

Do Investors Perceive Marking-to-Model as Marking-to-Myth? Early Evidence from FAS 157 Disclosure

Kalin Kolev
NYU Stern School of Business
kkolev@stern.nyu.edu

JOB MARKET PAPER

ABSTRACT: Using disclosure mandated by Statement of Financial Accounting Standards (FAS) 157 “Fair Value Measurements,” I evaluate the concern that fair value estimates for assets and liabilities not traded in active markets, aka mark-to-model, are too unreliable to be used in financial reporting. I document a significant positive association between stock prices and fair values of net assets measured using unadjusted market prices (Level 1), other observable inputs (Level 2), and significant unobservable inputs (Level 3). While the estimated coefficients on the mark-to-model estimates (Levels 2 and 3) are consistently lower than those on the mark-to-market fair values (Level 1), the difference is significant only for Level 3 net assets. Furthermore, even at its maximum, the difference does not exceed 35% of the coefficient on Level 1 net assets. Additional analysis suggests that the valuation gap is more pronounced for firms with lower equity capital and fewer financial experts on the Audit Committee, as well as for companies that develop their mark-to-model estimates internally. I also document a significant positive association between Level 3 net gains and both quarterly returns and returns for the three-day period surrounding the filing of Form 10-Q. Collectively, the results suggest that equity investors find mark-to-model fair value estimates sufficiently reliable to be reflected in firm value.

Acknowledgements: I would like to thank Karthik Balakrishnan, Eli Bartov, Mary Billings, Massimiliano Bonacchi, Donal Byard, Richard Carrizosa, Daniel Cohen, Juliet Estridge, Bill Greene, April Klein, Lucile Faurel, Alina Lerman, Baruch Lev (Chair), Sarah McVay, Mikhail Munenzon, Christine Petrovits, Joshua Ronen, Stephen Ryan, Paul Zarowin and workshop participants at New York University for helpful comments and suggestions. I also would like to thank Nancy Kleinrock for her editorial assistance. All remaining errors are mine.

I. INTRODUCTION

The expanding use of fair value estimates in financial reporting has drawn the attention of practitioners, academics, policymakers, regulators, and even pundits, fueling a heated debate on the merits of fair value accounting versus the current mixed-attributes model. Supporters of fair value have cited its informativeness to financial statement users, emphasizing the improved timeliness and transparency of reported financials (Ryan 2007, 2008b).¹ Opponents have blamed fair value accounting for exacerbating the current financial crisis and calling for its suspension (e.g., Isaac 2008).

Although the Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB) have demonstrated a commitment to expanding the use of fair value estimates in financial reporting (Barth 2006; Penman 2007), recent concessions underscore that the debate is far from over.² Extant research also contributes evidence to both sides of the argument. Prior studies have established that fair value estimates are generally value-relevant over and above historical cost figures (e.g., Barth et al. 1996, 2001; Carroll et al. 2003) and are used as a vehicle to communicate managers' private information (Beaver and Venkatachalam 2003; Beatty and Harris 1999). Findings, however, also suggest that the reliability of those estimates is questionable when active markets for the underlying assets or liabilities do not exist and the values are based on management's assumptions (e.g., Nissim 2003). Furthermore, the evidence implies that financial statement users perceive the reliability of fair value estimates to be decreasing in the managers' incentives and opportunity to bias the reported values (Barth 1994; Barth et al. 1996; Danbolt and Rees 2008).

¹ Detailed discussions of the arguments for and against using fair value estimates in financial reporting are provided in Enria et al. (2004), Penman (2007), and Ryan (2007, 2008b), among others.

² As an example, on October 13, 2008, the IASB amended IAS 39, "Financial Instruments: Recognition and Measurement," and IFRS 7, "Financial Instruments: Disclosures," to allow reclassification of certain assets recognized at fair value to allow amortized cost accounting. Also in October, in the United States, the Emergency Economic Stabilization Act of 2008 gave the Securities and Exchange Commission (SEC) the authority to suspend fair value accounting (sec. 132).

The questionable reliability of fair value estimates of assets and liabilities for which active markets do not exist is an issue cited frequently by opponents of fair value accounting. The lack of actual market prices necessitates the use of internally generated estimates, often labeled “mark-to-model,” which incorporate management’s assumptions and are difficult or impossible to verify in a timely fashion. The difficulty of estimating these values makes them, at best, a noisy proxy for the unobservable true value of the underlying assets and liabilities. Furthermore, the reliance on managerial assumptions in the valuation process opens the door to intentional bias, rendering mark-to-model estimates potentially misleading (Martin et al. 2006; Ronen 2008). This concern is emphasized by Warren Buffett in his discussion in the 2002 annual report to Berkshire Hathaway’s shareholders:

... Errors will usually be honest, reflecting only the human tendency to take an optimistic view of one’s commitments [O]ften there is no real market ... and “mark-to-model” is utilized In extreme cases, mark-to-model degenerates into what I would call mark-to-myth.

Whether mark-to-model estimates are used by financial statements users or are discarded as “markings-to-myth” remains an empirical question. I use the expanded disclosure mandated by Statement of Financial Accounting Standards 157 “Fair Value Measurements” (FAS 157) to examine this issue. Under FAS 157, companies are required to distinguish between assets and liabilities reported at fair value based on the observability of the inputs used in the measurement process: unadjusted market prices (Level 1 under the FAS 157 fair value hierarchy), other observable inputs (Level 2), and significant unobservable inputs (Level 3).³ Using a sample of large financial institutions for the first and second quarters of 2008, I study the association of stock price and reported value of net assets recognized at fair value on a recurring basis, dividing the estimates into groups based on the

³ Estimates based on unadjusted market prices are frequently labeled “mark-to-market.” In this paper, I use “mark-to-market” and “Level 1 estimates” interchangeably. Similarly, unless stated otherwise, I refer to Level 2 and Level 3 estimates as “mark-to-model.” It is important to note, however, that Level 2 estimates could be of two distinct types: adjusted market prices and mark-to-model. I discuss the issue in greater detail in the hypotheses development section.

observability of the measurement inputs. Following extant research, I interpret a positive and significant association between net assets and stock price as evidence that the fair value estimates are relevant to equity investors and deemed sufficiently reliable to be impounded in firm value. Furthermore, using the estimated coefficients on mark-to-market fair values as a benchmark, I draw inferences on the market's perception of the reliability of the mark-to-model estimates.

Consistent with prior research, I document a significant association between stock prices and fair values measured using Level 1 inputs. At odds with concerns expressed by opponents of fair value accounting, I also document a positive and significant association between prices and Level 2 and Level 3 estimates, suggesting that, on average, equity investors perceive even the estimates reflecting management's assumptions as sufficiently reliable to be reflected in firm value. This conclusion is corroborated by a positive and significant association between quarterly returns and net gains on the Level 3 assets and liabilities. An examination of the relative association of stock prices and fair value estimates across the three categories under the FAS 157 hierarchy, however, indicates that the valuation multiples on mark-to-model estimates are generally lower than those based on unadjusted market prices. Using Level 1 net assets as a benchmark, the highest relative difference in coefficients for the pooled sample is documented for Level 3 estimates in Q2. Even in this case, however, the gap does not exceed 35%.⁴

Turning to the issue of causality, I also examine the market reaction around the Form 10-Q filing dates. Similar to the quarterly returns analysis, I document a positive and significant association between Level 3 net gains and three-day returns centered on the Form

⁴ Unless stated otherwise, my analysis of investors' perception of reliability assumes that the relevance of the fair value estimates is constant across Level 1, Level 2, and Level 3 net assets. To the extent that this assumption is violated and mark-to-model fair value estimates data are deemed less relevant than mark-to-market fair values, the documented difference in the valuation coefficients might be overstated.

10-Q filing date. This finding supports the results from the other tests, suggesting that investors do not discard the mark-to-model revaluations as markings-to-myth.

Recognizing that investors' assessment of the reported fair values is likely to be affected by the management's incentives and opportunity to influence the reported results, I also examine whether the implied reliability of the estimates varies with equity capital availability, the use of external valuation services, and the financial expertise of the Board of Directors' Audit Committee. Results are consistent with the conjecture that investors treat the mark-to-model estimates as more valuation-relevant when firms have higher level of equity capital, the Audit Committee has more than one financial expert, and estimates are obtained from outside third parties. However, even in the instances when the management's implied incentives and opportunity to influence the estimates is high, the association between mark-to-model fair values and stock prices remains positive and significant.

This study contributes to the debate about the reliability of fair value estimates of assets and liabilities not traded on active markets. Using the expanded disclosure mandated by FAS 157, I examine the absolute and relative investors' valuation of reported mark-to-model estimates using the mark-to-market fair values as a benchmark. These newly available data allow me to study the whole set of assets and liabilities recognized at fair value, rather than focusing on subsets of financial instruments (e.g., loans or U.S. treasuries) or sample partitions, as prior research has done. Importantly, the study focuses on a set of assets and liabilities that are recognized at fair value, rendering them subject to both higher scrutiny and higher probability of misuse relative to disclosed fair values (Ahmed et al. 2006; Martin et al. 2006). Finally, the evolution of capital markets, the change in regulatory environment, and the increasing focus on fair value estimates has likely affected the investors' view on fair values over the years (e.g., Kohlbeck 2008). I study a set of financial firms for the first two quarters of 2008, a sample exposed to heightened public and regulatory scrutiny, rendering

the results a current and informative addition to the extant literature, even if limiting to some extent the generalizability of the findings.

A concurrent study by Song et al. (2008) examines the value-relevance of fair value estimates of assets and liabilities across the three categories under the FAS 157 hierarchy.⁵ Using a sample of FAS 157 early adopters, Song et al. (2008) document an association between stock prices and Level 1 and Level 2 estimates in 2007. Interestingly, they find that Level 3 fair values are associated with price only in specific circumstances. Although the latter finding is at odds with my results, a likely reason is the different samples used in the two studies.⁶ Also, while Song et al. (2008) provide interesting evidence on the value-relevance of fair value estimates and FAS 157 disclosure, I construct tests that, under certain conditions, allow me to draw conclusions on the investors' perception about the reliability of the mark-to-model estimates. In addition, I take advantage of the required reconciliation of the changes in Level 3 estimates to corroborate the levels analysis and document that equity investors do not perceive the three components of the period change—net gains, net additions, and net transfers—as equivalent.

Several factors, however, should be taken into account when weighing the evidence from this study. Companies provide inputs-to-valuation disclosure as mandated by FAS 157 only for assets and liabilities recognized at fair value, which renders the choice of accounting treatment a confounding factor. Also, my research design relies on the association of fair value estimates with stock prices and returns, i.e., the results may not generalize to financial statement users other than equity holders (Holthausen and Watts 2001). Furthermore, since

⁵ To the best of my knowledge, with the exception of the concurrent study by Song et al. (2008), my study is the first to explore empirically the expanded disclosure provided by FAS 157, shedding light on the market perception of fair value estimates as a function of management intervention in the valuation process.

⁶ Song et al. (2008) use a sample of early adopters across all industries, while I study a large sample of financial firms after the mandatory adoption of FAS 157. Also, Song et al. (2008) use a sample with a large proportion of firms that early-adopt FAS 157 as a condition for early-adopting FAS 159. My study, however, relies on a sample of mandatory adopters, and casual examination suggests that few of the companies I use apply the Fair Value Option under FAS 159 to assets and liabilities on their books at the adoption of FAS 157.

FAS 157 is a recently adopted standard and continues to undergo modifications, it is possible that equity investors are not fully familiar with the expanded fair value disclosure (e.g., Reilly 2007), rendering lack of results difficult to interpret. Lastly, the study uses hand-collected data, somewhat limiting the sample size and industry coverage.

The remaining portion of the document is organized as follows: Section II offers a brief overview of FAS 157, Section III discusses related research and develops the hypotheses, Section IV discusses the research design, sample selection and data for the study, Section V presents the findings, Section VI describes the robustness tests, and Section VII concludes.

II. FAS 157 “FAIR VALUE MEASUREMENTS”

In spite of the expanding use of fair values in financial reporting, prior to the enactment of FAS 157, U.S. Generally Accepted Accounting Principles (GAAP) did not provide uniform definition of “fair value.” FAS 157 defines fair value as “... *the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date*” (para. 5). This definition renders the fair value estimates a market-based, rather than a company-specific measure.

FAS 157 calls for expanded disclosure regarding the inputs used to measure the reported fair values. Specifically, it establishes a hierarchy for the inputs and stipulates that valuation based on unadjusted market prices (Level 1) is preferred, followed by valuation based on other observable inputs, e.g., market prices for similar instruments, yield curves, and discount rates (Level 2), and, if necessary, significant unobservable inputs (Level 3). The statement establishes that “[t]he transaction to sell the asset or transfer the liability is a hypothetical transaction at the measurement date, considered from the perspective of a market participant that holds the asset or owes the liability” (para. 7); thus, if Level 3 inputs

are used, they should reflect the assumptions that market participants would make if they possessed the full set of data available to management.

The standard mandates that firms disclose sufficient information to determine the level of inputs used for assets and liabilities measured at fair value on a recurring basis. For fair value estimates measured using significant unobservable inputs, companies are also required to provide a reconciliation of the opening and ending balances, distinguishing between net purchases, net transfers in and out of Level 3, and total and unrealized gains and losses included in earnings or net assets for the period (para. 32).⁷ As an illustration, Appendix I provides the FAS 157 disclosure included in the Form 10-Q of BB&T Corp. for the fiscal quarter ending on March 31, 2008.

FAS 157 does not require new fair value measurements. Rather, it applies to fair value measurements already required or permitted under other pronouncements. The statement is effective for fiscal years beginning after November 15, 2007, with early adoption encouraged. After the enactment of FAS 157, FASB delayed the effective date of the statement for non-financial assets and liabilities measured on a nonrecurring basis to fiscal years starting after November 15, 2008 (FSP FAS 157-2). FASB also explicitly stated that, if markets are illiquid, companies have the option of choosing non-market-based inputs over market inputs in measuring fair values (FSP FAS 157-3).⁸

⁷ For assets and liabilities measured at fair value on a nonrecurring basis, the statement requires disclosure of the reason for the valuation, the level of inputs used, and—in the case of Level 3 inputs—a description of the inputs and the information used to develop them (para. 33). For assets and liabilities measured on either a recurring or nonrecurring basis, the statement requires discussion in the annual report of the valuation techniques and changes in the valuation techniques used to develop the estimates. Subsequent to the enactment of FAS 157, the SEC issued two letters to the CFOs of selected firms suggesting that the firms should provide more extensive disclosure than that required by the statement.

⁸ On September 30, 2008, the SEC Office of the Chief Accountant and the FASB staff issued a joint release clarifying that companies may opt for a lower level of inputs to valuation if the available market-based-metrics are deemed not-representative of the underlying values (e.g., drying up of previously liquid markets). The joint release was followed by FSP FAS 157-3, which was issued on October 10, 2008, and became effective immediately. Although the option was implicit in the text of FAS 157, commentators agreed that the tenor of FAS 157 was preference for market-based metrics, when available. Although the joint release and the FASB Staff Position (FSP) suggest potential change in the characteristics of Level 3 fair value estimates, they do not affect my sample, as the Form 10-Q filings for Q2 2008 were completed before the end of August. The release is accessible at <http://www.sec.gov/news/press/2008/2008-234.htm>.

III. RELATED RESEARCH AND HYPOTHESES DEVELOPMENT

The expanding use of fair value estimates in financial reporting has brought attention to the relevance and, even more so, the reliability of those metrics. Theory suggests that in perfect and complete markets all fair values would be based on unadjusted market prices. In other words, the fair value estimates would fully reflect the consensus expectation of the investors, eliminating concerns over errors in measurement (Barth and Landsman 1995; Hitz 2007). In reality, although capital markets are continuously evolving, they are neither complete, nor perfect, and fair values frequently have to be estimated rather than obtained from liquid markets. The current financial crisis underscores this issue: Liquid markets can dry up, and fair values once based on unadjusted market price may have to be measured through models relying on management's assumptions (e.g., Anderson and Bajaj 2008).

Empirical research provides evidence supporting the notion that fair value estimates are value-relevant. This conclusion is generally based on tests of the association of fair value estimates with stock prices and returns under the stated assumption that a significant association is evidence that the estimates are both relevant and sufficiently reliable to be impounded in firm value (Barth et al. 2001).

One strand of the literature focuses on financial instruments, capitalizing on the fair value recognition and disclosure requirements under U.S. GAAP.⁹ Using a sample of banks for the period 1971–1990, Barth (1994) examines the incremental informativeness of fair value over historical cost for investment securities. She documents a significant association between market value of equity and the fair value estimates, controlling for book values. In the returns tests, however, she finds that the changes in the investment securities' unrealized gains and losses are significant explanatory variables only in certain specifications, attributing the result to measurement error in the fair value estimates. In a follow-up study,

⁹ Prior research also offers evidence on the value relevance of tangible asset revaluations, and intangible assets and employee stock options measurement. Barth et al. (2001), among others, provide an overview.

Ahmed and Takeda (1995) argue that the latter finding is a result of correlated omitted variables and show that, after controlling for interest rate risk, changes in unrealized gains and losses on investment securities are positively and significantly associated with returns.

Additional evidence on the value-relevance of fair value estimates of financial instruments is provided by three contemporaneous studies: Barth et al. (1996), Eccher et al. (1996), and Nelson (1996). The three studies use fair value disclosure for financial instruments mandated by FAS 107 to study the incremental informativeness of fair value estimates over historical cost figures for samples of banks in 1992 and 1993. All three studies find significant incremental association between investment securities and market prices, after controlling for the respective book values. Nelson (1996), however, documents that the result disappears after controlling for profitability and growth.

The value-relevance of fair value estimates is documented by non-FAS 107 studies as well. As an example, Venkatachalam (1996) uses disclosure mandated by FAS 119 to show that the fair value estimates for derivatives explain the cross-sectional variation of prices over and above the derivatives' notional amounts. Park et al. (1999) find similar results for available-for-sale and held-to-maturity securities. More recently, Carroll et al. (2003) examine 143 closed-end mutual funds and document that investment securities' fair values help explain the cross-sectional variation in security prices and returns. They argue these results are evidence that prior conflicting findings are driven by correlated omitted variables.

While the relevance of fair value estimates to equity investors is documented in various settings, the evidence on their reliability is contradictory. The conflicting results are best manifested in studies involving fair value estimates for which prices from active markets do not exist. Although results vary by research design, lack of association between fair value estimates and market value of equity are typically attributed to measurement error in the estimates (Barth 1994; Nelson 1996).

A common feature of these studies is that data constraints generally do not allow for the direct identification of assets and liabilities with fair value estimates affected by management's assumptions. Instead, researchers employ proxies for the groups of financial instruments that are likely to be measured using unobservable inputs. As an example, Barth et al. (1996) motivate their research question by citing the controversy over the FAS 107 requirement for fair value disclosure for loans. The authors find evidence for the value-relevance of loan fair values (both in level and changes specifications), suggesting that investors consider these estimates informative in spite of the (assumed) high level of management's discretion in their measurement. They emphasize that the fair value disclosure for loans is informative even after controlling for non-performing assets and interest-sensitive assets and liabilities; i.e., it provides information incremental to that relayed by proxies for banks' interest and credit risk. Interestingly, in contrast to the findings in Barth et al. (1996), the two contemporaneous studies using similar data either fail to find an association between loan fair values and market value of equity (Nelson 1996) or document the association only in certain specifications (Eccher et al. 1996).

In addition to examining specific financial instruments, prior studies also use firm and portfolio characteristics to proxy for the quality of fair value estimates. As an example, Barth (1994) splits her sample by bank size and proportion of U.S. Treasury securities held by the companies. She justifies the partition, arguing that larger banks are likely to have more precise fair value estimates due to their market power and sophistication of their investment departments and that U.S. Treasuries are more likely to have available market prices. Consistent with this argument, she finds a significant association between returns and unrealized net gains of investment securities only for large banks that hold a high proportion of U.S. Treasuries. Eccher et al. (1996) also partition their sample by bank size, arguing instead that large banks are likely to hold less liquid securities. They find that in some

specifications, the (changes in) fair value of loans helps explain the cross sectional variation of the (changes in) market-to-book ratio for small banks.

Capitalizing on industry-level differences, a recent study by Danbolt and Rees (2008) examines the comparative value-relevance of fair value and historical cost outputs of the financial-reporting system for the investment funds and real estate industries in the United Kingdom. The authors argue that, while market prices are generally available for the investment funds' holdings, this is not the case for the real estate companies. They find that fair value estimates are more informative than piecemeal or full historical-cost financial results, with the effect more pronounced for investment funds. The authors interpret the result as evidence that financial outputs based on fair value estimates are more informative when the estimates are less likely to be subject to managerial discretion.

Unlike data used on previous studies, the fair value hierarchy and related disclosure promulgated by FAS 157 not only allows for the direct examination of the full set of financial instruments recognized at fair value, but also for grouping the estimates by observability of the measurement inputs. Using the language of FAS 157, Level 2 and Level 3 fair value estimates are measured using inputs other than unadjusted market prices; i.e., they are likely to impound significant measurement error, raising concerns about their reliability.¹⁰

This problem is most pronounced for Level 3 estimates, as their measurement relies on management's assumptions. Since active markets for those assets and liabilities do not exist, their true values are not observable. Thus, the estimates are, at best, noisy proxies for the underlying fair values. If management behaves opportunistically, it could use the mark-to-model estimates to improperly alter the investors' perception of the firm to achieve a

¹⁰ Fair values measured using Level 2 inputs allow for two distinct types of estimates: adjusted prices of similar assets and liabilities (adjusted mark-to-market) and observable inputs aggregated through a model chosen by the valuation party (mark-to-model with observable inputs). While the former allows for relatively little intrusion in the valuation process, the latter gives ample opportunity to the company to affect the reported values (Ryan (2008a) provides a detailed discussion). Although FAS 157 disclosure does not allow for a clear distinction of the Level 2 subgroups, if mark-to-model estimates dominate, then analysis similar to the one for Level 3 measurements applies.

personal objective (Nissim 2003; Pulliam 2007). Even though intent is not a necessary condition for bias in the estimates (reported fair values could simply reflect the inherent optimism of the management team, as discussed by Martin et al. (2006), among others), if investors perceive the reported fair values as biased, the estimates based on Level 3 (Level 2) inputs would be treated as less reliable than the (verifiable) estimates based on Level 1 inputs and impounded in firm value at a lower multiple (or discarded completely). By construction, however, since mark-to-model fair value estimates impound managements' assumptions, they reflect private information regarding the company risk profile and expected future cash flows. Thus, under an information perspective, these fair value estimates are a convenient vehicle for the dissemination of management's private information, expanding the investors' information set (Hitz 2007; Beaver and Venkatachalam 2003). As such, investors could consider these estimates to be measured sufficiently reliably and use them similarly to mark-to-market fair values.¹¹

Whether investors find mark-to-model fair value estimates sufficiently reliable to be impounded in the company's market value of equity, and whether these estimates are deemed less reliable than mark-to-market values, remains an empirical question. Stated in alternative form, the first and second hypotheses of this study are as follows:

H1: Investors find mark-to-model fair value estimates sufficiently reliable to be reflected in firm value.

H2: Investors perceive mark-to-model estimates as less reliable than mark-to-market fair values.

¹¹ Based on prior research, this study assumes the relevance of fair value estimates and interprets the statistical results as evidence on the investors' assessment of the estimates' reliability. This assumption finds support in the language of FAS 157, which stipulates in the summary that "[t]his Statement applies under other accounting pronouncements that require or permit fair value measurements, the Board having previously concluded in those accounting pronouncements that fair value is the relevant measurement attribute." It is possible, however, that investors consider exit price to be less relevant for mark-to-model assets and liabilities than for those that are marked-to-market. Also, investors might impound mark-to-model estimates in firm value at lower multiples than mark-to-market fair values to account for transaction costs, not included in the estimates under the language of FAS 157. Under such circumstances, the analysis might understate the perceived reliability of mark-to-model fair values, and lack of results would be difficult to interpret unambiguously.

Conditional Analysis

Prior research suggests that investors' assessment of the reliability of mark-to-model fair values likely varies with the implied incentives and ability of management to bias the reported estimates (e.g., Martin et al. 2006). Investors have been shown to be savvy in parsing out and pricing accordingly the discretionary components of estimates, discounting suspected misstatements (Barth 1994; Barth et al. 1996; Beaver and Engle 1996; Beaver and Venkatachalam 2003). Thus, failing to account for the cross-sectional differences in the companies' financial reporting oversight and incentives to misreport may lead to erroneous inferences on the market's assessment of the reliability of mark-to-model fair value estimates.

One factor that could affect the perceived reliability of mark-to-model estimates is the level of discretion management has over the valuation process.¹² Since the true values of the underlying assets and liabilities are not observable, the choice of valuation model and inputs determines the reported values, opening the door to unintentional bias or even abuse (e.g., Weil 2007). Arguably, one way of addressing this issue is through the retention of an independent valuations provider. Under such a scenario, management's assumptions are no longer valuation inputs and, although the independent appraisers' estimates would also be a noisy measure of the underlying values, bias would be less of a concern.¹³ Thus, the investors' assessment of the reliability of mark-to-model fair values could be higher for estimates provided by third parties as compared to internally generated estimates (Mueller and Riedl 2002).

An alternative mechanism to counteracting potential misuse of mark-to-model estimates is strong oversight over the company's financial reporting. Extant research

¹² The following discussion focuses on a small portion of the factors that could affect the investors' perception of management's ability and incentives to intervene in the measurement process of mark-to-model fair values (e.g., meeting earnings forecasts, compensation, reputation, etc.). Due to data constraints and breadth of the issue, a comprehensive analysis is deferred to a follow-up study.

¹³ This argument, however, breaks down if the appraisers are not truly independent or management can select a most advantageous value from a set (e.g., choosing a single unadjusted non-binding broker quote from a pool).

provides evidence that a financially sophisticated Board of Directors' Audit Committee, acting as liaison between management and the internal and independent auditors, exercises such oversight.¹⁴ In particular, studies suggest that the market rewards the addition of financial experts to the Audit Committee (DeFond et al. 2005) and that financial sophistication of the Committee members is associated with higher quality financial reports (Carcello et al. 2007). Thus, the perceived reliability of mark-to-model fair value estimates could be higher for firms with more financial experts on their Audit Committees.

Another factor that could impact the investors' perception of the reliability of the reported estimates is management's incentives. Although the choice to misreport is not directly observable *ex ante*, prior research has shown that in circumstances where the benefits (costs) of achieving (failing to achieve) a financial target are particularly high, managers are more likely to use discretion to achieve that target.¹⁵ One such target is capital availability. Extant research provides ample evidence supporting the notion that capital adequacy is an important concern for a financial firm's management and investors. As an example, banks have been shown to use reporting discretion to manage the reported level of regulatory capital (Beatty et al. 1995; Ahmed et al. 1999) and the value-relevance of fair value gains and losses have been shown to increase in capital availability (Ahmed and Takeda 1995; Barth et al. 1996; Beaver and Venkatachalam 2003).

The ongoing financial crisis and failure of financial institutions have brought renewed attention to capital availability. Seen as an indicator of a company's health and long-term viability, a high level of equity capital has become particularly desirable. Thus, as the implied incentives to misreport are higher for financial firms with low levels of capital, it is

¹⁴ Independent auditors and regulators also provide important oversight. By construction, however, the majority of the sample firms retain Big 4 auditors, i.e., tests based on external oversight would lack power. Going forward, SEC enforcement actions could provide additional evidence on the issue.

¹⁵ Nissim (2003), among others, provides a discussion of the costs and benefits of using discretion in reporting fair value estimates to affect the statement users' perception of the firm.

likely that the investors' assessment of the reliability of mark-to-model fair value estimates would be lower for those firms.

IV. RESEARCH DESIGN, SAMPLE SELECTION, AND DATA

Sample Selection

This study uses a new data set based on recent disclosure about assets and liabilities recognized at fair value mandated by FAS 157.¹⁶ To minimize data collection costs while maximizing the power of the tests, I focus on a set of large financial firms: companies that are likely to recognize a substantial portion of their assets and liabilities at fair value. To identify the sample, I start with all firms designated by Standard and Poor's as part of the financial component, Global Industry Classification Standard (GICS) 40, of the S&P 500, S&P MidCap 400, and S&P SmallCap 600 indices as of March 2008. I exclude Real Estate firms (GICS 4040) since only a small portion of their assets and liabilities are recognized at fair value on a recurring basis. Next, I exclude all firms with fiscal years ending in months other than November and December, as FAS 157 is effective for fiscal years beginning after November 15, 2007. Finally, I eliminate seven companies that do not report financial assets or liabilities measured at fair value on a recurring basis or do not provide the required FAS 157 fair value hierarchy disclosure. For the second quarter of 2008, I eliminate another five companies, as they cease to exist as independent entities during the period. The final sample consists of 177 (172) firms from the Banking, Financial Services, and Insurance industries for Q1 (Q2) of 2008 (Table 1).¹⁷

¹⁶ In this study, I focus on assets and liabilities measured at fair value on a recurring basis. As an artifact of the mixed-attribute model promulgated by U.S. GAAP, some companies also recognize assets and liabilities at fair value on a nonrecurring basis. Although those fair value measurements are interesting on their own, I do not include them in the main analysis, as they carry different economic interpretation than the fair value measurements on a recurring basis (period-to-period revaluation vs. on-time impairment charge). As a robustness test, I verify that, within my sample, including the fair values measured on a nonrecurring basis in the regressions does not qualitatively affect the results.

¹⁷ The sample size varies with the specific tests due to additional data requirements. In particular, two firms do not provide Level 3 changes data for Q2 2008.

Regression Models: Hypotheses 1 & 2

To evaluate the investors' assessment of the reliability of mark-to-model fair value estimates, I examine the association of Level 1, Level 2, and Level 3 net assets and market prices.¹⁸ The generalized model takes the form:

$$(1) \quad \text{Price} = \alpha + \delta_1 \text{Level1} + \delta_2 \text{Level2} + \delta_3 \text{Level3} + \beta_1 \text{NetBVE} + \sum \beta_i \text{Controls} + \varepsilon \quad ,$$

where Price is the closing price of a share of common stock one business day after the filing of Form 10-Q; Level1, Level2, and Level3 are net assets measured at fair value on a recurring basis per share using Level 1, Level 2, and Level 3 inputs, respectively; and NetBVE is the difference between book value of equity and net assets reported at fair value on a recurring basis per share. The vector of controls includes industry indicators based on the GICS categorization, company-level credit ratings, and proxies for size, growth, and profitability.

The model is motivated by prior research on the differential valuation of balance sheet components and off-balance sheet items (e.g., Barth 1991, 1994; Barth and McNichols 1994; Cohen et al. 2008). As a first step, I separate net assets recognized at fair value on recurring basis from book value of equity, and group them by the level of inputs under the FAS 157 hierarchy. I augment this “base” model by including controls for factors that have been shown to affect the relationship between price and book value of equity. In particular, prior research indicates that size is an important determinant for the business model and information environment of financial institutions, due to, among other things, resource availability and market power (Barth 1994; Eccher et al. 1996; Khuranna and Kim 2003; Nissim 2007). As a proxy for size, I include the industry-quarter decile of total assets measured at the beginning of the fiscal quarter. As an additional control for size, I scale the

¹⁸ I focus on net assets rather than assets and liabilities because the majority of the firms in the sample have few liabilities measured at fair value on a recurring basis, resulting in potentially low power tests. In addition, a number of firms report net derivatives for the purposes of FAS 157 disclosure, introducing measurement issues. As a robustness test, I split net assets into the component assets and liabilities, and confirm that the point estimates have the expected signs (positive for assets; negative for liabilities) and that the coefficients are statistically different from zero and increase in the observability of the inputs.

components of the book value of equity by the number of common shares outstanding. Furthermore, since prices reflect growth before book value of equity (e.g., Liu and Ohlson 2000), I include the percentage change in total assets for the prior year, transformed into industry-quarter deciles.¹⁹ I also include industry fixed effects and estimate the model by quarter to account for industry and macroeconomic factors.

The growing number of failing financial institutions since the beginning of the financial crisis suggests that default risk is an important consideration in firm valuation over the sample period. For this reason, I include an ordinal variable based on the S&P Domestic Long-Term Issuer Credit Rating (Compustat item SPLTICRM) as a control for default risk. The variable, Credit Rating, increases in the reported S&P rating (i.e., a value of 1 (16) corresponds to “B-” (“AAA”) rating, which is the lowest (highest) for the sample) and is set to zero if data are not available.²⁰ When Credit Rating is included in the model, I also include an indicator variable set to 1 for the observations with missing S&P credit ratings data. Last, Nelson (1996) argues that profitability is an important determinant in modeling the relationship between stock price and book value of equity for financial institutions. For this reason, I include the industry-quarter decile of return on assets (ROA) for the quarter as a final control variable.

An attractive feature of this model is that the coefficient on Level 1 net assets may be used as a benchmark in evaluating the equity investors’ assessment of the reliability of the fair value estimates measured using significant unobservable inputs.²¹ Using the relative,

¹⁹ The analysts’ consensus long-term growth forecast is conceptually more appealing than a historical growth measure, as it reflects the market growth expectations. However, as of the writing of this draft, I/B/E/S data are not available for the second quarter of 2008. When the long-term growth forecast is included in place of assets growth in model 1 for Q1, results remain qualitatively unchanged.

²⁰ Excluding the observations with missing credit ratings data does not affect the inferences.

²¹ As discussed previously, although Level 2 fair values could reflect either adjusted mark-to-market or mark-to-model estimates, Level 1 and Level 3 net assets allow for the identification of strictly mark-to-market and mark-to-model fair values, respectively. For this reason, the subsequent discussion focuses primarily on Level 1 and Level 3 net assets. Similar analysis, however, applies to Level 2 net assets.

rather than absolute, association between prices and mark-to-model fair values also alleviates concerns about the impact of correlated omitted variables on the statistical inferences.

Using the notation in model 1, H1 could be stated as $\delta_3 > 0$ ($\delta_2 > 0$), i.e., finding a significant positive association between market prices and fair value estimates measured using Level 3 (Level 2) inputs is consistent with the conjecture that investors find those estimates sufficiently reliable to be impounded in firm value. Similarly, H2 is equivalent to $\delta_1 > \delta_3$ ($\delta_1 > \delta_2$). Thus, finding that δ_3 (δ_2) is lower than δ_1 would be consistent with the argument that, on average, the market perceives mark-to-model fair values as less reliable than estimates based on unadjusted market prices, holding relevance constant.

To mitigate the potential effect of correlated omitted variables, I transform model 1 to first-difference form (Landsman and Magliolo 1988). Taking advantage of the required reconciliation of the change in Level 3 assets and liabilities, I then partition the mark-to-model net assets into total gains, net purchases, and net transfers, allowing for a direct examination of total gains. Since total gains reflect the revaluation of Level 3 net assets, this approach provides a cleaner test for the investors' assessment of the reliability of those estimates (H1). As a refinement, I also examine separately the unrealized and realized portion of total gains on Level 3 net assets. The general models take the form:

$$(2a) \quad \Delta \text{Price} = \alpha' + \delta_1' \Delta \text{Level1} + \delta_2' \Delta \text{Level2} + \delta_3' \text{L3GAIN} + \delta_4' \text{L3ADD} \\ + \delta_5' \text{L3TRANSFER} + \beta_1' \Delta \text{NetBVE} + \sum \beta_i' \text{Controls} + \varepsilon'$$

$$(2b) \quad \Delta \text{Price} = \alpha' + \delta_1' \Delta \text{Level1} + \delta_2' \Delta \text{Level2} + \lambda_1' \text{L3URGAIN} + \lambda_2' \text{L3RGAIN} \\ + \delta_4' \text{L3ADD} + \delta_5' \text{L3TRANSFER} + \beta_1' \Delta \text{NetBVE} + \sum \beta_i' \text{Controls} + \varepsilon'$$

where L3GAIN is the total net gain (i.e., gains minus losses), L3URGAIN (L3RGAIN) is the unrealized (realized) portion of L3GAIN, L3ADD is the net addition (i.e., gross additions minus gross sales and settlements), and L3TRANSFER is the net transfer into Level 3 net assets, respectively. All other variables are as defined previously and Δ is the first-difference operator. All continuous variables, other than the vector of controls, are scaled by the market

value of equity one business day after the Form10-Q filing date for the prior quarter. Using the notation of models 2a (2b), a positive and statistically significant δ_3 (λ_1) is consistent with the conjecture that equity investors find the fair value estimates measured using significant unobservable inputs sufficiently reliable to be reflected in firm value.

Capitalizing on the requirement that the full set of FAS 157 fair disclosures be provided in the companies' financial statements, I also examine the market reaction during the three-day period surrounding the filing of Form 10-Q. Similar to the long-window returns tests, finding a positive and significant association between the three-day returns and Level 3 net gains (Level 3 unrealized gains) would be consistent with the idea that investors find the mark-to-model estimates sufficiently reliable to be impounded in firm value. An advantage of the short-window returns tests is that confounding events are less likely to influence the results, as compared to the long-window returns specification. On the cost side, however, lack of results would be difficult to interpret unequivocally, as details about the changes in the mark-to-model and mark-to-market fair value estimates could be disclosed in the earnings releases or discussed during the earnings conference calls.²²

The models take the form:

$$(3a) \quad \text{Ret} = \alpha'' + \delta_1'' \Delta \text{Level1} + \delta_2'' \Delta \text{Level2} + \delta_3'' \text{L3GAIN} + \delta_4'' \text{L3ADD} \\ + \delta_5'' \text{L3TRANSFER} + \beta_1'' \Delta \text{NetBVE} + \varepsilon''$$

$$(3b) \quad \text{Ret} = \alpha'' + \delta_1'' \Delta \text{Level1} + \delta_2'' \Delta \text{Level2} + \lambda_1'' \text{L3URGAIN} + \lambda_2'' \text{L3RGAIN} \\ + \delta_4'' \text{L3ADD} + \delta_3'' \text{L3TRANSFER} + \beta_1'' \Delta \text{NetBVE} + \varepsilon''$$

where Ret is the raw return for the three-day window centered on the filing date of Form 10-Q, and the rest of the variables are as defined previously. All explanatory variables are scaled by market value of equity the day before the filing date. Since the Form 10-Q filing dates for the sample firms appear to cluster in time, I also estimate the models using buy-and-hold

²² An examination of the earnings releases and conference call transcripts for a random subsample suggests that, although some firms do discuss the aggregate fair value gains and losses in the earnings announcements, only few provide sufficient information to distinguish between Level 1, Level 2, and Level 3 estimates.

abnormal returns (BHAR) as dependant variable, where BHAR is calculated as the difference between Ret and the return on the S&P 1,500 index for the period. In the BHAR models, I also include the natural logarithms of total assets and the market-to-book ratio, measured at the beginning of the fiscal quarter, as additional controls (Cohen et al. 2008).

Conditional Analysis

To examine the differential investors' assessment of the reliability of reported fair values, conditional on measurement oversight and implied incentives to bias the estimates, I use a modified version of model 1. The generalized model takes the form:

$$(4) \quad \text{Price} = \alpha + \delta_1 \text{Level1} + \delta_2 \text{Level2} + \delta_3 \text{Level3} + \gamma_1 \text{PART} + \gamma_2 \text{PART} * \text{Level1} \\ + \gamma_3 \text{PART} * \text{Level2} + \gamma_4 \text{PART} * \text{Level3} + \beta_1 \text{NetBVE} + \sum \beta_i \text{Controls} + \varepsilon$$

where the regression variables, with the exception of PART, are as defined previously. PART is an indicator variable defined in three independent ways: as a function of the valuation services provider, equity capital availability, and financial expertise of the Audit Committee. Specifically, a version of the variable is set to 1 if,

- the company discloses in Form 10-Q that valuation services for the Level 3 assets and liabilities measured at fair value on a recurring basis are obtained from third parties (External Valuation);²³ or,
- the company discloses in Form DEF 14A that more than one member of the Audit Committee qualifies as a financial expert (Financial Experts); or,
- the company has beginning-of-the-quarter ratio of book value of equity to total assets above the industry median (Capital Availability).

²³ The variable construction involves non-trivial judgment and is based on voluntary disclosure. As such, any inferences should be drawn with caution.

Under each of the three definitions, the management's implied incentives and/or ability to influence (investors' assessment of the reliability of) the reported mark-to-model fair value measurements is expected to be decreasing (increasing) in the partitioning variable.

Data and Descriptive Statistics

All data used in the study are collected from publicly accessible sources. When possible, I obtain the data from machine-readable databases and collect the rest by hand. Appendix II provides definitions for the variables.

The study hinges on the expanded fair value disclosure mandated by FAS 157. I collect those data from the Form 10-Qs filed with the SEC.²⁴ Specifically, I obtain data for Q1 and Q2 of 2008 for the net assets recognized at fair value on a recurring basis, grouped by observability of the measurement inputs as prescribed by the FAS 157 fair value hierarchy. I also retain the net gains, net purchases, and net transfers of the Level 3 assets and liabilities for the second quarter of 2008 (Appendix I provides a numerical example for the calculation of the FAS 157 disclosure-related variables, based on BB&T Corp's 10-Q for the fiscal quarter ending March 31, 2008). Turning to Table 2, the sample firms have a notably larger proportion of assets than liabilities recognized at fair value on a recurring basis (0.195 and 0.187 versus 0 percent of total assets for the median sample firm for Q1 and Q2, respectively). While the fair value net assets are clearly dominated by Level 2, on average and in the median the sample firms hold more Level 1 than Level 3 net assets (13.916 and 1.088 vs. 9.675 and 0.587 per share, respectively, for Q1). Turning to the Level 3 changes data, the average company reports a net total loss for the period, most of which is unrealized. However, the large standard deviation for the variable implies that the Level 3 net gains vary within the sample.

²⁴ I collect the 10-Qs from EDGAR. In one instance (Freddie Mac, Q1 2008), I obtain the data from the Information Statement, provided in lieu of Form 10-Q, from the company's website.

I obtain the rest of the company-specific financial data from the Compustat Quarterly Tape and Form 10-Q, if the Compustat data are missing. Last, I collect the price per common stock data from Yahoo Finance (<http://finance.yahoo.com>) and the number of financial experts on the Audit Committee from Form DEF 14A from the Electronic Data-Gathering, Analysis, and Retrieval (EDGAR) system.²⁵

Turning again to Table 2, although the sample is skewed, it contains mostly large firms, as expected. Table 2 also reports the quarter-end market-to-book ratio for the sample firms as a gauge for industry-wide shifts. It is notable that the market-to-book ratio for the median firm decreased from 1.24 to 1.06 between the quarters.

V. FINDINGS

Table 3 reports Spearman correlations for the pooled sample. Notably, the correlations between price per share and Level 1, Level 2, and Level 3 net assets are positive and significant. Furthermore, the correlation coefficients increase in the observability of the measurement inputs (0.402 vs. 0.393 vs. 0.157, for the net assets measured using Levels 1, 2, and 3 inputs, respectively). This is consistent with the conjecture that investors find mark-to-model estimates sufficiently reliable to be impounded at fair value, even if less so than mark-to-market fair values.

Regression Results

Following prior research, I deflate the dependant and independent variables in model 1 by the number of shares outstanding (e.g., Barth 1994; Cohen et al. 2008). Even the deflated data, however, show evidence of outliers and influential points. For this reason, I

²⁵ As of the writing of this draft, I do not have access to up-to-date market or governance data from the conventional machine-readable databases.

estimate the models using iteratively re-weighted least squares (IRLS) regression, a member of the robust-regression family.²⁶

Table 4 provides regression results for model 1. The estimated coefficients on the aggregate book value of equity range from 0.704 to 0.780 between quarters, which is consistent with prior studies (as an example, Barth (1994) reports an average coefficient of 0.79 for her sample of banks). The coefficients on Level 1 net assets similarly range from 0.604 to 0.811.²⁷ Interestingly, the estimated coefficients for the components of the book value of equity are consistently lower during the second quarter of 2008. In all specifications for both Q1 and Q2, however, the estimated coefficients on Level 2 and Level 3 net assets are positive and significant, providing support for H1: “Investors find mark-to-model fair value estimates sufficiently reliable to be reflected in firm value.”

An advantage of the FAS 157 fair value disclosure is that it allows for a direct comparison of the valuation coefficients on the mark-to-market (Level 1) and mark-to-model net assets in the price regressions. Focusing on Level 3 net assets, the coefficients range from 0.419 to 0.709. These coefficients are statistically different from 1 and consistently lower than the coefficients on the mark-to-market estimates. Interestingly, the standard errors on the coefficients of the Level 3 net assets are also consistently larger than those of Level 1, suggesting that the mark-to-model estimates are considered noisier than the mark-to-market fair values (Table 4, Panel B). A Wald test for equality of the coefficients provides a formal test for H2: “Investors perceive mark-to-model estimates as less reliable than mark-to-market

²⁶ I estimate the models using Stata `rreg`. As a first step, the Stata IRLS algorithm fits an ordinary least squares (OLS) regression and eliminates observations with Cook’s Distance above 1. Next, weights are calculated based on the absolute residuals, and a weighted least squares regression is fit. The weights are then updated, and the sequence continues until the weights converge. The statistical tests are based on standard errors calculated using pseudo-values as suggested by Street et al. (1988). Aboody et al. (2004), among others, provide an overview of IRLS.

²⁷ The estimated coefficients on Level 1 net assets are statistically different from the theoretical value of 1. This deviation could be attributed to one, or a combination, of several factors: correlated omitted variables, tax effects, or byproduct of the estimation procedure (the implemented IRLS algorithm down-weights all observations, driving the estimated coefficients toward 0). As a robustness test, I re-estimate model 1 using OLS and find that, in some specifications, the fitted coefficient on Level 1 net assets is statistically indistinguishable from 1 (not tabulated).

fair values.” The test rejects the null hypothesis of equality in all specifications, suggesting that investors impound Level 3 estimates in firm value at a lower multiple than mark-to-market fair values. Turning to Level 2 net assets, interestingly, although the estimated coefficients are also consistently lower than those on Level 1, a Wald test fails to reject the null hypothesis of equality in five of the six specifications.

Table 4, Panel B, reports a “relative valuation” ratio, standardizing the difference between the mark-to-market and mark-to-model coefficients. Using the coefficient on Level 1 net assets as a benchmark, this ratio quantifies the premium or discount assessed by investors for the mark-to-model estimates. It is interesting that, although the ratio is relatively constant across time for Level 2 net assets, for the Level 3 estimates it is much larger in Q2 than in Q1. As an example, when default risk and profitability controls are included in the model, the ratio changes from 12.58% for Q1 to 30.63% for Q2 ($(0.811 - 0.709)/0.811$ and $(0.604 - 0.419)/0.604$, respectively). This suggests that for the average sample firm, if Level 1 net assets were instead Level 3, then, *ceteris paribus*, the stock price would have been lower by $12.58\% \times \$13.916 = \1.75 and $30.63\% \times \$13.406 = \4.11 , a decrease in market value of equity of 5.29% and 13.93% for Q1 and Q2, respectively. Although the implications are economically significant, the ratio does not exceed 35% in any specification for the pooled sample, raising questions about claims that mark-to-model estimates should be discarded.

Although model 1 provides evidence consistent with H1, it is possible that the inferences are influenced by correlated omitted variables.²⁸ To alleviate such concerns, I difference the levels model. Table 5 presents regression results for model 2. As discussed in Section IV, the FAS 157 fair value disclosure allows for a classification of the changes in

²⁸ The relatively low difference between the coefficients on mark-to-model and mark-to-market fair value estimates (less than 35% at its maximum) appears inconsistent with a scenario where the positive association between Level 3 net assets and prices is purely a by-product of correlated omitted variables. Nevertheless, since the covariance structure of the model and the (potential) correlated omitted variables is not known, the conjecture cannot not be rejected with certainty.

Level 3 net assets into net gains, net purchases, and net transfers, each of which has a different economic interpretation. In particular, net gains is the component most vulnerable to management's discretion in the measurement process. Consistent with H1, the coefficient on Level 3 net gains is positive and significant in all specifications (Table 5, Panel A). Moreover, the unrealized portion of the Level 3 net gains is also positively and significantly associated with the returns for the period (Table 5, Panel B). Interestingly, the coefficient on the realized portion is insignificant. One potential explanation for this result is low power of the tests: Less than half of the sample companies are identified to have Level 3 net realized gains for a sample average of -0.2¢ per share. Notably, controlling for the change in default risk strengthens the documented relationship between Level 3 gains and returns, while also increasing the explanatory power of the model.²⁹ Moreover, in all specifications, the coefficient on Level 3 net additions is statistically equal to 1, consistent with the notion that net additions reflect the actual market prices for these assets and liabilities.

Turning to the short-window return tests, Table 6 presents results from regressing returns for the three-day period around the Form 10-Q filing date on the changes in book value of equity components. Consistent with the results for model 2, the coefficients on Level 3 net gains and Level 3 unrealized gains are positive and significant.³⁰ It is interesting to note that the coefficient on net transfers into Level 3 net assets is significantly negative. Although determining the cause of this negative association is beyond the scope of the study, two potential explanations relate to change in the investors' assessment of the company's liquidity risk and/or change in perception of the reliability of the estimates.³¹

²⁹ It is interesting that, after controlling for default risk, the coefficient on Level 3 net transfers becomes weakly significant and statistically equal to -1 under a Wald test. This result, however, disappears when the S&P 1,500-adjusted buy-and-hold abnormal return is used as a dependant variable, while the other results remain unaffected (not tabulated).

³⁰ As additional tests, I also examine the association of the changes in the components of book value of equity and S&P 1,500-adjusted returns for the periods $(-1, +1)$ and $(-1, +9)$ days around the earnings announcement date (Balsam et al. 2002; Cohen et al. 2008). While the estimated coefficients on Level 3 net gains (both realized and unrealized) are consistently positive, they are generally statistically insignificant.

³¹ Models 2 and 3 are estimated using IRLS. Estimating them by OLS does not qualitatively affect the results.

Focusing on the conditional analysis, Table 7 provides evidence on the differential valuation of mark-to-model net assets contingent on management's opportunity and implied incentives to bias the reported estimates. Notably, even in the cases with high conjectured probability of misstatement (internal valuation, low capital availability, and no more than one financial expert on the Audit Committee), the association between price and estimates of mark-to-model fair value remains positive and significant. Using the coefficient on Level 1 net assets as a benchmark, the relative valuation ratios vary significantly between periods and specifications. However, even in the case with the highest relative difference (Level 3 net assets for the low-equity subsample for Q2), the ratio does not exceed 44%.

Turning to the interactive terms in model 4, results are consistent with the conjecture that the investors' assessment of the reliability of mark-to-model fair values increases with equity capital and the quality of valuation oversight. Focusing on Level 3 net assets, the coefficients are positive in all specifications, although not always significant at conventional levels. Importantly, while a Wald test rejects the null hypothesis for equality of the coefficients on Level 1 and Level 3 net assets for the subsamples with high likelihood for misstatement, the difference in these coefficients becomes statistically zero for firms with high industry-adjusted equity capital and companies that obtain the mark-to-model estimates from third parties.³²

In summary, the statistical analysis suggests that, although the market applies lower multiples to the mark-to-model fair value estimates, the association between Level 2 and Level 3 net assets (Level 3 gains) and prices (returns) is positive and significant. This is

³² The evidence, however, should be interpreted with caution. The subsample of firms that use third-party valuation services for the Level 3 net assets is relatively small. Thus, it cannot be ruled out that the statistical equality of the coefficients on Level 1 and Level 3 net assets is a result of low power of the test. Interpretation of the "Financial Expertise" results also offers challenges: The statistical tests imply that Level 3 estimates are priced higher than those of Level 1, which merits further investigation. Lastly, as discussed before, the three partitions encompass a small fraction of the factors that could affect the management's incentives and opportunity to influence the reported fair value estimates.

consistent with the conjecture that investors find the mark-to-model estimates sufficiently reliable to be reflected in firm value.

VI. ADDITIONAL ANALYSIS AND ROBUSTNESS CHECKS

Measurement Date

The main objective of the study is to evaluate the investors' assessment of the reliability of mark-to-model fair value estimates. To ensure that investors have access to the FAS 157 fair value disclosure, I use the closing price one business day after the filing of Form 10-Q as dependant variable in model 1. The fair values, however, are measured at the balance sheet date, which precedes the 10-Q filing date on average by 37 days for the sample. To verify that results are not driven by changes in market conditions between the measurement and filing dates, I include the return for the S&P 1,500 Index for that period as an additional control variable in model 1. Results remain qualitatively the same.

In an alternative specification, I re-estimate model 1 using as dependant variable the closing price per share of common stock at the end of the fiscal quarter. The association between price and fair value estimates remains positive and significant for each of the three groups of fair value estimates. The difference between the regression coefficients on Level 1 and Level 3 net assets, however, becomes smaller, driven primarily by higher coefficients on Level 3 net assets. This is consistent with the notion that prices at the end of the fiscal quarter end reflect some, but not all, of the information pertaining to the fair value estimates measurement.

Net Assets Measured at Fair Value on a Nonrecurring Basis

The mixed-attribute financial reporting model promulgated by U.S. GAAP requires one-time fair value re-measurements of assets and liabilities that are not recognized at fair value on a recurring basis (e.g., impairment of held-to-maturity securities). For such

nonrecurring fair value measurements, FAS 157 requires that companies report the classification of the estimates under the fair value hierarchy. As a robustness check, I include the net assets measured at fair value on a nonrecurring basis as an additional control variable. In a separate specification, I pool them with the Level 1, Level 2, and Level 3 net assets measured on a recurring basis. Results remain qualitatively the same in both cases.

Net Assets vs. Assets and Liabilities

Liabilities measured at fair value on a recurring basis account for a small portion of the balance sheet for the majority of the sample firms. To increase the power of the tests and conserve degrees of freedom, I use net assets, rather than assets and liabilities, in the regressions. As a robustness check, I re-estimate model 1, using assets and liabilities in place of net assets. Consistent with the reported results, the estimated coefficients are statistically different from 0, obtain the expected signs (positive for assets and negative for liabilities), and decrease in the level of inputs under the FAS 157 hierarchy.

Early Adopters and FAS 159 Fair Value Option

In February 2007, FASB enacted FAS 159 “The Fair Value Option for Financial Assets and Financial Liabilities,” allowing companies to elect fair value accounting on an instrument-by-instrument basis for a wide range of financial instruments. The statement stipulates that any gain or loss on adoption should be recorded directly to Retained Earnings, bypassing the Income Statement. Companies that opt to early-adopt FAS 159 are required to do so in conjunction with FAS 157. A recent study by Song (2008) suggests that companies apply the Fair Value Option in a manner inconsistent with FASB’s stated intentions, using it as an earnings management and portfolio-restructuring tool instead. As a robustness check, I re-estimate model 1 excluding the firms that make an election under the FAS 159 Fair Value Option. The results remain qualitatively the same, except that the coefficients on Level 1 and

Level 3 net assets become statistically equal.³³ As an additional test, I re-estimate model 1 excluding the 17 companies that adopted FAS 157 early. The results are similar to the reported ones.

VII. CONCLUSION

In this study I use the expanded fair value disclosure mandated by FAS 157 to empirically evaluate the concern that mark-to-model fair value estimates are not sufficiently reliable to justify their use in financial reporting. Using a sample of large financial firms for the first and second quarters of 2008, I document a positive and significant association between market prices and Level 1, Level 2, and Level 3 fair value estimates. Using Level 1 net assets as a benchmark, I next examine the relative investor assessment of the company-reported mark-to-model estimates. Although results suggest that investors attach less weight to Level 2 and Level 3 fair values, the difference is significant only for the Level 3 estimates. Even at its peak (Level 3 net assets for Q2), however, the difference does not exceed 35%.

These findings are corroborated by an examination of the association between returns and Level 3 gains. I document a significant positive association between total and unrealized gains and quarterly returns, suggesting that the results from the levels specifications are not likely to be a byproduct of correlated omitted variables. Turning to causality, I also document a positive and significant association between total and unrealized Level 3 gains and three-day returns measured around the filing of Form 10-Q.

As a last step, I examine whether the investors' treatment of mark-to-model estimates varies with the management's implied incentives and opportunity to influence the reported fair values. Results are consistent with the conjecture that investors perceive the estimates as more reliable when the company has high equity capital, more than one financial expert on

³³ Of the sample companies, 53 made an election under the Fair Value Option, 19 of them only for transactions entered into after the adoption date. Of the 53 firms, 15 adopted FAS 157 early.

the Audit Committee, and when the estimates are obtained from a third party. Interestingly, even in the instances where the mark-to-model estimates are conjectured to be least reliable, the positive and significant association with stock prices holds.

Collectively, these results are at odds with claims that mark-to-model estimates are perceived as unreliable and are discarded as “markings-to-myth.”

Appendix I:

What follows is an excerpt from Note 12, “Fair Value Measurements” from Form 10-Q for fiscal quarter ended March 31, 2008, for BB&T Corp:

Fair Value Measurements

FAS No. 157 defines fair value as the exchange price that would be received on the measurement date to sell an asset or the price paid to transfer a liability in the principal or most advantageous market available to the entity in an orderly transaction between market participants. FAS No. 157 also establishes a three level fair value hierarchy that describes the inputs that are used to measure assets and liabilities.

Level 1: Level 1 asset and liability fair values are based on quoted prices in active markets for identical assets and liabilities. Level 1 assets and liabilities include certain equity securities and derivative contracts that are traded in an active market.

Level 2: Level 2 asset and liability fair values are based on observable inputs that include: quoted market prices for similar assets or liabilities; quoted market prices that are not in an active market; or other inputs that are observable in the market and can be corroborated by observable market data for substantially the full term of the assets or liabilities. Level 2 assets and liabilities include fixed income securities and mortgage-backed securities that are held in the Corporation’s trading and available-for-sale portfolios, loans held for sale, certain derivative contracts and short-term borrowings.

Level 3: Level 3 assets and liabilities are financial instruments whose value is calculated by the use of pricing models and/or discounted cash flow methodologies, as well as financial instruments for which the determination of fair value requires significant management judgment or estimation. These methodologies may result in a significant portion of the fair value being derived from unobservable data. Level 3 assets and liabilities include certain trading securities, mortgage servicing rights, venture capital investments and certain derivative contracts.

Assets and liabilities measured at fair value on a recurring basis, including financial instruments for which BB&T has elected the Fair Value Option are summarized below:

	Fair Value Measurements for Assets and Liabilities Measured on a Recurring Basis			
	3/31/2008	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
		(Dollars in Millions)		
Assets:				
Trading securities	\$ 609	\$ 213	\$ 382	\$ 14
Securities available for sale	23,487	287	23,186	14
Loans held for sale (1)	1,745	-	1,745	-
Residential mortgage servicing rights	406	-	-	406
Derivative assets (2)	814	1	790	23
Venture capital investments (2)	141	-	-	141
Total assets	\$ 27,202	\$ 501	\$ 26,103	\$ 598
Liabilities:				
Derivative liabilities (2)	\$ 434	\$ 4	\$ 426	\$ 4
Short-term borrowed funds (3)	269	-	269	-
Total liabilities	\$ 703	\$ 4	\$ 695	\$ 4

(1) Loans held for sale are residential and commercial mortgage loans that were originated subsequent to December 31, 2007 for which the Company elected the fair value option under FAS No. 159. Loans

- originated prior to January 1, 2008 and certain other loans held for sale are still accounted for at the lower of cost or market. There were \$77 million in loans held for sale that are not accounted for at fair value.
- (2) These amounts are reflected in other assets and other liabilities on the Consolidated Balance Sheet.
 - (3) Short term borrowed funds reflect securities sold short positions.

The table below presents a reconciliation for the period of January 1, 2008 to March 31, 2008, for all Level 3 assets and liabilities that are measured at fair value on a recurring basis.

	Fair Value Measurements Using Significant Unobservable Inputs				
	AFS Securities	Trading	Mortgage Servicing Rights	Net Derivatives	Venture Capital Investments
	(Dollars in Millions)				
Beginning Balance	\$ 9	\$ 27	\$ 472	\$ 2	\$ 128
Total realized and unrealized gains or losses:					
Included in earnings	-	(2)	(107)	17	(1)
Included in other comprehensive income	-	-	-	-	-
Purchases, issuances and settlements	5	(14)	41	-	14
Transfers in and/or out of Level 3	-	3	-	-	-
Ending Balance	\$ 14	\$ 14	\$ 406	\$ 19	\$ 141

The table below summarizes unrealized and realized gains and losses recorded in earnings for Level 3 assets and liabilities for the period January 1, 2008 to March 31, 2008.

	Total Gains and Losses			
	Trading	Mortgage Servicing Rights	Net Derivatives	Venture Capital Investments
	(Dollars in Millions)			
Classification of gains and losses (realized/unrealized) included in earnings for the period:				
Mortgage banking income	\$ -	\$ (107)	\$ 17	\$ -
Other noninterest income	(2)	-	-	(1)
Total	\$ (2)	\$ (107)	\$ 17	\$ (1)
Net unrealized gains (losses) included in net income relating to assets and liabilities still held at March 31, 2008	\$ -	\$ (84)	\$ 19	\$ (1)

The realized and unrealized losses reported for the mortgage servicing rights asset are comprised of a negative valuation adjustment of \$84 million and the realization of expected residential mortgage servicing rights cash flows of \$23 million. BB&T uses various derivative financial instruments to mitigate the income statement effect of changes in fair value due to its quarterly valuation. During the three months ended March 31, 2008, the derivative instruments produced gains of \$82 million, which covered 97.6% of the negative valuation loss recorded.

FAS 157 Variables Calculation:

The (unscaled) variables for BB&T Corp for the fiscal quarter ending March 31, 2008 based on the expanded fair value disclosure under FAS 157 are calculated as follows:

Level 1 Net Assets = Level 1 Assets - Level 1 Liabilities = 501 - 4 = 497

Level 2 Net Assets = Level 2 Assets - Level 2 Liabilities = 26,103 - 695 = 25,408

Level 3 Net Assets = Level 3 Assets - Level 3 Liabilities = 598 - 4 = 594

The calculations are based on:

	Fair Value Measurements for Assets and Liabilities Measured on a Recurring Basis			
	3/31/2008	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
		(Dollars in Millions)		
Assets:				
Trading securities	\$ 609	\$ 213	\$ 382	\$ 14
Securities available for sale	23,487	287	23,186	14
Loans held for sale (1)	1,745	-	1,745	-
Residential mortgage servicing rights	406	-	-	406
Derivative assets (2)	814	1	790	23
Venture capital investments (2)	141	-	-	141
Total assets	\$ 27,202	\$ 501	\$ 26,103	\$ 598
Liabilities:				
Derivative liabilities (2)	\$ 434	\$ 4	\$ 426	\$ 4
Short-term borrowed funds (3)	269	-	269	-
Total liabilities	\$ 703	\$ 4	\$ 695	\$ 4

Level 3 Net Gains = - 2 - 107 + 17 - 1 = - 93

Level 3 Unrealized Gain = - 84 + 19 - 1 = - 66

Level 3 Realized Gain = - 93 - (- 66) = - 27

Level 3 Net Additions = 5 - 14 + 41 + 14 = 46

Level 3 Net Transfers = 3

The calculations are based on:

	Fair Value Measurements Using Significant Unobservable Inputs				
	AFS Securities	Trading	Mortgage Servicing Rights	Net Derivatives	Venture Capital Investments
(Dollars in Millions)					
Beginning Balance	\$ 9	\$ 27	\$ 472	\$ 2	\$ 128
Total realized and unrealized gains or losses:					
Included in earnings	-	(2)	(107)	17	(1)
Included in other comprehensive income	-	-	-	-	-
Purchases, issuances and settlements	5	(14)	41	-	14
Transfers in and/or out of Level 3	-	3	-	-	-
Ending Balance	\$ 14	\$ 14	\$ 406	\$ 19	\$ 141

Net unrealized gains (losses) included
in net income relating to assets and liabilities
still held at March 31, 2008

\$	-	\$	(84)	\$	19	\$	(1)
----	---	----	------	----	----	----	-----

Appendix II
Variable Definitions

Variable Name	Label	Description
Book Value of Equity	BVE	Compustat item SEQQ
Level 1 Net Assets	Level1	Difference between Level 1 Assets and Level 1 Liabilities, as reported by the company in accordance with FAS 157
Level 2 Net Assets	Level2	Difference between Level 2 Assets and Level 2 Liabilities, as reported by the company in accordance with FAS 157
Level 3 Net Assets	Level3	Difference between Level 3 Assets and Level 3 Liabilities, as reported by the company in accordance with FAS 157
Non-Fair Value Net Assets	NetBVE	Difference between Book Value of Equity and the sum of Level 1, Level 2, and Level 3 Net Assets
Level 3 Gain	L3GAIN	Difference between Total Gains and Total Losses on Level 3 Net Assets for the fiscal quarter, as reported by the company in accordance with FAS 157
Level 3 Unrealized Gain	L3URGAIN	Level 3 Gain attributable to Net Assets still held at the measurement date; if the data are not disclosed, the variable is measured as the sum of Unrealized Level 3 Gain included in earnings plus Level 3 Gain included in Other Comprehensive Income
Level 3 Realized Gain	L3RGAIN	Difference between Level 3 Gain and Level 3 Unrealized Gain
Level 3 Net Purchase	L3ADD	Difference between Total Purchases and Total Sales and Settlements of Level 3 Net Assets for the fiscal quarter, as reported by the company in accordance with FAS 157
Level 3 Net Transfer	L3TRANSFER	Difference between Total Transfer In and Total Transfer Out of Level 3 Net Assets for the fiscal quarter, as reported by the company in accordance with FAS 157
Asset Growth	Asset Growth	Percentage change in Total Assets over the year ending at the beginning on the quarter; the variable is transformed into industry-quarter deciles in regressions; Compustat item $(ATQ_{t-1} - ATQ_{t-5})/ATQ_{t-1}$
Size	Size	Log-transformed Total Assets measured at the beginning of the quarter; the variable is transformed into industry-quarter deciles in regressions
Credit Rating	Rating	Rank variable based on the S&P Domestic Long-Term Issuer Credit Rating (Compustat item SPLTICRM), increasing in the rating; the variable is set to zero when credit ratings data are missing

Not Rated	Not Rated	An indicator variable set to one if data on the S&P Domestic Long-Term Issuer Credit Rating are not reported by Compustat, zero otherwise
Return on Assets	ROA	Net Income before Extraordinary Items scaled by Total Assets at the beginning of the quarter (IBQ_t / ATQ_{t-1}); the variable is transformed into industry-quarter deciles in regressions
Price	Price	The closing price per share of common stock one business day after the filing date of Form 10-Q
Three-day Raw Return	Ret	Raw return for the three business days around the filing date of Form 10-Q
Three-day Buy-and-Hold Abnormal Return	BHAR	Three-day Raw Return adjusted for the S&P 1,500 return for the period
Quarterly Raw Return	Δ Price	Return from one business day after the filing date of Form 10-Q for the previous fiscal quarter to one business day after the filing date of Form 10-Q for the current fiscal quarter

Bibliography:

- Aboody, D., Barth, M., Kasznik, R. 2004. FAS No. 123 stock-based compensation expense and equity market values. *The Accounting Review* 79, pp. 251–275.
- Ahmed, A. S., Kilic, E., Lobo, G. J. 2006. Does recognition versus disclosure matter? Evidence from value-relevance of banks' recognized and disclosed derivative financial instruments. *The Accounting Review* 81, pp. 567–588.
- Ahmed, A. S., Takeda, C. 1995. Stock market valuation of gains and losses on commercial banks' investment securities: An empirical analysis. *Journal of Accounting and Economics* 20, pp. 207–225.
- Ahmed, A. S., Takeda, C., Thomas, S. 1999. Bank loan loss provisions: A reexamination of capital management, earnings management and signaling effects. *Journal of Accounting and Economics* 28, pp. 1–25.
- Anderson, J., Bajaj, V. New trouble in auction rate securities. *The New York Times*. February 15, 2008.
- Balsam, S., Bartov, E., Marquardt, C. 2002. Accruals management, investor sophistication, and equity valuation: evidence from 10-Q filings. *Journal of Accounting Research* 40, pp. 987–1012.
- Barth, M. E. 1991. Relative measurement errors among alternative pension asset and liability measures. *The Accounting Review* 66, pp. 433–463.
- Barth, M. E. 1994. Fair value accounting: evidence from investment securities and the market valuation of banks. *The Accounting Review* 69, pp. 1–25.
- Barth, M. E. 2006. Including estimates of the future in today's financial statements. *Accounting Horizons* 20, pp. 271–285.
- Barth, M. E., Beaver, W. H., Landsman, W. R. 1996. Value-relevance of banks fair value disclosures under FAS 107. *The Accounting Review* 71, pp. 513–537.
- Barth, M. E., Beaver, W. H., Landsman, W. R. 2001. The relevance of the value relevance literature for financial accounting standard setting: Another view. *Journal of Accounting and Economics* 31, pp. 77–104.
- Barth, M. E., Landsman, W. R. 1995. Fundamental issues related to using fair value accounting for financial reporting. *Accounting Horizons* 9, pp. 97–107.
- Barth, M. E., McNichols, M. 1994. Estimation and market valuation of environmental liabilities relating to superfund sites. *Journal of Accounting Research* 32, pp. 177–209.
- Beatty, A., Chamberlain, S. L., Magliolo, J. 1995. Managing financial reports of commercial banks: The influence of taxes, regulatory capital, and earnings. *Journal of Accounting Research* 33, pp. 231–261.

- Beatty, A., Harris, D. G. 1999. The effects of taxes, agency costs and information asymmetry on earnings management: A comparison of public and private firms. *Review of Accounting Studies* 4, pp. 299–326.
- Beaver, W., Engel, E. 1996. Discretionary behavior with respect to allowances for loan losses and the behavior of security prices. *Journal of Accounting and Economics* 22, pp. 177–206.
- Beaver, W., Venkatachalam, M. 2003. Differential pricing of components of bank loan fair values. *Journal of Accounting, Audit and Finance* 18, pp. 41–67.
- Carcello, J. V., Hollingsworth, C. W., Klein, A., Neal, T. L. 2007. Audit committee financial expertise, competing corporate governance mechanisms, and earnings management. Working Paper.
- Carroll, T., Linsmeier, T., Petroni, K. 2003. The reliability of fair value versus historical cost information: Evidence from close-end mutual funds. *Journal of Accounting, Audit and Finance* 18, pp. 1–23.
- Cohen, D. A., Darrough, M. N., Huang, R., Zach, T. 2008. Warranty reserve: Contingent liability, strategic signal, or earnings management tool. Working Paper.
- Danbolt, J., Rees, W. 2008. An experiment in fair value accounting: UK investment vehicles. *European Accounting Review* 17, pp. 271–303.
- DeFond, M., Hann, R. N., Hu, X. 2005. Does the market value financial expertise on audit committees of boards of directors? *Journal of Accounting Research*, Vol. 43, pp. 153–193.
- Eccher, E., Ramesh, K., Thiagarajan, R. 1996. Fair value disclosures by bank holding companies. *Journal of Accounting and Economics* 22, pp. 79–117.
- Enria, A., Cappiello, L., Dierick, F., Gritini, S., Haralambous, A., Maddaloni, A., Molitor, P., Pires, F., Poloni, P. 2004. Fair value accounting and financial stability. European Central Bank, Occasional Paper Series, No. 13.
- Financial Accounting Standards Board (FASB). 2006. Statement of Financial Accounting Standards No. 157, Fair value measurements. Stamford, CT: FASB.
- Financial Accounting Standards Board (FASB). 2007. Statement of Financial Accounting Standards No. 159, The fair value option for financial assets and financial liabilities. Stamford, CT: FASB.
- Hitz, J.-M. 2007. The decision usefulness of fair value accounting - A theoretical perspective. *European Accounting Review* 16, pp. 323–362.
- Holthausen, R., Watts, R. 2001. The relevance of the value-relevance literature for financial accounting standard setting. *Journal of Accounting and Economics* 31, pp. 3–75.

- Isaac, W. 2008. Prepared remarks for SEC roundtable on mark-to-market accounting. <http://www.sec.gov/comments/4-573/4573-79.pdf>.
- Khuranna, I., Kim, M. 2003. Relative value relevance of historical cost vs. fair value: Evidence from bank holding companies. *Journal of Accounting and Public Policy* 22, pp. 19–42.
- Kohlbeck, M. J. 2008. An analysis of recent events on the perceived reliability of fair value measures in the banking industry. Working Paper.
- Landsman, W. R., Magliolo, J. 1988. Cross-sectional capital market research and model specification. *The Accounting Review* 63, pp. 586–604.
- Liu, J., Ohlson, J. A. 2000. The Feltham-Ohlson (1995) model: Empirical implications. *Journal of Accounting, Auditing and Finance* 15, pp. 321–331.
- Martin, R. D., Rich, J. S., Wilks, T. J. 2006. Auditing fair value measurements: A synthesis of relevant research. *Accounting Horizons* 20, pp. 287–303.
- Muller III, K. A., Riedl, E. J. 2002. External monitoring of property appraisal estimates and information asymmetry. *Journal of Accounting Research* 40, pp. 865–881.
- Nelson, K. 1996. Fair value accounting for commercial banks: An empirical analysis of FAS No. 107. *The Accounting Review* 71, pp. 161–182.
- Nissim, D. 2003. Reliability of banks' fair value disclosure for loans. *Review of Quantitative Finance and Accounting* 20, pp 355–384.
- Nissim, D. 2007. Fair value accounting in the banking industry. Center for Excellence in Accounting and Security Analysis, Columbia University. Occasional Paper Series.
- Park, M. S., Park, T., Ro., B. T. 1999. Fair value disclosures for investment securities and bank equity: Evidence from SFAS No. 115. *Journal of Accounting, Auditing and Finance* 14, pp. 347–370.
- Penman, S. 2007. Financial reporting quality: Is fair value a plus or a minus? *Accounting and Business Research Special Issue: International Accounting Policy Forum*, pp. 33-44.
- Pulliam, S. Bond's pricing is questioned in email trail. *The Wall Street Journal*. October 26, 2007, p. C1.
- Reilly, D. Marking down Wall Street. *The Wall Street Journal*. September 14, 2007, p. C1.
- Ronen, J. 2008. To fair value or not to fair value: A broader perspective. *Abacus* 44, pp. 181–208.
- Ryan, S. G. 2007. *Financial instruments & institutions – Accounting and disclosure rules*. Second edition, John Wiley & Sons, Inc.

- Ryan, S. G. 2008a. Accounting in and for the subprime crisis. *The Accounting Review*, forthcoming.
- Ryan, S. G. 2008b. Fair value accounting: Understanding the issues raised by the credit crunch. White Paper prepared for the Council of Institutional Investors.
- Song, C. J. 2008. An evaluation of FAS 159 fair value option: Evidence from the banking industry. Working Paper.
- Song, C. J., Thomas, W. B., Yi, H. 2008. Value relevance of FAS 157 fair value hierarchy information and the impact of corporate governance mechanisms. Working Paper.
- Street, J. O., Carroll, R. J., Rupert, D. 1988. A note on computing robust regression estimates via iteratively reweighted least squares. *The American Statistician* 42, pp. 152–154.
- Venkatachalam, M. 1996. Value-relevance of banks' derivatives disclosures. *Journal of Accounting and Economics* 22, pp 327–355.
- Weil, J. Mark-to-make-believe accounting claims a victim. *Bloomberg.com*. October 27, 2007.

Table 1**Panel A: Sample Selection**

	S&P 500	S&P MidCap 400	S&P SmallCap 600	Total
Financial Industry (GICS 40)	92	66	102	260
Exclude Real Estate Firms (GICS 4040)	14	22	24	60
Exclude Firms with fiscal year ending before November or missing Form 10-Q	4	5	7	16
Exclude Firms not providing FAS 157 disclosure	2	2	3	7
Q1 Sample	72	37	68	177
Exclude Firms acquired during the period	2	2	1	5
Q2 Sample	70	35	67	172

Panel B: Sample Distribution

	S&P 500	S&P MidCap 400	S&P SmallCap 600	Total
Q1 2008				
Banks (GICS 4010)	22	20	46	88 / 49.72%
Financial Services (GICS 4020)	26	3	6	35 / 19.77%
Insurance (GICS 4030)	24	14	16	54 / 30.51%
Total	72 / 40.68%	37 / 20.90%	68 / 38.42%	177 / 100.00%
Q2 2008				
Banks (GICS 4010)	21	19	46	86 / 50.00%
Financial Services (GICS 4020)	25	3	6	34 / 19.77%
Insurance (GICS 4030)	24	13	15	52 / 30.23%
Total	70 / 40.70%	35 / 20.35%	67 / 38.95%	172 / 100.00%

The sample is based on the Financial Component (GICS 40) of the S&P 500, S&P MidCap 400, and S&P SmallCap 600 indexes, as provided by Standard and Poor's on March 20, 2008 (<http://www2.standardandpoors.com>).

Table 2
Descriptive Statistics

	Q1 2008				Q2 2008			
	No. Obs.	Mean	Median	StDev	No. Obs.	Mean	Median	StDev
Total Assets	177	119,879	12,743	313,372	172	118,052	12,666	312,246
Total Liabilities	177	110,929	10,056	294,129	172	108,841	9,821	291,935
Market-to-Book Value of Equity	177	1.470	1.235	1.102	172	1.293	1.060	1.162
Level 1 Assets / Total Assets	177	0.064	0.011	0.119	172	0.056	0.012	0.101
Level 2 Assets / Total Assets	177	0.273	0.178	0.237	172	0.268	0.169	0.234
Level 3 Assets / Total Assets	177	0.028	0.006	0.081	172	0.025	0.006	0.076
Level 1 Liabilities / Total Assets	177	0.009	0.000	0.056	172	0.008	0.000	0.056
Level 2 Liabilities / Total Assets	177	0.030	0.000	0.119	172	0.024	0.000	0.102
Level 3 Liabilities / Total Assets	177	0.005	0.000	0.028	172	0.005	0.000	0.026
Book Value of Equity per share	177	25.751	21.598	23.117	172	24.965	20.075	23.127
Level 1 Net Assets per share	177	13.916	1.088	46.730	172	13.406	1.109	46.475
Level 2 Net Assets per share	177	63.328	26.783	112.016	172	61.576	25.834	111.935
Level 3 Net Assets per share	177	9.675	0.587	30.958	172	7.433	0.628	23.985
Level 3 Gain per share	-	-	-	-	170	-0.039	0.000	1.127
Level 3 Unrealized Gain per share	-	-	-	-	170	-0.037	0.000	1.189
Level 3 Realized Gain per share	-	-	-	-	170	-0.002	0.000	0.180
Level 3 Net Purchase per share	-	-	-	-	170	-0.110	0.000	1.704
Level 3 Net Transfer per share	-	-	-	-	170	-0.072	0.000	2.644
Asset Growth	177	0.135	0.063	0.418	172	0.122	0.044	0.391
ROA	177	0.001	0.002	0.017	172	0.001	0.002	0.020
S&P Long-Term Credit Ratings	117	9.829	10.000	2.554	112	9.705	10.000	2.524
Price	177	33.068	27.260	39.428	172	29.500	22.870	32.338
Three-day Raw Return	-	-	-	-	172	0.011	0.012	0.084
Three-day BHAR	-	-	-	-	172	0.012	0.010	0.104
Quarterly Raw Return	-	-	-	-	172	-0.101	-0.089	0.231

The variables are defined as follows: Total Assets is Compustat item ATQ; Total Liabilities is Compustat item LTQ; Book Value of Equity is Compustat item SEQQ; Market-to-Book Value of Equity is Market Value of Equity, measured at the end of the fiscal quarter, divided by Book Value of Equity; Level 1 (2, 3) Assets is the sum of the assets reported at fair value on a recurring basis measured using Level 1 (2, 3) inputs; Level 1 (2, 3) Liabilities is the sum of the liabilities reported at fair value on a recurring basis measured using Level 1 (2, 3) inputs; Level 1 (2, 3) Net Assets is the difference between Level 1 (2, 3) Assets and Level 1 (2, 3) Liabilities; Level 3 Gain is the difference between Total Gains and Total Losses on Level 3 Net Assets for the fiscal quarter; Level 3 Unrealized Gain is the Level 3 Gain attributable to Net Assets still held at the measurement date; if the data are not disclosed, the variable is measured as the sum of Unrealized Level 3 Gain included in earnings plus Level 3 Gain included in Other Comprehensive Income; Level 3 Realized Gain is the difference between Level 3 Gain and Level 3 Unrealized Gain; Level 3 Net Purchase is the difference between Total Purchases and Total Sales and Settlements of Level 3 Net Assets for the fiscal quarter; Level 3 Net Transfer is the difference between Total Transfer In and Total Transfer Out of Level 3 Net Assets for the fiscal quarter; Asset Growth is the percentage change in Total Assets over the fiscal year ending at the beginning of the quarter; ROA is Net Income before Extraordinary Items scaled by Total Assets at the beginning of the quarter; S&P Long-Term Credit Ratings is a rank variable based on the S&P Domestic Long-Term Issuer Credit Rating (Compustat item SPLTCRM), increasing in the rating; Price is the closing price per share of common stock one business day after the filing date of Form 10-Q; Three-day Raw Return is the return for the three business days around the filing date of Form 10-Q; Three-day BHAR is the three-day raw return adjusted for the S&P 1,500 return for the period; Quarterly Raw Return is the return from one business day after the filing date of Form 10-Q for the previous fiscal quarter to one business day after the filing date of Form 10-Q for the current fiscal quarter; “per share” indicates that the variable is deflated by the number of common shares outstanding.

Table 3
Panel A: Spearman Correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) Price										
(2) Level 1	0.402 (0.001)									
(3) Level 2	0.393 (0.001)	0.390 (0.001)								
(4) Level 3	0.157 (0.001)	0.157 (0.003)	0.415 (0.001)							
(5) NetBVE	-0.306 (0.001)	-0.508 (0.001)	-0.847 (0.001)	-0.467 (0.001)						
(6) BVE	0.570 (0.001)	0.502 (0.001)	0.627 (0.001)	0.396 (0.001)	-0.453 (0.001)					
(7) Size	0.168 (0.002)	0.196 (0.001)	0.431 (0.001)	0.536 (0.001)	-0.407 (0.001)	0.369 (0.001)				
(8) Asset Growth	0.134 (0.012)	-0.049 (0.362)	0.001 (0.990)	-0.047 (0.379)	0.012 (0.828)	-0.028 (0.606)	0.075 (0.160)			
(9) Credit Rating	0.290 (0.001)	0.160 (0.015)	0.390 (0.001)	0.267 (0.001)	-0.368 (0.001)	0.263 (0.001)	0.571 (0.001)	0.285 (0.001)		
(10) ROA	0.392 (0.001)	-0.061 (0.256)	-0.078 (0.146)	-0.250 (0.001)	0.098 (0.066)	-0.136 (0.011)	-0.206 (0.001)	0.152 (0.004)	0.000 (1.000)	

The table presents Spearman correlations for the first two quarters of 2008. All variables are defined in Appendix II. Size, Asset Growth, and ROA are transformed to industry-quarter deciles. *p* – values are reported in brackets below the coefficients.

Table 4**Panel A: Regressing Share Price One Business Day After the Form 10-Q Filing Date on Book Value of Equity Components and Controls**

	Q1 2008				Q2 2008			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Intercept	-1.902 (-0.61)	0.778 (0.25)	-1.153 (-0.23)	-17.17 (-3.95)	5.585 (0.18)	11.87 (1.85)	17.18 (2.16)	-10.39 (-1.53)
BVE	0.780 (11.15)				0.704 (9.17)			
Level 1 Net Assets		0.745 (9.59)	0.757 (11.02)	0.811 (14.11)		0.679 (8.25)	0.643 (8.01)	0.604 (9.95)
Level 2 Net Assets		0.740 (10.17)	0.736 (11.38)	0.772 (14.28)		0.664 (8.43)	0.622 (8.05)	0.582 (9.96)
Level 3 Net Assets		0.624 (7.26)	0.602 (7.93)	0.709 (10.33)		0.504 (4.49)	0.422 (3.82)	0.419 (4.99)
NetBVE		0.710 (9.53)	0.709 (10.73)	0.748 (13.47)		0.660 (8.30)	0.600 (8.01)	0.558 (9.36)
Size	0.257 (0.59)	-0.267 (-0.07)	-16.91 (-3.63)	-0.836 (-0.21)	-4.004 (-1.00)	-5.240 (-1.28)	-12.77 (-2.31)	-1.443 (-0.34)
Asset Growth	9.919 (2.76)	8.464 (2.43)	8.482 (2.69)	1.685 (0.64)	10.76 (2.87)	8.929 (2.43)	7.232 (1.95)	3.921 (1.38)
Credit Rating			1.828 (3.66)	0.887 (2.13)			1.469 (2.36)	0.559 (1.17)
Not Rated			6.486 (1.34)	4.863 (1.21)			8.819 (1.53)	3.332 (0.76)
ROA				27.23 (10.15)				28.33 (10.01)
No. Obs. with data	177	177	177	177	172	172	172	172
Adj. R^2	0.579	0.586	0.665	0.770	0.501	0.502	0.521	0.712

Panel B: Regressing Share Price One Business Day After the Form 10-Q Filing Date on Book Value of Equity Components and Controls; Additional Analysis

	Q1 2008				Q2 2008			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Tests of Equality:								
L1 = L2 (<i>p</i> -value; one-tailed test)	-	0.436	0.237	0.054	-	0.338	0.285	0.213
L1 = L3 (<i>p</i> -value; one-tailed test)	-	0.012	0.001	0.010	-	0.016	0.003	0.001
L2 = L3 (<i>p</i> -value; one-tailed test)	-	0.034	0.008	0.106	-	0.045	0.015	0.010
L1 = L2 = L3 (<i>p</i> -value)	-	0.077	0.004	0.018	-	0.075	0.015	0.005
Relative Valuation:								
(L1 – L2) / L1	-	0.67%	2.77%	4.81%	-	2.21%	3.27%	3.64%
(L1 – L3) / L1	-	16.24%	20.48%	12.58%	-	25.77%	34.37%	30.63%
Standard Errors:								
Level 1 Net Assets	-	0.078	0.069	0.058	-	0.082	0.080	0.061
Level 2 Net Assets	-	0.073	0.065	0.054	-	0.079	0.077	0.058
Level 3 Net Assets	-	0.086	0.076	0.069	-	0.112	0.111	0.084

All models are estimated using iteratively reweighted least squares (IRLS) and include industry fixed effects (not tabulated). All variables are defined in Appendix II. In Panel B, Level 1, 2, and 3 Net Assets are denoted by L1, L2, and L3, respectively. BVE, netBVE, and Level 1, 2, and 3 Net Assets are scaled by number of shares outstanding. Size, Asset Growth, and ROA are transformed into industry-quarter deciles. In Panel A, *t* statistics are reported in brackets below the coefficients.

Table 5
Panel A: Regressing Quarterly Returns on Changes in Book Value of Equity Components and Controls

Intercept	-0.112 (-5.16)	-0.109 (-4.89)	-0.143 (-5.39)	-0.134 (-5.24)
Δ BVE	0.176 (2.28)			
Δ Level 1 Net Assets		0.257 (2.91)	0.161 (1.91)	0.073 (0.86)
Δ Level 2 Net Assets		0.273 (2.98)	0.170 (1.94)	0.078 (0.86)
Level 3 Gain		0.413 (2.44)	0.759 (4.05)	0.624 (3.32)
Level 3 Net Purchase		1.233 (4.12)	1.333 (4.86)	1.210 (4.55)
Level 3 Net Transfer		-0.382 (-0.87)	-0.691 (-1.70)	-0.718 (-1.83)
Δ NetBVE		0.224 (2.63)	0.113 (1.39)	0.034 (0.41)
Δ Size	0.026 (0.06)	-0.177 (-0.42)	-0.088 (-0.23)	-0.040 (-0.11)
Δ Asset Growth	0.022 (0.22)	0.014 (0.14)	-0.009 (-0.10)	-0.012 (-0.13)
Δ Credit Rating			0.122 (2.97)	0.133 (3.35)
Not Rated			0.093 (2.92)	0.077 (2.48)
Δ ROA				0.179 (2.72)
No. Obs. with data	170	170	170	170
Adj. R^2	0.004	0.076	0.200	0.215

All models are estimated using iteratively reweighted least squares (IRLS) and include industry fixed effects (not tabulated). Returns are measured between day $t + 1$ for the prior and current fiscal quarters, where t is the Form 10-Q filing date. All variables are defined in Appendix II and Δ is the first difference operator. Size, Asset Growth, and ROA are transformed into industry-quarter deciles. Δ BVE, Δ NetBVE, Δ Level 1 Net Assets, Δ Level 2 Net Assets, Level 3 Gain, Level 3 Net Purchase, and Level 3 Net Transfer are scaled by market value of equity calculated at the end of the business day after the Form 10-Q filing date for the prior quarter. t statistics are reported in brackets below the coefficients.

Panel B: Regressing Quarterly Returns on Changes in Book Value of Equity Components and Controls; Realized and Unrealized Level 3 Gains

Intercept	-0.108 (-4.82)	-0.142 (-5.29)	-0.130 (-5.05)
Δ Level 1 Net Assets	0.255 (2.88)	0.159 (1.88)	0.063 (0.74)
Δ Level 2 Net Assets	0.270 (2.93)	0.167 (1.88)	0.064 (0.72)
Level 3 Unrealized Gain	0.411 (2.41)	0.760 (4.05)	0.620 (3.31)
Level 3 Realized Gain	0.240 (0.23)	0.340 (0.36)	0.030 (0.03)
Level 3 Net Purchase	1.246 (4.05)	1.366 (4.86)	1.256 (4.64)
Level 3 Net Transfer	-0.382 (-0.86)	-0.676 (-1.66)	-0.742 (-1.90)
Δ NetBVE	0.223 (2.62)	0.114 (1.40)	0.028 (0.34)
Δ Size	-0.174 (-0.41)	-0.068 (-0.18)	-0.040 (-0.11)
Δ Asset Growth	0.014 (0.14)	-0.010 (-0.11)	-0.007 (-0.08)
Δ Credit Rating		0.123 (2.99)	0.136 (3.45)
Not Rated		0.093 (2.91)	0.073 (2.38)
Δ ROA			0.186 (2.83)
No. Obs. with data	170	170	170
Adj. R^2	0.070	0.197	0.218

All models are estimated using iteratively reweighted least squares (IRLS) and include industry fixed effects (not tabulated). Returns are measured between day $t + 1$ for the prior and current fiscal quarters, where t is the Form 10-Q filing date. All variables are defined in Appendix II and Δ is the first difference operator. Size, Asset Growth, and ROA are transformed into industry-quarter deciles. Δ BVE, Δ NetBVE, Δ Level 1 Net Assets, Δ Level 2 Net Assets, Level 3 Unrealized Gain, Level 3 Realized Gain, Level 3 Net Purchase, and Level 3 Net Transfer are scaled by market value of equity calculated at the end of the business day after the Form 10-Q filing date for the prior quarter. t statistics are reported in brackets below the coefficients.

Table 6
Regressing Three-Day Returns Around the Form 10-Q Filing Date on Changes in Book Value of Equity Components and Controls

	Raw Return		BHAR	
Intercept	0.023 (3.96)	0.023 (3.97)	0.049 (2.33)	0.048 (2.28)
Δ Level 1 Net Assets	0.026 (3.28)	0.024 (3.00)	0.026 (3.69)	0.024 (3.38)
Δ Level 2 Net Assets	0.039 (3.88)	0.037 (3.54)	0.040 (4.50)	0.037 (4.11)
Level 3 Gain	0.100 (2.70)		0.080 (2.43)	
Level 3 Unrealized Gain		0.090 (2.37)		0.062 (1.85)
Level 3 Realized Gain		-0.018 (-0.08)		-0.132 (-0.66)
Level 3 Net Purchase	0.189 (5.10)	0.182 (4.88)	0.177 (5.42)	0.169 (5.17)
Level 3 Net Transfer	-0.292 (-3.40)	-0.294 (-3.41)	-0.249 (-3.27)	-0.252 (-3.33)
Δ NetBVE	0.037 (5.16)	0.036 (4.95)	0.037 (5.74)	0.035 (5.54)
Log TA			-0.004 (-1.72)	-0.003 (-1.65)
Log MB			0.006 (0.87)	0.006 (0.88)
No. Obs. with data	170	170	170	170
Adj. R^2	0.308	0.300	0.354	0.351

All models are estimated using iteratively reweighted least squares (IRLS) and include industry fixed effects (not tabulated). Log TA is the natural logarithm of Total Assets at the beginning of the quarter; Log MB the natural logarithm of the Market to Book ratio measured at the beginning of the quarter. All other variables are defined in Appendix II and Δ is the first difference operator. Δ BVE, Δ NetBVE, Δ Level 1 Net Assets, Δ Level 2 Net Assets, Level 3 Unrealized Gain, Level 3 Realized Gain, Level 3 Net Purchase, and Level 3 Net Transfer are scaled by market value of equity calculated at the end of the business day before the Form 10-Q filing date for the quarter. t statistics are reported in brackets below the coefficients.

Table 7

Panel A: Regressing Share Price One Business Day After the Form 10-Q Filing Date on Book Value of Equity Components and Controls; Condition on External Valuation, Capital Availability, and Audit Committee Financial Experts

	External Valuation		Capital Availability		Financial Experts	
	2008 Q1	2008 Q2	2008 Q1	2008 Q2	2008 Q1	2008 Q2
Intercept	-17.02 (-3.95)	-12.94 (-3.07)	-17.36 (-3.89)	-15.87 (-3.41)	-18.47 (-4.05)	-13.77 (-3.13)
Level 1 Net Assets	0.857 (13.12)	0.663 (9.20)	0.762 (11.02)	0.512 (6.96)	0.889 (13.18)	0.711 (9.73)
Level 2 Net Assets	0.800 (13.87)	0.598 (9.53)	0.722 (10.66)	0.491 (6.63)	0.827 (14.72)	0.644 (10.59)
Level 3 Net Assets	0.765 (12.19)	0.450 (5.43)	0.642 (8.79)	0.287 (2.99)	0.712 (7.98)	0.441 (4.44)
PART	-1.132 (-0.34)	-2.694 (-0.79)	-1.540 (-0.73)	-2.335 (-1.03)	-1.176 (-0.65)	0.606 (0.32)
PART × Level 1 Net Assets	0.090 (1.21)	-0.149 (-1.30)	-0.053 (-0.45)	0.149 (0.73)	-0.140 (-3.61)	-0.191 (-4.14)
PART × Level 2 Net Assets	-0.055 (-1.20)	0.021 (0.41)	0.039 (0.93)	0.048 (0.99)	0.070 (2.86)	0.050 (1.70)
PART × Level 3 Net Assets	0.129 (0.88)	0.440 (1.57)	0.295 (1.57)	0.406 (1.88)	0.174 (2.13)	0.489 (4.25)
NetBVE	0.775 (13.02)	0.569 (8.94)	0.695 (10.05)	0.452 (6.06)	0.792 (13.59)	0.602 (9.66)
Controls	<i>Included</i>	<i>Included</i>	<i>Included</i>	<i>Included</i>	<i>Included</i>	<i>Included</i>
No. Obs. with data	177	172	177	172	172	171
No. Obs. where Partition = 0	150	145	88	86	76	76
Adj. R^2	0.784	0.732	0.770	0.700	0.838	0.817

Table 7**Panel B: Regressing Share Price One Business Day After the Form 10-Q Filing Date on Book Value of Equity Components and Controls; Condition on External Valuation, Capital Availability, and Audit Committee Financial Experts; Additional Analysis**

	External Valuation		Capital Availability		Financial Experts	
	2008 Q1	2008 Q2	2008 Q1	2008 Q2	2008 Q1	2008 Q2
Tests of Equality						
L1 = L2 (<i>p</i> -value; one-tailed test)	0.034	0.047	0.056	0.243	0.048	0.074
L1 = L3 (<i>p</i> -value; one-tailed test)	0.029	0.007	0.002	0.000	0.002	0.000
L2 = L3 (<i>p</i> -value; one-tailed test)	0.237	0.034	0.049	0.004	0.049	0.006
L1 = L2 = L3 (<i>p</i> -value)	0.071	0.033	0.003	0.001	0.004	0.000
L1+ <i>P</i> ×L1 = L2+ <i>P</i> ×L2 (<i>p</i> -value; one-tailed test)	0.028	0.241	0.337	0.292	0.000	0.000
L1+ <i>P</i> ×L1 = L3+ <i>P</i> ×L3 (<i>p</i> -value; one-tailed test)	0.322	0.129	0.135	0.453	0.012	0.000
L2+ <i>P</i> ×L2 = L3+ <i>P</i> ×L3 (<i>p</i> -value; one-tailed test)	0.207	0.172	0.178	0.234	0.442	0.020
L1+ <i>P</i> ×L1 = L2+ <i>P</i> ×L2 =L3+ <i>P</i> ×L3 (<i>p</i> -value)	0.065	0.521	0.542	0.703	0.000	0.000
Relative Valuation:						
(L1 – L2) / L1	6.65%	9.80%	5.25%	4.10%	6.97%	9.42%
(L1 – L3) / L1	10.74%	32.13%	15.75%	43.95%	19.91%	37.97%

All models are estimated using iteratively reweighted least squares (IRLS) and include industry fixed effects (not tabulated). The vector of controls includes Size, Asset Growth, Credit Rating, Not Rated, and ROA. PART (denoted by *P* in Panel B) is an indicator variable taking a value of 1 if

- the company discloses in Form 10-Q that valuation services for the Level 3 net assets are obtained from third parties (External Valuation); or,
- the company has beginning-of-the-quarter ratio of book value of equity to total assets above the industry median (Capital Availability); or,
- the company discloses in Form DEF 14A that more than one member of the Audit Committee qualifies as a financial expert (Financial Experts).

All other variables are defined in Appendix II. In Panel B, Level 1, 2, and 3 Net Assets are denoted by L1, L2, and L3, respectively. BVE, netBVE, and Level 1, 2, and 3 Net Assets are scaled by number of shares outstanding. Size, Asset Growth, and ROA are transformed into industry-quarter deciles. In Panel A, *t* statistics are reported in brackets below the coefficients.