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Valuation Implications of FAS 159 Reported Gains and Losses from Fair Value Accounting for Liabilities

Abstract

This study examines the economic implications of fair value liability gains and losses arising from the adoption of Statement of Financial Accounting Standards No. 159 (hereafter, FAS 159). Consistent with the notion that gains and losses contain value-relevant information, we find a positive correspondence between a firm's FAS 159 fair value liability gains and losses and current period stock returns. However, further analysis indicates that fair value gains and losses from liabilities have a negative association with future returns, suggesting that investors misprice this earnings component. This negative association is stronger for firms with low levels of institutional ownership. While the value-relevance tests provide some evidence that fair value changes from liabilities have information content, the negative association with future stock returns suggests that these gains are eventually not realizable or that the market has overreacted to the initial recognition of these gains. Overall, our study contributes evidence regarding the controversy over the recognition of fair value liability gains and losses by providing direct empirical evidence that such gains and losses are priced by the stock market but subsequently reversed within the next 12 months.

Keywords: Fair value accounting, FAS 159 liability gains and losses, value relevance, market efficiency

JEL Classifications: D82, G34, M41

1. Introduction

We examine how investors perceive the valuation implications of recognized fair value gains and losses attributable to fair value changes in liabilities. Statement of Financial Accounting Standards No. 159, *The Fair Value Option for Financial Assets and Financial Liabilities* (hereafter, FAS 159; FASB 2007), allows firms to elect fair value as the measurement basis for certain financial instruments. A primary motivation for this standard is to allow a consistent measurement basis of both financial assets and financial liabilities on the balance sheet. This accounting standard also enables firms to apply fair value measurement on its financial liabilities for the first time.

Because FAS 159 gives firms the option to fair value their financial liabilities, the standard has been controversial and has drawn considerable attention. Particularly, the inclusion of the effects of changes in a firm's own credit risk when measuring the fair value of liabilities remains one of the most debated aspects of fair value accounting. Critics of this standard argue that reporting an accounting gain from its financial liabilities when the firm's creditworthiness has deteriorated is very confusing to the market (Lipe 2002), and it is possible that managers can exploit the accounting treatment of fair valuing liabilities for opportunistic reasons (e.g., Guthrie et al. 2011; Henry 2009). There are also concerns that the fair value measurement of financial liabilities is unreliable, especially if these financial liabilities are not actively traded.

Given the tremendous controversy over this rule, the FASB began deliberating on whether to update this rule several years ago. In January 2016, the FASB issued an Accounting Standards Update (ASU No. 2016-01), which specifies the requirement for firms to recognize in other comprehensive income (rather than net income) the portion of the total change in the fair value of a liability resulting from a change in the instrument-specific credit risk when the firm

has elected to measure the liability at fair value in accordance with the fair value option for financial instruments. The accumulated gains and losses due to these changes will still be reclassified from accumulated other comprehensive income to earnings if the financial liability is settled before maturity.[1] Thus, within a decade since the inception of FAS 159, the FASB effectively reversed the requirement for fair value gains and losses from liabilities attributable to its own credit risk to be included as net income on the income statement.

The revision to this rule met with strong approval from the banking industry (e.g., Eavis, 2016; McLannahan 2016; Whitehouse 2012). While it appears that the financial industry initially lobbied for this rule in the first place, the banks ended up opposing it on grounds that the counterintuitive nature of this rule made it harder for them to explain their performance to investors and analysts.[2] The rule created confusion in banks' financial reporting because it distracted the banks from simply reporting the fundamental performance of their businesses. In addition, as the valuation implications of such fair value gains and losses seem questionable, analysts and investors are interested to know earnings that exclude the impact of these fair value gains and losses.

Prior behavioral research that has examined this issue also suggests that participants do not perceive these gains and losses from liabilities in a similar manner as gains and losses from assets. Utilizing an experiment with CPAs as participants, Gaynor et al. (2011) find that the majority of the participants incorrectly assess a company's credit risk as improving (deteriorating) when a fair value liability gain (loss) is recognized. Their study provides evidence that suggests financial statement users are likely to misinterpret fair value gains as positive signals and fair

[1] The implementation date of this update starts for fiscal years beginning after December 15, 2017.
[2] For example, Goldman Sachs reported US$ 845 million of income before extraordinary items in the third quarter of 2008, but gains from the fair value change in liabilities were US$ 3.8 billion. Without these gains, Goldman Sachs would have reported a loss of US$ 3 billion. Similarly, JPMorgan reported a US$ 54 million loss in the same quarter, but it would have reported a US$ 13.1 billion loss without the gains from the fair value change in liabilities.

value losses as negative signals, which is consistent with the income statement effects being counterintuitive. Another behavioral study shows that investors' fair value judgments are contingent on whether the financial instrument in question is an asset or a liability, whether fair values produce gains or losses, and whether or not the item will be sold (Koonce et al. 2011). In particular, the authors find that investors consider fair value changes as more relevant for assets than for liabilities, even when the underlying economics of both types of financial instruments are held constant.

The above findings suggest that market participants, including professional investors and analysts, perceive the valuation implications of fair value gains and losses from liabilities differently. On the other hand, there is some empirical evidence that shows the market is able to impute the gains and losses from the changes in fair value of liabilities to equity. Specifically, Barth et al. (2008) find that increases (decreases) in equity value are associated with decreases (increases) in debt value arising from increases (decreases) in credit risk, after controlling for the direct effect on equity value of the credit risk change. Thus, this study suggests that the stock market imputes the valuation implications of fair value changes in liabilities in the correct direction, just as it does fair value changes in assets.

Our study attempts to provide direct evidence on whether there is a positive correspondence between stock returns and fair value gains and losses from liabilities, as Barth et al. (2008) have suggested. In particular, we examine whether reported fair value liability gains and losses provide value-relevant information. This evidence is especially relevant given the many assertions that the accounting for fair valuing liabilities is flawed. We also examine to what extent the valuation implications of these fair value changes affect future returns. We consider these research questions to be of importance given the controversy that raises troubling

questions about the nature of fair value gains and losses from liabilities, and what they really represent in the overall context of a firm's fundamentals.

Our sample firms are drawn from firms that elected the fair value option as the measurement basis for certain financial instruments, following FAS 159. We reviewed their financial statements from 2009 to 2012 to hand-collect financial statement information pertaining to FAS 159 disclosures. We find a positive association between a firm's stock returns and FAS 159 fair value gains or losses from liabilities that is incremental to the market response to the firm's earnings before inclusion of these fair value gains or losses. These results extend prior research that investigates the value relevance of fair value gains and losses of financial assets (e.g., Barth 1994). Consistent with the predictions of Barth et al. (2008), our study provides *direct* evidence that there is a decrease in equity value arising from a decrease in asset value, and an increase in equity value associated with a decrease in debt value. Contrary to the assertions that fair value gains and losses from liabilities are not value relevant, our empirical findings suggest that fair value gains and losses from debt value changes represent a component of a firm's economic income that is priced by the market.

In additional tests, we utilize a difference-in-differences approach to document that the value relevance of earnings for our sample firms improved, in terms of an increase in incremental adjusted R^2, in the post-FAS 159 adoption period. We also assess the value relevance of gains from liabilities that are due to changes in a firm's own credit risk and gains from liabilities that are due to changes in overall market conditions as reflected in market interest rates. The recognition of an accounting gain associated with the deterioration of a firm's own credit risk is one reason why FAS 159 is controversial. The adoption of FAS 159 by certain firms enables us to directly examine those liability gains and losses that are attributable to changes in

their own credit risk for the first time. We are able to do so because these disclosures clearly distinguish the liability gains and losses arising from a firm's own credit risk changes from liability gains and losses that are due to changes in other factors. We still find that gains and losses attributable to changes in a firm's own credit risk are positively related to stock returns.

Next, we examine the future valuation implications of these liability gains and losses by investigating the association between the earnings component and future returns. Because firms that report fair value liability gains (losses) are essentially bad (good) news firms (i.e., they report a gain (loss) because their credit worthiness has deteriorated (improved)), we examine whether there is a correspondence between these fair value gains and losses and future returns. A positive association will suggest that investors underestimate the valuation implications of fair value liability gains and losses, and that they were too pessimistic (optimistic) about the gains (losses) of these firms when those gains (losses) were initially reported. On the other hand, a negative association between fair value changes and future stock returns will suggest that investors are initially optimistic (pessimistic) about these gains (losses), but there are subsequent price reversals from these firms over the next 12 months.

We find that liability gains have a significant, negative association with future one-year returns, indicating that investors were too optimistic with respect to these fair value changes. In a cross-sectional analysis, we find that this overreaction occurs mostly in the firms with low institutional ownership. An interpretation of these results is that investors are optimistic regarding the firm's prospects when the firm reports net income that is boosted by fair value gains from liabilities but do not consider the real implications of these fair value gains and losses in the overall context of the firm's changing fundamentals to market conditions. This finding provides some evidence that the fair value accounting for liabilities may be flawed, as most of

these gains are not realizable but instead are reversed from the financial statements in subsequent periods. In this regard, our results support the concerns expressed by many regarding the accounting treatment of fair valuing liabilities. We also note that when we disentangle liability gains from liability losses in our tests, the mispricing occurs only for the gain component of the fair value changes. We do not observe such mispricing occurring in the loss component.

We contribute to extant research that addresses the controversy surrounding fair value accounting for liabilities. Barth et al. (2008) find that the relation between credit risk changes and equity returns is significantly less negative for firms with more debt. However, we note that since firms did not recognize gains from liabilities as earnings during their sample period, they were unable to conduct a direct test of the value relevance of fair value gains and losses from liabilities. In contrast, by using data on firms that recognize gains and losses from liabilities in the post-FAS 159 period, we are able to provide direct evidence on the value relevance of *reported* fair value gains and losses from liabilities. Furthermore, we find evidence that suggests fair value changes in liabilities have different future valuation implications compared with fair value changes in assets, which is not tested in Barth et al. (2008). Specifically, it appears that market participants might have misinterpreted the valuation implications of this earnings component, thus resulting in a market correction in subsequent periods among firms that report fair value liability gains. We believe our paper is of interest to standard setters, regulators, and investors who are concerned about the financial reporting implications of fair valuing liabilities.

The remainder of the paper proceeds as follows. Section 2 develops the hypotheses. Section 3 describes the data and research design. Section 4 discusses the main results and the results of additional analyses. Section 5 presents our conclusions.

2. Hypothesis development

2.1. Institutional background

FAS 159 was promulgated to permit firms the option (i.e., the "fair value option") to measure financial instruments at fair value on an instrument-by-instrument application. Under this standard, firms have the discretion to irrevocably elect fair value as the initial and subsequent measurement attribute for certain financial assets and liabilities. All fair value changes must be reflected in earnings, including fair value changes resulting from changes in market interest rates (and other macroeconomic factors) as well as changes in the firm's own creditworthiness. To improve transparency, the standard requires various disclosures, including information relating to how changes in fair value affect a firm's earnings.

The stated objective of FAS 159 is to improve financial reporting by providing firms the opportunity to mitigate artificial volatility in reported earnings caused by measuring related assets and liabilities differently. Adopting this standard will also allow firms to apply the fair value measurement basis to designated derivative assets and liabilities without having to apply complex hedge accounting provisions. Finally, standard setters believe that this standard will expand the use of fair value measurement and help to mitigate some of the limitations of the mixed-attribute reporting model.

Because FAS 159 permits firms to fair value some of their liabilities, it has received considerable attention and resulted in much controversy over whether or not fair value gains from liabilities reflect economic income. In the following subsections, we highlight the main arguments in the debate for and against the fair value measurement of liabilities.[3]

[3] See also the discussion paper by the IASB (2009) titled "Credit Risk in Liability Measurement" for an in-depth discussion of the issues pertaining to this debate. AAA FASC (2000, 2007) have also provided their views on this issue.

2.1.1. Arguments for recognizing fair value gains and losses from liabilities as income

i. Better match between assets and liabilities. A central argument for fair valuing a firm's liabilities is to better align the measurement basis of a firm's liabilities with the measurement basis of its corresponding assets. Measuring liabilities at fair value will lead to a consistent measurement basis on both sides of the balance sheet if a firm has been measuring its assets at fair value. In contrast, if a firm's assets are measured at fair value but its liabilities are measured at amortized cost, changes in market interest rates or the firm's credit risk will affect only the fair value measurements of the firm's assets but will not lead to a remeasurement of its liabilities. If the measurement of liabilities does not incorporate the effect of these changes, there is an accounting income mismatch. Consequently, net income (or other comprehensive income) will be distorted by the mismatch, and will not properly reflect the underlying economics of the firm. This argument also underlies the FASB's long-term objective of measuring liabilities at fair value to be consistent with measuring assets at fair value.

Hodder et al. (2006) provide some evidence that supports this argument. They examine properties of GAAP net income, GAAP comprehensive income, and full fair value income to determine which accounting income measure best reflects firm risk. They find that investors view the volatility of full fair value income as a better measure of firm risk than the other two measures. The authors interpret their results as suggesting that greater inclusion of fair value estimates will lead to reported accounting income that better reflects a firm's underlying economic risk. In a related study, Hirst et al. (2004) also document that a full fair value income measurement is more likely to enable analysts to reach better-informed value and risk judgments about a firm's fundamentals.

ii. Wealth transfer between equity and debt holders. Barth et al. (2008) outline the economic justification for fair value measurement of a firm's liabilities as a wealth transfer between equity and debt holders based on Merton's (1974) theoretical framework.[4] Briefly, equity holders have an option to put their firm to debt holders. That is, if the asset value of the firm falls below the value of debt, the shareholders can transfer the firm to the debt holders. When the value of the firm's assets decreases, the value of exercising the put option increases. Thus the value of debt decreases to reflect the transfer of wealth from debt holders to equity holders due to the increase in the put option value.

The above argument can also be viewed based on the classic accounting equation that assets equal liabilities plus equity, in which liabilities and equity represent two classes of claims against the firm's assets. An increase in the credit risk of the firm's liabilities represents a transfer of wealth from debt holders to equity holders in the following way. As the firm's ability to pay its liabilities diminishes, the potential loss to shareholders is limited to the amount of their investment. In contrast, debt holders may be unable to recover the principal amount they lent to the firm because equity holders are not obligated to inject additional capital into the firm. Effectively, debt holders will "share" in the losses of the firm if the firm becomes insolvent. Therefore, the apparent gain to the firm is essentially an allocation of claims between the firm's owners and its lenders. Hence, Barth and Landsman (1995) state that the "fair value accounting for liabilities is conceptually no different than for assets (p. 104)" since the decrease in liabilities' fair values arising from a deterioration of a firm's financial condition represents the transfer of wealth from creditors to equity holders.

Supporting the above argument, Barth et al. (2008) find evidence that there are two countervailing equity value effects associated with increases in credit risk. The primary effect is

[4] See also Bohn (2000) for a description of other theoretical models on risky debt valuation.

a decrease in equity value arising from a decrease in asset value, and the secondary effect is an increase in equity value associated with a decrease in debt value. Barth et al. (2008) document that the relation between credit risk change and equity returns is significantly less negative when the firm has more debt. Their finding is consistent with the reasoning that debt holders subsidize equity holders' wealth decreases. Hence their study indicates that debt value changes resulting from the firms' credit risk changes represent a component of a firm's economic income and should be considered for inclusion in a firm's accounting income.

2.1.2. Arguments against recognizing fair value gains and losses from liabilities as income

i. Realizability issue. While Merton's theory is theoretically sound in its reasoning, it may not incorporate some of the effects of market realities. In particular, opponents of fair valuing liabilities argue that accounting measurement of liabilities does not take into account factors such as low tradability and counterparty constraints that make realization of fair value changes in liabilities unlikely. Hence any reported profit accruing to the firm from fair valuing its liabilities is essentially theoretical.[5]

The realizability argument against fair valuing liabilities is as follows. If liabilities are seldom transferred, it is not clear whether the firm has the ability to benefit from the change in liability value, even if there is a change in its fair value. A liability transfer usually requires negotiations between the firm (i.e., the debt issuer) and its counterparties (i.e., the debt holders), which often is a lengthy process. Hence, most liabilities are typically held to maturity for redemption at their face value by the firm and typically do not involve debt renegotiation despite changes in the market value of a firm's debt. Consequently, the economic impact to a firm's

[5] An alternative view is that realizability is irrelevant to this issue. Proponents argue that unrealized fair value gains and losses relate to forgone opportunities arising from the decision to continue to hold assets or owe liabilities. These forgone opportunities (or opportunity costs) are viewed as informative and allow investors to reassess the value of the firm.

equity holders attributable to changes in the fair values of a firm's liabilities is unclear.[6] In support of the above argument, Koonce et al. (2011) find that investors' fair value judgments are contingent on specific contexts even if these judgments appear inconsistent with the predictions of economic theory. Specifically, they find that investors consider fair value changes to be less relevant for liabilities. Investors also view fair value changes as more relevant when firms anticipate selling or settling their financial instruments in the near term compared with held-to-maturity financial instruments.

ii. Counterintuitive nature of fair value gains and losses from liabilities. Critics argue that recognizing fair value changes in liabilities, particularly recognizing changes in debt value arising from changes in a firm's own credit risk, will lead to counterintuitive results. The counterintuitive income statement effect argument remains one of the most commonly cited objections to fair valuing liabilities. When liability measurement includes the impact of a firm's own credit risk, a firm reports an accounting gain from a decline in the credit quality of its liabilities. Opponents of fair value accounting for liabilities argue that this gain is misleading and counterintuitive. Their basic premise is that reporting accounting gains when a firm's fundamentals deteriorate provides misleading information signals. For example, Lipe (2002) documents that accounting information conveys misleading positive signals when a firm that is approaching bankruptcy uses fair value to measure liabilities, because it reports a gain when its financial strength deteriorates and a loss when its financial strength increases.

In a related study, Gaynor et al. (2011) also find that a majority of their survey respondents (i.e., over 70%) misinterpreted fair value gains attributable to a deterioration in a firm's creditworthiness as a positive signal and fair value losses as a negative signal. Using

[6] In contrast, unrealized fair value changes in assets can be recognized or disclosed in the financial statements because these assets are presumed to be readily available for disposal unless there are significant restrictions preventing the firm from disposing them.

CPAs as survey respondents, many of these financial statement experts incorrectly assess a company's credit risk as improving (deteriorating) when a fair value gain (loss) is recognized. Their study provides evidence in support of the claim that market participants might not be able to unravel the counterintuitive income statement effect arising from changes in liability fair values due to changes in a firm's own creditworthiness. Taken together, these studies suggest that the counterintuitive nature of fair value liability gains and losses could cause financial statement readers to misinterpret the valuation signals arising from reported income figures, and the effect extends to qualified accounting professionals such as CPAs as well.

2.2. Hypotheses

We address the above issues by empirically examining the valuation implications of fair value gains and losses attributable to fair value changes in liabilities for firms that adopt FAS 159. Our setting allows for a direct test of the above arguments about whether fair valuing liabilities conveys decision-relevant information to market participants. Specifically, we are interested in examining whether gains and losses from liabilities are value relevant. If liability gains and losses are not ignored by investors, we hypothesize that these gains and losses will be positively associated with current period stock returns if they contain decision-useful information. We are also interested in whether a *negative* association between these gains and losses and stock returns will materialize as critics of fair value accounting for liabilities have contended given the apparent misleading nature of this earnings component.

Therefore, we test the following hypothesis (stated in null form):

HYPOTHESIS 1. *FAS 159 gains and losses attributable to fair value changes in liabilities are not value relevant.*

Next, we investigate whether investors correctly understand the valuation implications of these liability gains. Because firms that report fair value liability gains are essentially bad news

firms (i.e., they report a gain because their credit worthiness has deteriorated) and vice versa, a positive association between these gains and future stock returns will suggest that investors are initially pessimistic (optimistic) about the gains (losses) of these firms when they are first reported. On the other hand, a negative association between liability fair value gains and losses and future stock returns will suggest that investors are initially optimistic (pessimistic) about these gains (losses). However, subsequent price reversals occur within the next 12 months as investors react adversely to the deteriorating fundamentals of these firms.

If the market is efficient and investors understand the nature of each earnings component, the information is incorporated into the stock price and will not have any significant association with future returns. However, if investors do not understand the different nature (e.g., persistence) of each earnings component and misreact to a specific earnings component, that earnings component can have a significant association with future returns. For example, Sloan (1996) shows that total accruals have weaker associations with future earnings than cash flow from operations, but investors do not understand total accruals' implications for future earnings and overreact to it, leading to negative future returns (the earnings fixation hypothesis). The notion that fair value measurements are associated with firms' future financial performance has been examined for fair value assets such as investment securities (e.g., Evans et al. 2014) and derivative instruments such as cash flow hedges (e.g., Campbell 2015).[7] However, prior research has not examined whether reported fair value changes for FAS 159 designated financial liabilities have similar valuation implications to those for financial assets.

[7] Specifically, Evans et al. (2014) test the predictive relation between the fair values of interest-bearing investment securities and future accounting income from those securities, and find that firms with larger amounts of accumulated unrealized gains (losses) have greater future income that outperforms (underperforms) their peers, whereas Campbell (2015) finds that unrealized cash flow hedge gains and losses are negatively associated with future changes in gross profit but negatively associated with future stock returns over the subsequent two years.

It is ex ante unclear whether or not investors would impute the valuation implications of liability gains and losses for future earnings correctly. While extant research shows that unrealized fair value changes reported by firms in the current period have positive valuation implications, as these gains and losses are eventually realized in subsequent periods by the sale or settlement of these financial instruments (e.g., Park et al. 1999), it is not certain whether reported fair value changes in liabilities are realizable or simply reversed in subsequent periods. Therefore, we again state our second hypothesis in the null form, as follows:

HYPOTHESIS 2. *FAS 159 gains and losses attributable to fair value changes in liabilities are not associated with future returns.*

3. Research design

3.1. Sample selection

We use accounting data and filing dates (10-Q and 10-K) from Compustat, and stock return and price data from CRSP. We hand-collect our main variable of interest, change in fair value of liabilities included in earnings ($\Delta LIAB$), after first identifying firms in the financial industry with nonzero change in fair value included in earnings for which the fair value option was elected (Compustat: TFVCEQ) and nonzero fair value liabilities (Compustat: TFVLQ), and then checking the 10-Q and 10-K filings of these firms to confirm that they adopted the fair value option for their liabilities.[8] We delete observations whose beginning-of-quarter stock price is below $3 in order to mitigate the extreme (small-denominator) effects of low-priced stocks on quarterly returns. We then winsorize all the variables at the top and bottom 1 percent of the sample distributions. Our final sample consists of 854 firm-quarter observations from the first

[8] Most firms that adopted the fair value option report the changes in the fair value of their designated liabilities either in the form of text or in table format in the 10-Q and 10-K accounting footnotes. We provide some examples of fair value option tables from the 10-Q (or 10-K) notes in the Appendix.

quarter of 2007 to the first quarter of 2012.[9] Of these 854 firm-quarters, 397 are from banks, 210 from financial companies, and 247 from insurance companies. We refer to this sample as the full sample.

Fair value changes in financial liabilities typically arise from either changes in a firm's own credit risk or overall market interest rate risk. Some firms in our sample provide quantitative information regarding the fair value changes in their liabilities included in earnings as a consequence of changes in the firm's own credit risk.[10] For these firms, we hand-collect this information ($\Delta LIAB\_CREDIT$) to examine its value relevance. We obtain 129 firm-quarter observations with fair value gains and losses from liabilities attributable to changes in the firm's own credit risk. We refer to this sample as the reduced sample.

3.2. Models for testing hypotheses

We first analyze the valuation implications of the gains and losses from the change in fair value of liabilities included in earnings by estimating the following model that relates stock return to its various earnings components:

$$QRET_{i,t} = \alpha_0 + \alpha_1 NI\_excl\Delta FV_{i,t} + \alpha_2 \Delta FV\_ASSET_{i,t} + \alpha_3 \Delta FV\_LIAB_{i,t} + \alpha_4 \Delta NI_{i,t} + e_{i,t} \quad (1)$$

[9] FAS 159 was officially issued in February 2007. The standard took effect for the fiscal year beginning after November 15, 2007, although early adoption was permitted. On July 1, 2009, FAS 159 was codified into Accounting Standards Codification (ASC) Topic 825, *Financial Instruments*.

[10] The following are two examples of such disclosures:
Citigroup Inc. 2008 Q3: "The estimated change in the fair value of these liabilities due to such changes in the Company's own credit risk (or instrument-specific credit risk) was a gain of $1,525 million and $112 million for the three months ended September 30, 2008 and September 30, 2007, respectively, and a gain of $2,576 million and $241 million for the nine months ended September 30, 2008 and September 30, 2007, respectively."
American International Group 2008 Q3:"During the three- and nine-month periods ended September 30, 2008, AIG recognized a loss of $184 million and a gain of $1.1 billion, respectively, attributable to the observable effect of changes in credit spreads on AIG's own liabilities for which the fair value option was elected."

where $QRET_{i,t}$ is quarterly size-adjusted return measured from two trading days after the filing date of the 10-Q (10-K) in quarter t-1 to two trading days after the filing date of the 10-Q (10-K) in quarter t. We measure quarterly returns up to two trading days after the 10-Q and 10-K filing dates to ensure that the returns reflect investors' responses to the information on filing dates. Consistent with Barth et al. (2008), we use size-adjusted returns.[11] $NI\_excl\Delta FV_{i,t}$ is income before extraordinary items per share excluding the change in fair values of assets and liabilities included in earnings for which the fair value option was elected. $\Delta FV\_ASSET_{i,t}$ is recognized per share of FAS 159 gains or losses from assets for the quarter. $\Delta FV\_LIAB_{i,t}$ is recognized per share of FAS 159 gains or losses from liabilities for the quarter. Thus, $NI\_excl\Delta FV_{i,t}$ represents income that excludes the effect of fair value changes in assets and liabilities. Finally, $\Delta NI_{i,t}$ is the seasonal change in earnings before extraordinary items, defined as $\Delta NI_{i,t} = NI_{i,t} - NI_{i,t-4}$. We scale each income variable by beginning-of-quarter stock price.

We hypothesize that the coefficient on $\Delta FV\_LIAB_{i,t}$, our main variable of interest, will be positive if fair value gains and losses from liabilities are value relevant. In contrast, this coefficient will not be reliably different from zero if fair value gains and losses from liabilities are not value relevant or if there are significant reliability concerns regarding their measurement. Consistent with the results from prior research, we expect positive coefficients on $NI\_excl\Delta FV_{i,t}$ and $\Delta FV\_ASSET_{i,t}$.

Next, we use the reduced sample of firms that explicitly disclose gains and losses from liabilities solely due to changes in a firm's credit risk to directly assess the value relevance of these liability gains and losses. Specifically, by hand-collecting fair value liability gains and losses per share attributable to changes in the firm's own credit risk ($\Delta LIAB\_CREDIT_{i,t}$), we are able to explicitly separate changes in the fair values of the firm's liabilities that are due to

[11] Using raw returns does not change our inferences in all of our analyses.

changes in the firm's own credit risk from changes in fair values due to changes in other factors such as market interest risk. We compute the fair value change in liabilities attributable to factors other than changes in the firm's own credit risk ($\Delta LIAB\_NCREDIT_{it}$) as the difference between $\Delta FV\_LIAB_{i,t}$ and $\Delta LIAB\_CREDIT_{i,t}$. We examine the value relevance of $\Delta LIAB\_CREDIT_{i,t}$ using the following regression model:

$$QRET_{i,t} = \alpha_0 + \alpha_1 NI\_excl\Delta FV_{i,t} + \alpha_2 \Delta FV\_ASSET_{i,t} + \alpha_3 \Delta LIAB\_CREDIT_{i,t} + \alpha_4 \Delta LIAB\_NCREDIT_{it} + \alpha_5 \Delta NI_{i,t} + e_{i,t} \quad (2)$$

The income variables are scaled by beginning-of-quarter stock price. If fair value gains and losses from liabilities due to changes in the firm's own creditworthiness are value relevant, we expect a positive coefficient on $\Delta LIAB\_CREDIT_{i,t}$.

For the test of Hypothesis 2, we replace $QRET_{i,t}$ in model (1) by future one-year returns (*RET_1YR*) measured three trading days after the filing date. Thus, we estimate the following model:

$$RET\_1YR_{i,t} = \alpha_0 + \alpha_1 NI\_excl\Delta FV_{i,t} + \alpha_2 \Delta FV\_ASSET_{i,t} + \alpha_3 \Delta FV\_LIAB_{i,t} + \alpha_4 \Delta NI_{i,t} + e_{i,t} \quad (3)$$

In all our regression tests, we use standard errors clustered by firm and quarter to account for within-firm and within-quarter correlations in residuals.

4. Empirical results

4.1. Univariate analyses

Table 1 presents descriptive statistics for the variables. The averages of size-adjusted quarterly returns (*QRET*), one-year-ahead future size-adjusted returns (*RET_1YR*), income before extraordinary items (*NI*), and change in *NI* (ΔNI) are all negative. This is expected because our sample period includes the 2008 crisis period and the sample firms are in the financial industries,

which were affected most during the crisis period. The standard deviations of *ΔFV_ASSET* and *ΔFV_LIAB* (0.061 and 0.059) are about 30 percent of the standard deviation of *NI*, which indicates that fair value changes included in earnings have a significant effect on the firm's earnings for our sample firms.

4.2. Results of value relevance tests

Table 2 presents the results on the value relevance of earnings components. The first column shows the results of the basic value relevance test with earnings (*NI*) and the change in earnings (*ΔNI*). The positive and statistically significant coefficients on *NI* (coefficient = 0.251, t = 2.27) and on *ΔNI* (coefficient = 0.083, t = 1.81) are consistent with the results of prior research. When we decompose *NI* into its respective components (*NI_exclΔFV* and *ΔFV*) in the second column, we find a significant positive association (0.306, t = 3.63) between *QRET* and *NI_exclΔFV*. We also find a significant positive relation (coefficient = 0.527; t = 2.51) between *QRET* and fair value gains and losses from assets and liabilities (Δ*FV*). In the third column, we further decompose Δ*FV* into Δ*FV_ASSET* and Δ*FV_LIAB* and find that both Δ*FV_ASSET* and Δ*FV_LIAB* are value relevant. Specifically, the coefficient on Δ*FV_ASSET* is 0.638 (t = 2.68), and the coefficient on Δ*FV_LIAB* is 0.476 (t = 3.92). The magnitude of the coefficient on Δ*FV_LIAB* is smaller than that of Δ*FV_ASSET*. An F-test shows that the difference is significant at the 10 percent confidence level (p-value = 0.064).

The results of the multivariate analyses indicate that although smaller in magnitude than Δ*FV_ASSET*, Δ*FV_LIAB* is value relevant after controlling for other earnings components, which suggests that investors perceive reported FAS 159 fair value liability gains and losses as value relevant. In column (4), we decompose Δ*FV_ASSET* and Δ*FV_LIAB* into gains and losses (*ΔASSET_GAIN*, *ΔASSET_LOSS*, *ΔLIAB_GAIN*, and *ΔLIAB_LOSS*). We find that both gains and

losses from the fair value changes in assets are value relevant, although the coefficient for fair value gains appear to be larger in magnitude than the coefficient for losses (0.922, t = 2.24 vs. 0.507, t = 2.36). In contrast, we find significant results only for *ΔLIAB_GAIN* (0.455, t = 3.31) but not for *ΔLIAB_LOSS* (0.415, t = 0.87).

4.3. Changes in value relevance of earnings in the post–FAS 159 period: Difference-in-differences approach

In this section, we investigate whether the adoption of FAS 159 improves adopters' earnings value relevance compared with the value relevance of nonadopters' earnings. This test sheds light on whether the FASB's decision to promulgate FAS 159 improves the information content of earnings for firms that choose to adopt this standard or whether the value relevance of their earnings deteriorates in the postadoption period. We select control firms using four criteria: the log value of total assets (*SIZE*); the ratios of fair value assets (*FV_ASSET*), fair value liabilities (*FV_LIAB*), and derivatives (*DERIVATIVES*) to the firm's total assets; and the firm's earnings volatility (*EARN VOLATILITY*). Large firms are more likely to have complex financial products. Thus, these firms are more likely to adopt FAS 159 to reduce the burden of complicated hedge accounting. For the same reason, we conjecture that firms that use derivatives are more likely to adopt FAS 159. Another stated objective of FAS 159 is to reduce income volatility caused by different measurement bases for a firm's assets and liabilities. Therefore, we expect that earnings volatility is a determinant of FAS 159 adoption. We also reason that firms that elect FAS 159 for their liabilities tend to have a higher proportion of fair value assets and liabilities to total assets.

Table 3 presents the results of the propensity score matching (PSM) criteria for selecting our control sample firms. We use a probit regression specification as our determinants' model for whether the firm adopts FAS 159 or not (*ADOPTION*). As expected, Panel A of Table 3 shows that the coefficients for *SIZE*, *FV_ASSET*, and *FV_LIAB* are statistically significant and load positively in the correct direction. In contrast, the coefficients of *DERIVATIVES* and *EARN VOLATILITY* do not load significantly, although their signs are in the predicted direction. Panel B of Table 3 reports the univariate differences of our treatment group sample firms and control firms to ensure that our propensity score matching procedure properly matches our treatment firms and control firms such that the treatment firms are indistinguishable from the control firms other than the fact that the treatment firms are firms that adopt FAS 159 in their financial statements. As reported in Panel B, the univariate differences across the five characteristics suggest that our treatment and control firms are similar across our matching criteria.

In Table 4, we report the average adjusted R^2s of the value relevance regressions ($QRET_{i,t} = \alpha_0 + \alpha_1 NI + \alpha_2 \Delta NI_{i,t} + e_{i,t}$) for fair value option adopters versus nonadopters in the pre– and post–FAS 159 adoption periods. Following Barth et al. (2008), we randomly select, with replacement, the same number of firm-quarter observations and run this regression procedure a thousand times so as to obtain 1,000 R^2s for each group. While both groups experience an improvement in the value relevance of their earnings from the pre–FAS 159 period to the post–FAS 159 period, the results show that the average adjusted R^2 of the value relevance regressions is significantly greater in the post–FAS 159 period for the adopter group than for the nonadopter group. The difference (0.044) is statistically significant at the 0.01 level.

4.4. Association with future returns

To test our second hypothesis, we examine whether investors efficiently incorporate the information in each earnings component into the stock price. More specifically, we study the association between each earnings component and future one-year returns. The results show that the coefficient on *ΔNI* is significantly positive (0.158), consistent with prior literature on the "post earnings announcement drift" that suggests there is a delayed market reaction to the full implications of firms' reported earnings. We do not find a significant association between the future returns and *NI_exclΔFV*, but we do find a significant negative coefficient for *ΔFV_LIAB* (-0.922, t = -2.18), which is strong evidence that the market overreacts to this information. In the second column, we decompose *ΔFV_LIAB* into gains and losses (*ΔLIAB_GAIN* and *ΔLIAB_LOSS*). We find that the market's overreaction is primarily a result of fair value liability gains (-1.121, t = -2.26) and not fair value losses (-0.536, t = -0.78). Contrary to the other earnings components that do not reverse within the next 12 months, an interpretation of these findings is that market participants subsequently reverse their interpretation of the information in these fair value gains from liabilities. A possible reason is that they realize that these gains are not realizable or they are more aware of the deteriorating fundamentals of these firms that lead to the recognition of these fair value gains in the first place.

In the third column, we investigate whether the market overreaction to the fair value changes in assets and liabilities varies by the firm's institutional ownership. Since institutional investors are more sophisticated than retail investors, we expect a stronger overreaction for firms with low institutional ownership. The results are consistent with this expectation. *LOW INST HOLDING* is an indicator variable that equals one if a firm's institutional ownership is less than the median value, and zero otherwise. We interact *LOW INST HOLDING* with *ΔFV_LIAB* and *ΔFV_ASSET*. Our results suggest that the negative coefficient on *ΔFV_LIAB* in column (1) is

mostly driven by the firms with low institutional ownership. Specifically, we find a negative coefficient for the interaction variable *LOW INST HOLDING* × *ΔFV_LIAB* (significant at the 0.10 level) and the interaction variable *LOW INST HOLDING* × *ΔFV_ASSET* (significant at the 0.01 level). These results suggest that the market overreaction to FAS 159 gains and losses is more pronounced among firms with low institutional ownership.

4.5. Additional analyses

We perform several additional tests to assess the robustness of our main results. To address endogeneity concerns arising from self-selection issues given that not all firms elect FAS 159 for their financial instruments, we rerun our main regressions after controlling for endogeneity by including the Inverse Mills ratio for the selection model that we used in Table 3.

Table 6 reports the results of our value-relevance analyses after addressing this concern. We obtain similar results that are comparable with our earlier results. Specifically, column (2) of Table 6 shows that the fair value changes from FAS 159 adoption are positively related to quarterly returns (0.509, t = 2.45). When we decompose Δ*FV* into Δ*FV_ASSET* and Δ*FV_LIAB*, we continue to find that both Δ*FV_ASSET* and Δ*FV_LIAB* are value relevant. Finally, we decompose Δ*FV_ASSET* and Δ*FV_LIAB* into gains and losses (*ΔASSET_GAIN*, *ΔASSET_LOSS*, *ΔLIAB_GAIN*, and *ΔLIAB_LOSS*). Similar to our earlier results, we find that both gains and losses from the fair value changes in assets are value relevant. We also find a significant coefficient for *ΔLIAB_GAIN* (0.350, t = 2.98) but not for *ΔLIAB_LOSS*.

In Table 7, we conduct further analyses on the fair value gains and losses due to changes in the firms' own credit risk. A major debate arising from FAS 159 is whether this fair value component represents an economic gain or loss to the firms. The majority of firms in our sample

do not provide detailed footnote disclosures that allow us to isolate the fair value gains related to instrument-specific credit risk from other macroeconomic factors. However, a small group of firms in our sample does provide such disclosures.

We hand-collect these disclosures for those firms that provide sufficient disclosures that enable us to decompose the fair value change in liabilities into two separate components: fair value changes attributable to changes in the firm's own credit risk ($\Delta LIAB\_CREDIT_{i,t}$) and fair value changes attributable to factors other than changes in the firm's own credit risk ($\Delta LIAB\_NCREDIT_{it}$). For firms that report fair value changes arising from changes in the firm's own credit risk ($\Delta LIAB\_CREDIT_{i,t}$), we find a statistically significant coefficient (0.158) at the 0.10 level, which suggests that the fair value changes are economically significant and value relevant. A caveat from this analysis is that the sample size is relatively small (131 firms); hence, the results may not be as statistically significant as the other results.

5. Conclusion

This study examines how investors perceive fair value liability gains and losses arising from FAS 159 adoption. Consistent with the objectives of standard setters, we find a positive association between a firm's stock returns and FAS 159 gains and losses from liabilities. We also find evidence that the value relevance of the earnings has improved in the post–FAS 159 adoption period. Our results thus suggest that the reported fair value gains and losses from liabilities represent value-relevant information that is priced by the market.

We also examine whether investors understand the valuation implications of the liability gains and losses by investigating the association between this earnings component and future returns. We find that the liability gains and losses have a significant and negative association

with future one-year returns, indicating that investors overreact to this earnings component. In a cross-sectional analysis, we find that this overreaction occurs mostly in the firms with low institutional ownership. If retail investors fixate on net income and do not examine its various earnings components, these findings provide some evidence suggesting that, given the counterintuitive nature of such gains and losses which might be hard to comprehend, retail investors might have misgauged the valuation implications of these fair value liability changes.

Our finding that there is a market correction in response to these gains also raises questions regarding how realizable these fair value gains truly are or whether they simply reverse out from the financial statements upon maturity of the related credit instruments, as critics of fair valuing liabilities have argued. If this is so, it would appear that the recognition of an accounting gain in the income statement, which eventually does not translate to greater shareholder wealth in the form of dividends or other distributable gains, could present a misleading assessment regarding a firm's financials and cause some investors to be (incorrectly) optimistic about the firm's prospects.

Overall, our study provides empirical evidence on investors' assessments of the impact of fair value gains and losses from liabilities. Our study is informative to standard setters and regulators regarding the importance to investors of fair value gains and losses from liabilities, and provides relevant information for addressing questions regarding whether firms should fair value their liabilities and whether fair value gains and losses from liabilities should be treated differently. Our study thus provides interesting evidence that contributes to the debate and controversy surrounding the fair value accounting for liabilities.

Appendix:

Example of a fair value option table in the 10-Q and 10-K notes

Goldman Sachs 2010 1Q note

The Fair Value Option Gains (Losses)

The following table sets forth the gains (losses) included in earnings for the three months ended March 2010 and March 2009 as a result of the firm electing to apply the fair value option to certain financial assets and financial liabilities, as described in Note 2.

	Three Months Ended March	
	2010	**2009**
	(in millions)	
Unsecured long-term borrowings	$ 84	$ (135)
Other secured financings	(4)	25
Unsecured short-term borrowings	13	(67)
Receivables from customers and counterparties	(38)	(2)
Other liabilities and accrued expenses	69	82
Other	(3)	(26)
Total	$ 121	$ (123)

The effect of the firm's own credit spread on income

The following table sets forth the net gains (losses) attributable to the impact of changes in the *firm's own credit spreads* on borrowings for which the fair value option was elected.

	Three Months Ended March	
	2010	**2009**
	(in millions)	
Net gains (losses) including hedges	$ 107	$ (197)
Net gains (losses) excluding hedges	109	(192)

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TABLE 1
Descriptive statistics of full sample for value relevance analysis

Table 1 presents the full sample descriptive statistics of the variables used in this study.

	Mean	Median	Std Dev	Min	5%	Lower Quartile	Upper Quartile	95%	Max
NI	-0.027	0.015	0.182	-1.191	-0.305	-0.013	0.029	0.084	0.361
ΔFV	0.005	0.000	0.075	-0.366	-0.054	-0.002	0.005	0.080	0.444
NI_exclΔFV	-0.028	0.014	0.178	-1.183	-0.286	-0.017	0.029	0.076	0.383
ΔFV_ASSET	-0.001	0.000	0.061	-0.366	-0.057	-0.001	0.002	0.052	0.291
ΔFV_LIAB	0.006	0.000	0.059	-0.144	-0.026	0.000	0.000	0.045	0.450
ΔNI	-0.009	-0.001	0.208	-0.947	-0.283	-0.036	0.018	0.282	0.931
QRET	-0.023	-0.034	0.247	-0.645	-0.453	-0.132	0.073	0.389	1.026
RET_1YR	-0.027	0.015	0.182	-1.191	-0.305	-0.013	0.029	0.084	0.361

NI = income before extraordinary items per share for quarter t, scaled by the beginning-of-quarter stock price

ΔFV = the change in fair values of assets and liabilities included in earnings for which the fair value option was elected, scaled by beginning-of-quarter stock price

NI_exclΔFV = *NI* - *ΔFV*

ΔFV_ASSET = change in fair value of assets per share included in earnings for which the fair value option was elected, scaled by beginning-of-quarter stock price

ΔFV_LIAB = change in fair value of liabilities per share included in earnings for which the fair value option was elected, scaled by beginning-of-quarter stock price

ΔNI = *NI* for quarter *t* minus *NI* for quarter *t*-4, scaled by beginning-of-quarter stock price

QRET = quarterly size-adjusted return measured from two trading days after the filing date of quarter t-1 up to two trading days after the filing date of quarter t

RET_1YR = One-year buy-and-hold size-adjusted returns measured from three trading days after the filing date of quarter t

TABLE 2
Value relevance tests

Table 2 presents the results of regression analyses examining the value relevance of the earnings components. The dependent variable is quarterly size-adjusted return (*QRET*). *ΔASSET_GAIN* is *ΔFV_ASSET* if *ΔFV_ASSET* is positive, and zero otherwise. *ΔASSET_LOSS* is *ΔFV_ASSET* if *ΔFV_ASSET* is negative, and zero otherwise. *ΔLIAB_GAIN* is *ΔFV_LIAB* if *ΔFV_LIAB* is positive, and zero otherwise. *ΔLIAB_LOSS* is *ΔFV_LIAB* if *ΔFV_LIAB* is negative, and zero otherwise. All the other variables are defined in Table 1. Industry fixed effects is included in each regression. Standard errors are clustered by firm and quarter to account for within-firm and within-quarter correlations in residuals. t-statistics are reported in parentheses. *, **, and *** indicate significance at the 10, 5, and 1 percent levels, respectively.

	Dependent variable: *QRET*			
	(1)	(2)	(3)	(4)
NI	0.251**			
	(2.27)			
ΔNI	0.083*	0.062	0.062	0.052
	(1.81)	(1.60)	(1.40)	(1.10)
NI_exclΔFV		0.306***	0.290***	0.307***
		(3.63)	(3.21)	(3.42)
ΔFV		0.527**		
		(2.51)		
ΔFV_ASSET			0.683***	
			(2.68)	
ΔFV_LIAB			0.476***	
			(3.92)	
ΔASSET_GAIN				0.922**
				(2.24)
ΔASSET_LOSS				0.507**
				(2.36)
ΔLIAB_GAIN				0.455***
				(3.31)
ΔLIAB_LOSS				0.415
				(0.87)
Constant	0.002	0.001	0.001	-0.003
	(0.24)	(0.18)	(0.18)	(-0.45)
Observations	854	854	854	854
Adj. R^2	0.052	0.065	0.065	0.065

TABLE 3
Treatment and control firm selection for difference-in-difference test

Propensity score matching procedure (PSM) is used to select the control firms for the difference-in-difference test of the earnings value relevance. We first select treatment firms that report the gains and losses from the fair value change in liabilities (hereafter, liability gains). Then, we collect other financial firms that have nonzero fair value assets and nonzero fair value liabilities but did not report the liability gains in our sample period from Compustat. Finally, we run a probit regression of *ADOPTION* (an indicator variable of one if a firm belongs to the treatment group, and zero otherwise) on the following firm characteristics: the log value of total assets (*SIZE*), the ratios of fair value assets (*FV_ASSET*), fair value liabilities (*FV_LIAB*), and derivatives (*DERIVATIVES*) to the firm's total assets, and earnings volatilities (*EARN VOLATILITY*). *EARN VOLATILITY* is measured in the preadoption period. The other variables are measured in the first quarter of the adoption period. After this PSM, we obtain 44 treatment and 44 control firms. Panel A shows the results of the first-stage selection model used for the PSM. Industry fixed effect is included in the selection model. Panel B shows the mean differences in firm characteristics between the final treatment and control groups chosen by the PSM and the t-statistics.

Panel A: Selection model

	Dependent variable: *ADOPTION*
SIZE	0.272***
	(6.65)
FV_ASSET	0.692*
	(1.70)
FV_LIAB	1.412**
	(2.19)
DERIVATIVES	17.403
	(0.56)
EARN VOLATILITY	0.866
	(0.16)
Constant	-3.947***
	(-10.80)
Observations	825
Pseudo R^2	0.210

Panel B: Differences in firm characteristics

	Treatment group	Control group	Difference	t-statistics
SIZE	9.693	9.484	0.209	0.43
FV_ASSET	0.343	0.360	-0.017	-0.32
FV_LIAB	0.113	0.066	-0.047	-1.09
DERIVATIVES	0.000	0.000	0.000	0.79
EARN VOLATILITY	0.006	0.007	-0.001	-0.17

TABLE 4
Difference-in-difference value relevance test

Table 4 presents the difference-in-difference test results of earnings value relevance. Following Barth, Landsman, and Lang (2008), we randomly select, with replacement, the same number of firm-quarter observations, and run the value relevance regression of return on earnings and the change in earnings ($QRET_{i,t} = \alpha_0 + \alpha_1 NI_{i,t} + \alpha_2 \Delta NI_{i,t} + e_{i,t}$). We repeat this procedure 1,000 times, and obtain 1,000 R^2s for each group (Pre- vs. postadoption period and treatment vs. control groups). We report the averages, and standard deviation of the R^2s, and the differences, and t-values of the differences. *, **, and *** indicate significance at the 10, 5, and 1 percent levels, respectively.

	Treatment group		Control group		Difference
	Mean	Std dev	Mean	Std dev	**(t-statistics)**
Pre–FAS 159	**0.045**	0.044	**0.041**	0.040	0.003*** (3.48)
Post–FAS 159	**0.088**	0.037	**0.044**	0.042	0.044*** (28.85)
Difference (t-value)	**0.043*** ** (31.00)		**0.002*** (1.86)		

TABLE 5
One-year-ahead return tests

Table 5 presents the results of regression analyses examining the association between the future one-year size-adjusted returns (*RET_1YR*) and the earnings components. *LOW INST HOLDING* is an indicator variable of one if a firm's institutional ownership is less than the median value and zero otherwise. All the other variables are defined in Tables 1 and 2. Industry fixed effects is included in each regression. Standard errors are clustered by firm and quarter to account for within-firm and within-quarter correlations in residuals. t-statistics are reported in parentheses. *, **, and *** indicate significance at the 10, 5, and 1 percent levels, respectively.

	Dependent variable: *RET_1YR*		
	(1)	(2)	(3)
ΔNI	0.158***	0.137***	0.188***
	(3.24)	(3.34)	(2.92)
NI_exclΔFV	0.017	0.048	0.021
	(0.12)	(0.37)	(0.16)
ΔFV_ASSET	-0.573		0.538
	(-1.62)		(1.24)
ΔFV_LIAB	-0.922**		0.792
	(-2.18)		(1.64)
ΔASSET_GAIN		-0.075	
		(-0.15)	
ΔASSET_LOSS		-0.970	
		(-1.58)	
ΔLIAB_GAIN		-1.121**	
		(-2.26)	
ΔLIAB_LOSS		-0.536	
		(-0.78)	
LOW INST HOLDING			-0.034
			(-0.86)
LOW INST HOLDING × ΔFV_ASSET			-2.207***
			(-3.53)
LOW INST HOLDING × ΔFV_LIAB			-1.555*
			(-1.68)
Constant	-0.111***	-0.117***	-0.096**
	(-2.84)	(-2.86)	(-2.37)
Observations	851	851	851
Adj. R^2	0.043	0.043	0.054

TABLE 6
Value relevance tests after controlling for endogeneity

Table 6 presents the results of regression analyses examining the value relevance of the earnings components after controlling for endogeneity. Using the same selection model used in Table 3, we compute the Inverse Mills ratio and include it in each regression. All the variables are defined in Tables 1 and 2. Industry fixed effects is included in each regression. Standard errors are clustered by firm and quarter to account for within-firm and within-quarter correlations in residuals. t-statistics are reported in parentheses. *, **, and *** indicate significance at the 10, 5, and 1 percent levels, respectively.

	Dependent variable: *QRET*			
	(1)	(2)	(3)	(4)
NI	0.252**			
	(2.31)			
ΔNI	0.062	0.047	0.047	0.032
	(1.36)	(1.22)	(1.04)	(0.68)
NI_exclΔFV		0.298***	0.281***	0.300***
		(3.44)	(3.01)	(3.25)
ΔFV		0.509**		
		(2.45)		
ΔFV_ASSET			0.674***	
			(2.62)	
ΔFV_LIAB			0.432***	
			(4.86)	
ΔASSET_GAIN				0.998**
				(2.51)
ΔASSET_LOSS				0.424**
				(2.23)
ΔLIAB_GAIN				0.350***
				(2.98)
ΔLIAB_LOSS				0.604
				(1.34)
Inverse Mills	0.004	0.005	0.004	0.005
	(0.75)	(0.93)	(0.78)	(1.54)
Constant	-0.025	-0.031	-0.028	-0.034
	(-1.08)	(-1.27)	(-1.19)	(-1.35)
Observations	840	840	840	840
Adj. R^2	0.047	0.058	0.058	0.059

TABLE 7
Analysis on fair value gains and losses due to changes in firms' own credit risk

Table 7 presents the results of regression analyses examining the value relevance of the earnings components of the firms with the fair value gains and losses due to changes in firms' own credit risks and firms without them. The dependent variable is quarterly size-adjusted return (*QRET*). *ΔLIAB_CREDIT* is the fair value gains and losses due to changes in firms' own credit risks. *ΔLIAB_NCREDIT* is *ΔFV_LIAB* - *ΔLIAB_CREDIT*. All the other variables are defined in Table 1. Industry fixed effects is included in each regression. Standard errors are clustered by firm and quarter to account for within-firm and within-quarter correlations in residuals. t-statistics are reported in parentheses. *, **, and *** indicate significance at the 10, 5, and 1 percent levels, respectively.

	Dependent variable: QRET	
Variable	Firms with *ΔLIAB_CREDIT* (1)	Firms without *ΔLIAB_CREDIT* (2)
ΔNI	-0.021	0.116
	(-0.28)	(1.30)
NI_exclΔFV	0.368***	0.221**
	(3.88)	(2.02)
ΔFV_ASSET	0.588**	0.657*
	(2.27)	(1.70)
ΔLIAB_CREDIT	0.158*	
	(1.96)	
ΔLIAB_NCREDIT	0.315	
	(0.82)	
ΔFV_LIAB		0.450***
		(7.33)
Constant	-0.051***	-0.027
	(-3.43)	(-1.52)
Observations	131	723
Adj. R^2	0.142	0.050