely and value relevant.

5. Robustness checks and additional analyses

We also conduct a series of checks and additional analyses to ensure the robustness of our results.[11] We decompose book value of equity and net income in Equation (2) into fair value and non-fair value components and allow them to vary between the pre-crisis and the crisis periods, re-estimating our model as shown in equation (3):

$$MV_{it+3m} = \theta_0 + \theta_1 Non - FVBV_{it} + \theta_2 FVBV_{it} + \theta_3 Non - FVNI_{it} + \theta_4 FVNI_{it} + \quad)$$

$$\theta_5 Crisis + \theta_6 Crisis * Non - FVBV_{it} + \theta_7 Crisis * FVBV_{it} + \theta_8 Crisis * Non -$$

$$FVNI_{it} + \theta_9 Crisis * FVNI_{it} + \theta_{10} ROE_{it} + \theta_{11} Growth_{it} + \delta D_t + \lambda Country_i + \varepsilon_{it}$$

where $Non - FVBV_{it}$ is the non-fair value components of book value of equity for firm i at the end of the fiscal year t. $FVBV_{it}$ is the fair value components of book value of equity for firm i at the end of the fiscal year t. $Non - FVNI_{it}$ is the non-fair value components of net income for firm i over the fiscal year t. $FVNI_{it}$ is the fair value components of net income for firm i over the fiscal year t. The fair value and non-fair value components variables are scaled by lagged total assets. All other variables are as defined in equation (2) in Section 3.1 and in Appendix.

Table 5 confirms that the coefficient on the interaction between the crisis and non-fair value components of book value of equity is positive and statistically significant. For the interaction between the crisis and fair value components of book value of equity, the estimated coefficient is negative but statistically insignificant. Similarly, while the coefficient on the interaction between the crisis and non-fair value components of net income is negative and statistically significant, the one on the interaction between the crisis and the fair value components of net income is negative and statistically insignificant. These additional findings imply that the impact of the financial crisis on the value relevance of accounting information is more apparent for non-fair value components compared with fair value components, which

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[11] We are grateful to two anonymous reviewers for suggesting some of these tests. All our untabulated results are available from the authors upon request.

provides further support for our main results that fair value accounting attenuates the impact of the crisis on the value relevance of book value of equity and net income.

<Insert Table 5 around here>

Several published studies on value relevance use alternative scaling methods other than lagged total assets, such as the number of shares outstanding (e.g. Barth et al., 1998; Hamberg & Beisland, 2014). We re-estimate our main model in Equation (2) after dividing all variables by the number of shares outstanding at the end of each fiscal year. As shown in Panel A of Table 6, the results are qualitatively similar to those reported above. As a sensitivity test, we employ the market value of equity six months rather than three months after the end of the fiscal year, scaled by lagged total assets as a dependent variable to run the main regression in Equation (2). The results reported in Panel B of Table 6 largely support our main findings. We also run the regression in Equation (2) using the market value of equity 12 months following the end of the fiscal year (i.e. market capitalisation at the end of $t+1$) scaled by lagged total assets. Again, Panel C of Table 6 shows that our main findings are robust to all these variations.

<Insert Table 6 around here>

As there is no consensus in the literature on the exact onset and end of the global financial crisis and the European sovereign debt crisis, we also rerun the model in Equation (2) after dropping the cut-off years 2008 and/or 2011 from the sample. Because the detrimental impact of the sovereign debt crisis is more apparent for financial firms that operate in the single currency area, we re-estimate Equation (2) for the subsample of euro area countries. In this case, we consider the period 2005-2007 as the pre-sovereign debt crisis period and 2009-2011 as the sovereign debt crisis period. In all cases, the results generally confirm our main findings.

In measuring the exposure to fair value, we considered all financial assets measured at fair value under IAS 39, including available-for-sale financial assets. Unrealized holding gains and losses relating to available-for-sale financial assets are recognized directly in equity, through the statement of changes in equity rather than through the income statement. It could be argued that fair value changes in available-for-sale financial assets do not have an impact on the income statement. Therefore, as a sensitivity test, we re-estimate the regression in Equation (2) after excluding available-for-sale financial assets from our measure of fair value exposure. We obtain the same inferences as those reported in Section 4.

Prior studies have used different measures to proxy for fair value holding. For example, Magnan, Menini, and Parbonetti (2015) and Ayres, Huang, and Myring (2017) employ total fair value assets and liabilities divided by total assets as a measure of fair value exposure. Therefore, as a robustness check, we rerun the model in Equation (2) after using two alternative measures of fair value exposure: total assets and liabilities measured at fair value divided by total assets, and fair value net assets divided by total assets. In both cases, the results confirm our main findings.

As further sensitivity tests, we allow the control variables to vary between the pre-crisis and the crisis periods. We also include in the model three additional control variables: size measured by total assets, financial leverage, and share return volatility. The obtained results are in line with those reported above in Section 4.

As an alternative treatment for outliers, we rerun the regressions after winsorising the raw variables at the 1% and 99% levels. Our results remain virtually unchanged. Also, we run the main regression in Equation (2) after transforming the independent continuous variables into ranks.[12] The advantage of this specification is that it controls for potential non-linearity

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[12] Specifically, we transfer book value of equity and net income into ascending quartile variables and interact them with two dummy variables for the crisis and the level of exposure to fair value accounting (a variable equals one if the firm's exposure level to fair value is above the sample median in a given year and zero otherwise).

and mitigates the impact of extreme observations in the independent variables. The estimated results on the three-way interactions between exposure to fair value, the crisis, and accounting information are broadly consistent with those reported in Section 4.

The model in which the market value of equity is regressed on the book value of equity and net income can be rewritten to provide a model in which the dependent variable is share return.[13] In the return model, the share return is regressed on net income and the change in net income. As a robustness check, we run the return model after allowing net income to interact with both the crisis and fair value exposure. Our results confirm the mitigating effect of fair value exposure on the changes in the value relevance of net income during the crisis. Finally, we rerun the main model in Equation (2) after excluding from the sample countries with less than ten observations, and, as in all previous robustness checks, our results hold.

6. Concluding remarks

This paper adds to the literature on fair value accounting and the valuation role of accounting information by examining whether and how the level of exposure to fair value accounting moderates the changes in the value relevance of equity book value and net income during a crisis period.

In line with the extant literature, our evidence suggests that the value relevance of equity book value increases whereas the value relevance of net income decreases during the financial crisis (see, e.g., Barth et al., 1998; Graham et al., 2000; Davis-Friday et al., 2006). Further, we conjecture that the exposure to fair value accounting is likely to moderate the effect of the crisis on the value relevance of accounting information. Fair value accounting was at the heart of the debate about the reasons and consequences of the financial crisis and, as far as we know, no prior studies have taken a similar approach. Our analysis provides two

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[13] See Cazavan-Jeny and Jeanjean (2006).

key takeaways. First, fair value accounting results in a shift in the valuation weight placed by investors from net income to the book value of equity. Second, as this shift is not only comparable to the effect of the crisis but also precedes it, in line with our expectations, the impact of the crisis on the value relevance of book value of equity and net income for firms that are more exposed to fair value accounting appears less evident.

Understanding the value relevance of accounting numbers in times of economic crises and the role of fair value accounting is of potential interest to accounting standard-setters and securities commissions. As the focus of this paper is on financial firms that were at the heart of the financial crisis, our findings offer particularly useful insights and novel evidence to those interested in the valuation role of accounting information when firms' financial health deteriorates. Our findings also contribute to a better understanding of the impact of fair value accounting on the valuation roles of the two key accounting aggregates: book value of equity and net income.

Some caveats need to be noted regarding the present study. The valuation coefficients on the components of our chosen accounting aggregates, book value of equity and net income, might differ. Further, the moderating effect of fair value exposure might vary with the levels of fair value accounting (i.e. Level 1, 2, and 3); this can be a fruitful avenue for future research. Finally, in this study we focus our analysis on financial institutions in Europe. Future studies could investigate whether our findings hold for firms operating in other industries or geographical regions.

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References

Alhaj-Ismail, A., Adwan, S., & Stittle, J. (2019a). Does accounting treatment of share- based payments impact performance measures for banks? *Australian Accounting Review*, *29*(4), 631-648.

Alhaj-Ismail, A., Adwan, S., & Stittle, J. (2019b). Share-option based compensation expense, shareholder returns and financial crisis. *Journal of Contemporary Accounting & Economics*, *15*(1), 20-35.

Allen, F., & Carletti, E. (2008). Mark-to-market accounting and liquidity pricing. *Journal of Accounting and Economics*, *45*(2-3), 358-378.

Anandarajan, A., Francis, B., Hasan, I., & John, K. (2011). Value relevance of banks: Global evidence. *Review of Quantitative Finance and Accounting*, *36*(1), 33-55.

Armstrong, C. S., Barth, M. E., Jagolinzer, A. D., & Riedl, E. J. (2010). Market reaction to the adoption of IFRS in Europe. The Accounting Review, *85*(1), 31-61.

Ayres, D., Huang, X. S., & Myring, M. (2017). Fair value accounting and analyst forecast accuracy. *Advances in Accounting*, *37*, 58-70.

Badertscher, B. A., Burks, J. J., & Easton, P. D. (2012). A convenient scapegoat: Fair value accounting by commercial banks during the financial crisis. *The Accounting Review*, *87*(1), 59-90.

Barth, M. E. (1994). Fair value accounting: Evidence from investment securities and the market valuation of banks. *The Accounting Review*, *69*(1), 1-25.

Barth, M. E. (2006). Including estimates of the future in today's financial statements. *Accounting Horizons*, *20*(3), 271-285.

Barth, M. E., Beaver, W. H., & Landsman, W. R. (1998). Relative valuation roles of equity book value and net income as a function of financial health. *Journal of Accounting and Economics*, *25*(1), 1-34.

Barth, M. E., & Landsman, W. R. (2010). How did financial reporting contribute to the financial crisis? *European Accounting Review*, *19*(3), 399-423.

Barth, M. E., Landsman, W. R., & Lang, M. H. (2008). International accounting standards and accounting quality. *Journal of Accounting Research*, *46*(3), 467-498.

Beltratti, A., Spear, N., & Szabo, M. D. (2013). The value relevance and timeliness of write-downs during the financial crisis of 2007–2009. *The International Journal of Accounting*, *48*(4), 467-494.

Bhattacharya, N., Black, E. L., Christensen, T. E., & Larson, C. R. (2003). Assessing the relative informativeness and permanence of pro forma earnings and GAAP operating earnings.

Journal of Accounting and Economics, *36*(1-3), 285-319.

Bignon, V., Biondi, Y., & Ragot, X. (2009). An economic analysis of fair value: Accounting as a vector of crisis. Working paper, Cournot Centre for Economic Studies.

Burgstahler, D. C., & Dichev, I. D. (1997). Earnings, adaptation and equity value. *The Accounting Review*, *72*(2), 187-215.

Cazavan-Jeny, A., & Jeanjean, T. (2006). The negative impact of R&D capitalization: A value relevance approach. *European Accounting Review*, *15*(1), 37-61.

Chan, K. H., Lin, K. Z., & Mo, P. L. (2010). Will a departure from tax-based accounting encourage tax noncompliance? Archival evidence from a transition economy. *Journal of Accounting and Economics*, *50*(1), 58-73.

Collins, D. W., Maydew, E. L., & Weiss, I. S. (1997). Changes in the value-relevance of earnings and book values over the past forty years. *Journal of Accounting and Economics*, *24*(1), 39-67.

Collins, D. W., Pincus, M., & Xie, H. (1999). Equity valuation and negative earnings: The role of book value of equity. *The Accounting Review*, *74*(1), 29-61.

Darrough, M., & Ye, J. (2007). Valuation of loss firms in a knowledge-based economy. *Review of Accounting Studies*, *12*(1), 61-93.

Davis-Friday, P. Y., Eng, L. L., & Liu, C. S. (2006). The effects of the Asian crisis, corporate governance and accounting system on the valuation of book value and earnings. *The International Journal of Accounting*, *41*(1), 22-40.

DeFond, M. L., Hung, M., Li, S., & Li, Y. (2014). Does mandatory IFRS adoption affect crash risk? *The Accounting Review*, *90*(1), 265-299.

Dichev, I. D. (2008). On the balance sheet-based model of financial reporting. *Accounting Horizons*, *22*(4), 453-470.

Dichev, I. D., & Tang, V. W. (2008). Matching and the changing properties of accounting earnings over the last 40 years. *The Accounting Review*, *83*(6), 1425-1460.

Dichev, I. D., & Tang, V. W. (2009). Earnings volatility and earnings predictability. *Journal of Accounting and Economics*, *47*(1-2), 160-181.

Givoly, D., & Hayn, C. (2000). The changing time-series properties of earnings, cash flows and accruals: Has financial reporting become more conservative? *Journal of Accounting and Economics*, *29*(3), 287-320.

Goh, B. W., Li, D., Ng, J., & Yong, K. O. (2015). Market pricing of banks' fair value assets reported under SFAS 157 since the 2008 financial crisis. *Journal of Accounting and Public Policy*, *34*(2), 129-145.

Gavana, G., Gottardo, P., & Moisello, A. M. (2020). Did the switch to IFRS 11 for joint ventures

affect the value relevance of corporate consolidated financial statements? Evidence from France and Italy. *Journal of International Accounting, Auditing and Taxation* (In press).

Graham, R., King, R., & Bailes, J. (2000). The value relevance of accounting information during a financial crisis: Thailand and the 1997 decline in the value of the baht. *Journal of International Financial Management & Accounting*, *11*(2), 84-107.

Hamberg, M., & Beisland, L. A. (2014). Changes in the value relevance of goodwill accounting following the adoption of IFRS 3. *Journal of International Accounting, Auditing and Taxation*, *23*(2), 59-73.

Hellwig, M. F. (2009). Systemic risk in the financial sector: An analysis of the subprime-mortgage financial crisis. *De Economist*, *157*(2), 129-207.

Hitz, J. M. (2007). The decision usefulness of fair value accounting–a theoretical perspective. *European Accounting Review*, *16*(2), 323-362.

Hung, M., & Subramanyam, K. R. (2007). Financial statement effects of adopting international accounting standards: The case of Germany. *Review of Accounting Studies*, *12*(4), 623-657.

International Accounting Standards Board. (2018). *The Conceptual Framework for Financial Reporting*. London: IFRS Foundation.

Jiang, W., & Stark, A. W. (2013). Dividends, research and development expenditures, and the value relevance of book value for UK loss-making firms. *The British Accounting Review*, *45*(2), 112-124.

Kothari, S. P., & Zimmerman, J. L. (1995). Price and return models. *Journal of Accounting and Economics*, *20*(2), 155-192.

Kolev, K. (2009). Do investors perceive marking-to-model as marking-to-myth? Early evidence from FAS 157 disclosure. Working paper, New York University

Landsman, W. R. (2007). Is fair value accounting information relevant and reliable? Evidence from capital market research. *Accounting and Business Research*, *37*(sup 1), 19-30.

Lang, M., Raedy, J. S., & Yetman, M. H. (2003). How representative are firms that are cross-listed in the United States? An analysis of accounting quality. *Journal of Accounting Research*, *41*(2), 363-386.

Laux, C. (2012). Financial instruments, financial reporting, and financial stability. *Accounting and Business Research*, *42*(3), 239-260.

Laux, C., & Leuz, C. (2009). The crisis of fair-value accounting: Making sense of the recent debate. *Accounting, Organizations and Society*, *34*(6-7), 826-834.

Manganaris, P., Spathis, C., & Dasilas, A. (2015). The effects of mandatory IFRS adoption and conditional conservatism on European bank values. *Journal of International Accounting, Auditing and Taxation*, *24*, 72-81.

Marton, J., & Runesson, E. (2017). The predictive ability of loan loss provisions in banks–Effects of accounting standards, enforcement and incentives. *The British Accounting Review*, *49*(2), 162-180.

Magnan, M., Menini, A., & Parbonetti, A. (2015). Fair value accounting: information or confusion for financial markets? *Review of Accounting Studies*, *20*(1), 559-591.

Nelson, K. K. (1996). Fair value accounting for commercial banks: An empirical analysis of SFAS No. 107. *The Accounting Review*, *71*(2), 161-182.

O'Hanlon, J., & Taylor, P. (2007). The value relevance of disclosures of liabilities of equity-accounted investees: UK evidence. *Accounting and Business Research*, *37*(4), 267-284.

Ohlson, J. A. (1995). Earnings, book values, and dividends in equity valuation. *Contemporary Accounting Research*, *11*(2), 661-687.

Penman, S. H. (2007). Financial reporting quality: is fair value a plus or a minus? *Accounting and Business Research*, *37*(sup 1), 33-44.

Song, C. J., Thomas, W. B., & Yi, H. (2010). Value relevance of FAS No. 157 fair value hierarchy information and the impact of corporate governance mechanisms. *The Accounting Review*, *85*(4), 1375-1410.

Street, D. L., & Larson, R. K. (2004). Large accounting firms' survey reveals emergence of "two standard" system in the European Union. *Advances in International Accounting*, 17, 1-29.

Tsalavoutas, I., André, P., & Evans, L. (2012). The transition to IFRS and the value relevance of financial statements in Greece. *The British Accounting Review*, *44*(4), 262-277.

Warner, R. M. (2012). *Applied Statistics: From Bivariate Through Multivariate Techniques.* (2nd ed.). London: Sage.

Xie, B. (2016). Does fair value accounting exacerbate the procyclicality of bank lending? *Journal of Accounting Research*, *54*(1), 235-274.

Table 1. Sample selection

Sample selection process	Number of observations
Firm-year observations for financial firms published consolidated financial statements under IFRS over the period 2005–2011	1,937
Less: observations with no market information in 2007 and 2008	(49)
Less: observations with no accounting information	(39)
Less: observations with no fair value information	(136)
Less: outliers	(15)
Study sample	1,698

Table 2. Number of firms, firm-year observations and GDP growth by country

Country	Firms	Percent	Observations	Percent	GDP Growth (2005-2007)	GDP Growth (2008-2011)
Austria	10	3.70	70	4.12	3.04	0.62
Belgium	5	1.85	28	1.65	2.68	0.77
Bulgaria	2	0.74	11	0.65	7.22	0.82
Cyprus	3	1.11	21	1.24	4.35	0.93
Czech Republic	1	0.37	7	0.41	6.33	0.48
Denmark	16	5.93	91	5.36	2.39	-0.55
Finland	5	1.85	35	2.06	4.01	-0.50
France	33	12.22	206	12.13	2.11	0.32
Germany	20	7.41	123	7.24	2.56	0.80
Greece	13	4.81	82	4.83	3.18	-4.81
Hungary	2	0.74	14	0.82	2.89	-0.85
Iceland	3	1.11	11	0.65	7.02	-1.75
Ireland	4	1.48	27	1.59	5.58	-0.94
Italy	26	9.63	172	10.13	1.48	-1.07
Latvia	1	0.37	6	0.35	10.86	-3.88
Lithuania	4	1.48	26	1.53	8.74	-1.12
Luxemburg	3	1.11	16	0.94	5.57	0.44
Malta	4	1.48	25	1.47	3.20	1.46
Netherlands	7	2.59	42	2.47	3.13	0.25
Norway	21	7.78	133	7.83	2.67	0.11
Poland	13	4.81	88	5.18	5.57	3.92
Portugal	4	1.48	26	1.53	1.60	-0.68
Romania	3	1.11	20	1.18	6.36	0.41
Slovakia	2	0.74	14	0.82	8.67	2.02
Slovenia	1	0.37	5	0.29	5.53	-0.65
Spain	11	4.07	66	3.89	3.89	-0.86
Sweden	8	2.96	52	3.06	3.64	0.73
Switzerland	12	4.44	75	4.42	3.74	1.16
United Kingdom	33	12.22	206	12.13	2.64	-0.38
Total	270	100.00	1,698	100.00		

Table 3. Descriptive Statistics

Panel A. Descriptive Statistics

Variables	All sample			Pre-crisis			Crisis			t-test (mean)
	Mean	Median	St. dev	Mean	Median	St. dev	Mean	Median	St. dev	
MV_{it+3m}	0.219	0.087	0.433	0.310	0.155	0.593	0.154	0.057	0.247	***
BV_{it}	0.165	0.079	0.522	0.196	0.083	0.774	0.143	0.074	0.200	**
NI_{it}	0.012	0.007	0.041	0.020	0.011	0.045	0.006	0.005	0.037	***
FV_{it}	0.498	0.500	0.353	0.497	0.500	0.353	0.499	0.500	0.353	-
ROE_{it}	0.031	0.094	0.831	0.146	0.143	0.114	-0.050	0.067	1.075	***
$Growth_{it}$	-0.566	0.000	17.793	0.299	0.079	2.309	-1.178	-0.124	23.148	*

Panel B. Correlations

	MV_{it+3}	BV_{it}	NI_{it}	$Crisis$	FV_{it}	ROE_{it}	$Growth_{it}$
MV_{it+3}	1						
BV_{it}	0.865***	1					
NI_{it}	0.171***	-0.064***	1				
$Crisis$	-0.178***	-0.050**	-0.169***	1			
FV_{it}	-0.042*	-0.023	0.046*	0.0027	1		
ROE_{it}	0.053**	0.016	0.205***	-0.116***	0.043*	1	
$Growth_{it}$	-0.019	-0.042*	0.028	-0.041*	0.017	-0.002	1

Notes: All variables are defined in Appendix. Panel (A) reports the descriptive statistics for the variables used in the analysis for the whole study period (2005-2011) as well as for the pre-crisis (2005-2007) and crisis (2008-2011) periods. *t*-tests are for the difference in mean values between the pre-crisis and the crisis periods. Panel (B)

reports the Pearson correlation coefficients for the variables used in the analysis. *, **, *** indicate statistical significance at the 0.10, 0.05, and 0.01 levels (two-tailed), respectively.

Table 4. The impact of the financial crisis on the value relevance and the moderating effect of fair value

Panel A. The impact of the financial crisis					Panel B. The moderating effect of fair value				
Variables		Exp.	Coefficients	t-stat	Variables		Exp.	Coefficients	t-stat
(Dependent variable MV_{it+3m})		Signs			(Dependent variable MV_{it+3m})		Signs		
BV_{it}	a_1	+	0.730***	44.33	BV_{it}	b_1	+	0.763***	28.49
NI_{it}	a_2	+	2.857***	5.60	NI_{it}	b_2	+	4.527***	4.23
$Crisis$	a_3	-	-0.136***	-7.68	$Crisis$	b_3	-	-0.116***	-4.31
					FV_{it}	b_4	?	-0.0263	-0.67
$Crisis * BV_{it}$	a_4	+	0.131**	2.32	$Crisis * BV_{it}$	b_5	+	0.160*	1.71
$Crisis * NI_{it}$	a_5	-	-1.723***	-3.11	$Crisis * NI_{it}$	b_6	-	-3.451***	-3.74
					$FV_{it} * Crisis$	b_7	?	-0.0062	-0.19
					$FV_{it} * BV_{it}$	b_8	+	0.186**	2.28
					$FV_{it} * NI_{it}$	b_9	-	-3.631***	-2.79
					$FV_{it} * Crisis * BV_{it}$	b_{10}	-	-0.298**	-2.25
					$FV_{it} * Crisis * NI_{it}$	b_{11}	+	3.843***	2.89
ROE_{it}	a_6	?	-0.0029	-0.92	ROE_{it}	b_{12}	?	-0.0017	-0.51
$Growth_{it}$	a_7	?	0. 0.0002	1.59	$Growth_{it}$	b_{13}	?	0.0001	1.26
$Constant$	a_0		0.0976***	5.40	$Constant$	b_0		0.0876***	2.88
Year effects			Yes		Year effects			Yes	
Country effects			Yes		Country effects			Yes	
Observations			1,698		Observations			1,698	
Number of firms			270		Number of firms			270	
Adjusted R^2			0.838		Adjusted R^2			0.847	

Notes: All variables are defined in Appendix. Panel (A) reports the estimation of the baseline model in Equation (1). Panel (B) reports the estimation of the study main model in Equation (2). *, **, *** indicate statistical significance at the 0.10, 0.05, and 0.01 levels (two-tailed), respectively. The t-statistics are estimated using standard errors clustered at the firm level.

Table 5. The impact of the financial crisis on the value relevance of fair value and non-fair value components

Variables (Dependent variable MV_{it+3m})		Expected signs	Coefficients	t-stat
$Non - FVBV_{it}$	θ_1	+	0.695***	38.27
$FVBV_{it}$	θ_2	+	0.766***	24.09
$Non - FVNI_{it}$	θ_3	+	2.262***	4.24
$FVNI_{it}$	θ_4	+	2.853***	3.97
Crisis	θ_5	-	-0.124***	-6.85
$Crisis * Non - FVBV_{it}$	θ_6	?	0.149**	2.36
$Crisis * FVBV_{it}$	θ_7	?	-0.0406	-0.60
$Crisis * Non - FVNI_{it}$	θ_8	?	-1.097**	-2.08
Crisis * $FVNI_{it}$	θ_9	?	-0.863	-1.45
ROE_{it}	θ_{10}	?	-0.0021	-0.69
$Growth_{it}$	θ_{11}	?	0.0002	1.58
Constant	θ_0		0.0958***	5.12
Year effects			Yes	
Country effects			Yes	
Observations			1,698	
Number of firms			270	
Adjusted R^2			0.840	

Notes: All variables are defined in Appendix. This table reports the results of examining the impact of the financial crisis on the value relevance of both the fair value and non-fair value components of book value of equity and net income based on the model described in equation (3) over the period 2005-2011. *, **, *** indicate statistical significance at the 0.10, 0.05, and 0.01 levels (two-tailed), respectively. The t-statistics are estimated using standard errors clustered at the firm level.

Table 6. Robustness Checks

Variables		Exp. Signs	Panel A Coefficients	t-stat	Panel B Coefficients	t-stat	Panel C Coefficients	t-stat
BV_{it}	b_1	+	-1.778***	-2.77	0.730***	28.04	0.384***	14.21
NI_{it}	b_2	+	22.08***	6.70	3.923***	3.86	3.895***	3.66
Crisis	b_3	-	-0.0399**	-2.44	-0.135***	-5.08	-0.188***	-6.66
FV_{it}	b_4	?	0.0429***	2.79	-0.0547	-1.45	-0.0655	-1.63
$Crisis * BV_{it}$	b_5	+	2.043***	2.60	0.148*	1.88	0.527***	5.27
$Crisis * NI_{it}$	b_6	-	-15.39***	-3.28	-2.914***	-3.14	-1.878*	-1.72
$FV_{it} * Crisis$	b_7	?	0.00427	0.20	0.0237	0.70	0.0237	0.70
$FV_{it} * BV_{it}$	b_8	+	2.678**	2.38	0.216**	2.35	0.453***	5.39
$FV_{it} * NI_{it}$	b_9	-	-31.35***	-4.83	-2.393*	-1.76	-3.640***	-2.73
$FV_{it} * Crisis * BV_{it}$	b_{10}	-	-3.038**	-2.15	-0.282**	-2.37	-0.567***	-4.17
$FV_{it} * Crisis * NI_{it}$	b_{11}	+	18.14**	1.97	2.930**	2.25	3.424**	2.38
ROE_{it}	b_{12}	?	-0.0024*	-1.76	-0.0031	-1.05	-0.0099*	-1.97
$Growth_{it}$	b_{13}	?	-0.0001	-0.71	0.0002	1.45	0.0002	1.41
Constant	b_0		-0.0505	-0.68	0.102***	3.42	0.189***	5.81
Year effects			Yes		Yes		Yes	
Country effects			Yes		Yes		Yes	
Observations			1,697		1,698		1,698	
Number of firms			270		270		270	
Adjusted R2			0.956		0.833		0.654	

Notes: All variables are defined in Appendix. In this table, we check the robustness of our results based on the model in Equation (2) by running three tests. In Panel A, the market capitalisation and the accounting variables are scaled by the number of shares outstanding. In Panel B, we use the market capitalisation of a financial firm *i* six months, following the end of fiscal year *t* scaled by lagged total assets as a dependent variable. In Panel C, we use the market capitalisation of a financial firm *i* 12 months, following the end of fiscal year *t* scaled by lagged total assets as a dependent variable. *, **, *** indicate statistical significance at the 0.10, 0.05, and 0.01 levels (two-tailed), respectively. The t-statistics are estimated using standard errors clustered at the firm level.

Appendix. Variable Definitions

Variable	Definition	Source/Database
MV_{it+3m}	The market capitalization of firm i three months following the end of fiscal year t scaled by lagged total assets (i.e. total assets at the end of year $t-1$).	DataStream
BV_{it}	The book value of equity for firm i at the end of the fiscal year t scaled by lagged total assets (i.e. total assets at the end of year $t-1$).	DataStream
NI_{it}	The reported net income of firm i for the fiscal year t scaled by lagged total assets (i.e. total assets at the end of year $t-1$).	DataStream
Crisis	A dummy variable coded 1 for the years of crisis period (2008-2011) and zero otherwise.	
FV_{it}	A quintile ranking of firms based on fair value exposure (%). Fair value exposure is the percentage of financial assets measured at fair value to total assets for firm i at the end of fiscal year t. Financial assets recognised at fair value are: held-for-trading securities, financial assets at fair value through profit or loss, available-for-sale financial assets, and derivatives.	Fitch Connect
ROE_{it}	The return on equity ratio of firm i for the fiscal year t.	DataStream
$Growth_{it}$	The growth rate of firm i for the fiscal year t and is measured by change in total operating income (the sum of net interest income and non-interest income) between year t and year $t-1$.	Fitch Connect
D_t	A year dummy variable for year t.	
$Country_i$	A country dummy variable based on the country in which firm i is domiciled.	
$Non-FVBV_{it}$	The non-fair value components of book value of equity for firm i at the end of the fiscal year t scaled by lagged total assets (i.e. total assets at the end of year $t-1$).	Fitch Connect
$FVBV_{it}$	The fair value components of book value of equity for firm i at the end of the fiscal year t scaled by lagged total assets (i.e. total assets at the end of year $t-1$).	Fitch Connect
$Non-FVNI_{it}$	The non-fair value components of net income for firm i over the fiscal year t scaled by lagged total assets (i.e. total assets at the end of year $t-1$).	Fitch Connect

| $FVNI_{it}$ | The fair value components of net income for firm i over the fiscal year t scaled by lagged total assets (i.e. total assets at the end of year t-1). | Fitch Connect |