Is Fair Value Income a More Useful Summary Measure for Banks' Performance than GAAP Net Income?

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Abstract

This study examines whether income based on fair values provides a more useful summary measure of banks' performance than net income under current generally accepted accounting principles (GAAP). We find that fair value income receives both a lower valuation weight in stock price formation and a lower incentive weight in compensation contracts than GAAP net income. Further, we find that fair value income is less comparable and less able to predict future cash flows than GAAP net income. In addition, we show that the relative inferior performance of fair value income compared with net income is smaller when a bank hires a more reputable auditor or holds more loans whose fair values are relatively less difficult to estimate. Overall, our findings are consistent with fair value income being a less useful summary measure of banks' performance than GAAP net income for both valuation and contracting purposes, and this inferiority is at least partially attributable to lower reliability of reported fair values.

Key words: fair value income; net income; valuation; contracting; banks.

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1. Introduction

Standard setters, academics, and practitioners are actively debating whether fair value accounting provides more useful information for financial statement users than historical cost accounting. Although "usefulness" has many dimensions, one way that financial reporting can be useful is in summarizing periodic performance. Providing a summary performance measure fulfills a critical role for financial reporting because there is a market-driven demand for a single, "sufficient statistic" that adequately captures periodic performance (Dechow [1994]). For example, equity investors and analysts need a performance number that can be benchmarked against the performance of other entities, and contracting parties, such as directors or lenders, need simple performance measures that can be used in compensation and debt contracts. A recent survey of CFOs also indicates that firms rely on a single earnings metric in their external financial reporting and internal decision-making (Dichev, Graham, Harvey, and Rajgopal [2013]).

Given the ongoing fair value debate, and importance of summary performance measurement, we compare the relative ability of fair values versus historical costs in summarizing periodic performance. Specifically, we examine whether income based fully on fair values (fair value income, FVI) is a more useful summary measure of banks' performance than net income under current generally accepted accounting principles (GAAP net income, NI), which is largely based on historical costs. We focus on banks because the fair value debate is particularly heated for financial instruments (e.g., securities, loans, deposits, debt) and these items comprise the vast majority of banks' assets and liabilities.

We consider the usefulness of income measures for both valuation and contracting purposes. Valuation and contracting (or stewardship) are generally viewed as the most important roles of financial reporting (Ball [2001], Holthausen and Watts [2001]). However, valuation and contracting are distinct activities, and the ranking of performance measures for

one purpose need not coincide with that for the other (Gjesdal [1981], Bushman, Engel, and Smith [2006]).

Income fulfills its valuation purpose by providing information to help assess the amount, timing, and uncertainty of future cash flows. Because FVI contains unrealized gains/losses on all financial instruments held by banks while NI does not, FVI potentially provides more relevant and timely information for assessing banks' future cash flows. Further, the inclusion of unrealized gains/losses in NI often depends on how an instrument is held (e.g., loans vs. loan-backed securities) or classified (e.g., trading vs. held to maturity); in contrast, FVI includes all unrealized gains/losses and thus is potentially more comparable across banks than NI. Consistent with more fair value-based income being more useful for valuing a bank, Dhaliwal, Subramanyam, and Trezevant [1999] find that comprehensive income that includes unrealized gains/losses from marketable securities is more strongly associated with contemporaneous stock returns than NI for banks, and Hodder, Hopkins, and Wahlen [2006] show that FVI is more informative for banks' equity market risk than NI.

However, there are also reasons why FVI may be less useful for valuation purposes than NI. First, for financial instruments that banks intend to hold until maturity, many fair value gains/losses will reverse over the life of the instrument, and thus may be less relevant to banks' long-term value. Second, fair values may contain more measurement errors than historical costs because many financial instruments are not traded in liquid markets. Fair values for those instruments are often mark-to-model estimates based on unobservable inputs managers choose. The uncertainty inherent in such estimates can result in larger unintentional errors in FVI, and the flexibility in estimating fair values also gives managers more discretion to manipulate FVI (Dechow, Myers, and Shakespeare [2010]).

Valuation concerns notwithstanding, income also plays an important contracting role in helping owners evaluate and incentivize managers. Valuing a firm is a distinct activity

from contracting with managers because firm value is affected by factors uncontrolled by managers such as macroeconomic shocks (Lambert [1993]). Since income is generally less influenced by those factors, it can provide useful information incremental to stock prices for evaluating managerial performance (Sloan [1993]). On one hand, FVI can be more useful for contracting if it is a more timely and relevant signal for managerial effort and more comparable across firms. For example, incorporating unrealized gains or losses on a loan portfolio into income may improve its usefulness as a contracting performance measure if these value changes are reflective of the quality of managerial decision making.

On the other hand, irrelevant fair value gains/losses and measurement errors can make FVI a noisier signal of manager performance and thereby less useful for contracting purposes. In particular, absent liquid markets, fair values are difficult to verify. Because contracts written on unverifiable income measures are harder to enforce, this lack of verifiability can reduce the contracting usefulness of FVI (e.g., Ball [2001], Watts [2006]). Further, the inclusion of unrealized fair value gains in compensation contracts can cause ex post settling-up problems because it is costly to recover past compensation if unrealized fair value gains do not materialize (Leone, Wu, and Zimmerman [2006]).

Given the competing arguments above, it is an open empirical question whether FVI or NI is a better summary measure of bank performance. We calculate FVI using banks' disclosures of the fair value of all of their financial instruments and compare its usefulness relative to NI for both valuation and compensation purposes. Following Bushman et al. [2006], we use valuation earnings coefficients to gauge the valuation weight earnings receive in stock price formation, and compensation earnings coefficients to gauge the contracting weight on earnings in compensation contracts. Specifically, valuation earnings coefficients refer to the coefficient on changes in earnings (FVI or NI) from regressing annual market-adjusted returns on changes in earnings, and compensation earnings coefficients refer to the

coefficient on changes in earnings from regressing changes in annual CEO cash compensation on changes in earnings after controlling for contemporaneous stock returns.

Using a broad sample of banks from 1996 to 2010, we find that valuation earnings coefficients for NI are more than twice as large as that for FVI and compensation earnings coefficients are positive and significant for NI but insignificant for FVI. These results indicate that NI receives a higher weight in both stock price formation and compensation contracts. These results are robust to using the overall association with contemporaneous stock returns (R^2) as an alternative approach to gauge valuation usefulness for earnings (Dechow [1994]).

We corroborate our main results by examining two attributes that are central to the usefulness of earnings: comparability and the ability to predict future cash flows. Using the approach developed by DeFranco, Kothari, and Verdi [2011] to measure comparability of earnings, we find that NI has significantly higher comparability than FVI. Further, we find that NI can better predict further cash flows up to five years than FVI. The fact that NI has a stronger overall association with returns and is better able to predict future cash flows relative to FVI indicates that the lower valuation weight on FVI is not simply due to lower persistence. Instead, our results collectively suggest that NI is a better summary measure of banks' periodic performance than FVI.

Further, we conduct cross-sectional tests to examine whether lower reliability contributes to the inferiority of FVI relative to NI. Lower reliability in reported fair values can come from two sources: inherent estimation difficulty and managerial flexibility to report opportunistically. Our first test sorts banks on the presence of Big N auditors, who are more likely to constrain managerial reporting flexibility but should not affect the inherent difficulty in estimating fair values. Our second test sorts banks on the extent of banks' consumer real estate loans, which involve less inherent fair value estimation difficulty (Ryan [2007]). We

find that the relative valuation usefulness of FVI is higher for banks with a higher proportion of consumer real estate loans and for banks with Big N auditors. These results are consistent with both the inherent estimation difficulty and managerial reporting flexibility contributing to lower reliability and inferior performance of FVI relative to NI. We also find that relative to NI, the valuation usefulness of FVI decreases during the recent financial crisis. This evidence is consistent with the financial crisis decreasing the reliability and usefulness of FVI as a performance measure relative to NI.

This study contributes to our understanding of the costs and benefits of fair value accounting versus historical cost accounting. Early studies in this literature have largely focused on the usefulness of fair values incremental to historical costs (Landsman [2007]). More recently, Hodder et al. [2006] examine the usefulness of FVI versus NI in conveying information about equity market risks. Our study adds to this line of research by providing new evidence on the relative ability of fair value versus historical cost accounting to provide a summary measure of banks' performance for both valuation and contracting purposes and on the source of the relative performance of the two income measures. Further, we also provide new evidence on comparability of fair values. Our finding on comparability is particularly important to the current fair value versus historical cost debate, as increased comparability is touted as one key benefit of fair value accounting (FASB [2010]). Additionally, our findings on the relative performance of FVI versus NI during the financial crisis contribute new evidence on the roles of fair value and historical cost accounting during the financial crisis.

Our findings have potential implications for standard setters. Despite the apparent conceptual appeal of fair value accounting, our results do not show that FVI provides a better summary measure of bank performance relative to NI for valuation or contracting purposes. However, we caution readers that our study provides evidence only on the ability of fair

value versus historical cost accounting to generate a single summary measure of periodic performance. While this is an important role for financial reporting, it is clearly not the only role. Our study does not speak to the other roles of financial reporting or the overall ranking of the two accounting systems. Further, it is possible that FVI would perform differently if all fair value gains/losses were required to be recognized in banks' financial statements. Finally, our results may be confounded by investors' potential inefficiency in setting stock prices or designing compensation contracts (e.g., investors may fixate on NI and ignore the useful information conveyed in FVI), though this concern is mitigated by our finding that NI can better predict future cash flows than FVI.

Section 2 provides background information, reviews prior literature, and develops our hypotheses. Section 3 describes our research design, and Section 4 discusses the sample and descriptive statistics. Section 5 reports the results of our tests. Section 6 concludes.

2. Background, Prior Research and Hypotheses

2.1 Current accounting practice for banks

Most of the assets and liabilities held by banks are financial instruments such as cash, securities, derivatives, loans, deposits, and debt. The majority of banks' financial instruments are currently measured on a historical cost basis under U.S. GAAP. Loans, which are banks' biggest asset, are generally reported at amortized historical costs on the balance sheet, net of a loan loss reserve for uncollectibility. On the income statement, the provision for loan losses reduces income, while interest revenue for loans is generally accrued using the effective historical rate that prevailed at loan origination. Deposit liabilities and long-term debt, which are banks' biggest source of capital, are accounted for on the balance sheet and income statement by most banks using historical cost conventions. Investments in debt securities

intended to be held-to-maturity (HTM) are also accounted for on a historical cost basis, with unrealized changes in fair value generally being unrecognized unless realized through sale.

However, current GAAP for banks involves a "mixed attribute" measurement approach, where some financial instruments are measured on a fair value basis. Investments in trading securities are measured at fair value, with unrealized changes in fair value being reported in net income. Available-for-sale (AFS) securities are measured at fair value on the balance sheet, but any unrealized changes in fair value are not recognized in net income but recorded as part of other comprehensive income. Loans held for sale are measured at the lower of cost or fair value.[1] Finally, derivative assets and liabilities (and the underlying hedged item) are measured at fair value, with changes in fair value being reported in net income or other comprehensive income, depending on the nature of the derivative (ASC Topics 320 and 942). Further, under ASC 825-10-50 (formerly referred to in the literature as SFAS 107), all entities (including banks) are required to disclose the fair value of their financial instruments. These fair value figures are audited as part of the annual audit (Barth, Beaver, and Landsman [1996]).

In May of 2010, the Financial Accounting Standards Board (FASB) proposed a significant change in the reporting of financial instruments. Under the proposal, financial instruments held for collection or payment of contractual cash flows, such as loans or certain debt securities and long-term debt, would be presented on the balance sheet at both amortized historical cost and fair value, with unrealized changes in fair value for these instruments reported in other comprehensive income. Other financial instruments, such as equity securities and non-hedging derivatives, would be reported on the balance sheet at fair value, with unrealized changes in fair value reported in net income. Deposit liabilities would

[1] ASC 825-10 (originally passed as SFAS 159) also allows firms to elect to report specific financial instruments at fair value (i.e., the fair value option) with changes in fair value being reported in net income beginning in 2007. However, the majority of banks have not used this option. Chang, Liu, and Ryan [2011] identify only 57 banks that used this fair value option once available (approximately 16% of their sample).

generally be reported on the balance sheet at both historical cost and present value measurement based upon current interest rates.

Under the proposal, the FASB envisioned that a continuous statement of comprehensive income would be required, whereby net income (which under the proposal is fairly close to current GAAP net income) and comprehensive income (which under the proposal is fairly close to the concept of fair value income) would be reported on the same performance statement. As of this writing, however, the FASB has backed off most of the provisions of the proposal described above due to strong opposition by the banking industry (Cohn [2011], Moore [2011]).

2.2 Related research

A variety of prior studies have examined the value relevance of fair values for various financial instruments held by banks. These studies generally focus on the relation between equity prices or returns and fair values, *incremental* to historical cost measures. Some studies (e.g., Eccher, Ramesh, and Thiagarajan [1996], Nelson [1996]) find that fair values are incrementally value relevant over historical costs for investment securities, but have no incremental explanatory power for other instruments such as loans, deposits, and debt. Other studies (e.g., Barth et al. [1996]) find that fair values for loans and debt do provide incremental explanatory power with respect to equity market values. Overall, the evidence from this line of research is largely mixed. The main takeaway from these studies is that fair values for financial instruments that are traded relatively actively and that are currently recognized at fair value, such as securities, seem to help explain variation in stock prices or returns. On the other hand, it is not clear that fair values for instruments traded less actively that are not currently recognized at fair value, such as loans, are value relevant to investors.

Dhaliwal et al. [1999] evaluate whether GAAP net income or comprehensive income is a better summary measure of performance for a broad sample of firms over the period of 1994-1995. Comprehensive income is traditional GAAP net income plus various gains and losses on items such as available for sale securities, certain derivatives, and foreign currency translations. For their broad sample of firms, they find that net income dominates comprehensive income in its association with contemporaneous stock returns and future cash flows. However, they find just the *opposite* among financial firms. For the financial firms, comprehensive income is found to dominate net income as a summary performance measure. Further, they indicate that comprehensive income's dominance among financial firms stems from its inclusion of unrealized gains and losses on AFS securities, of which financial firms often have significant holdings. However, Dhaliwal et al. [1999] do not evaluate whether GAAP net income or fair value income (which would include fair value changes for all bank assets and liabilities) is a better summary measure of bank performance for the valuation purpose. Nor do they examine the usefulness of income measures for contracting purposes.

Hodder et al. [2006] compare fair value income and net income in their ability to measure banks' equity risk. They find that the volatility of fair value income is more strongly associated with measures of equity market risk than net income, consistent with fair value income being more informative about banks' equity risk than net income. In a similar vein, Blankespoor, Linsmeier, Petroni, and Shakespeare [2013] compare the ability of leverage ratios based upon fair values vs. current GAAP values to capture banks' credit market risk, and find that fair value-based leverage ratios are more informative. Overall, these studies generally find that fair value income is more informative about banks' risk than net income.

2.3 Hypotheses

We consider the usefulness of FVI vs. NI as a summary performance measure for both valuation and contracting purposes. Investors demand a summary performance measure for both valuing a firm and motivating managers to take actions that maximize shareholder value. However, valuation and contracting are distinct activities, and the ranking of income measures for one purpose need not coincide with that for the other (Gjesdal [1981], Lambert [1993], Bushman et al. [2006]). Firm value is affected by both managerial effort and factors uncontrolled by managers such as macroeconomic shocks. While the valuation role of earnings is to facilitate investors' estimation of the total firm value, the contracting role of earnings is to help investors evaluate the part of firm value attributable to managerial effort. As such, the contracting role of earning depends critically on the sensitivity of earnings to managerial effort. Because accounting income is generally less influenced by factors uncontrolled by managers, it provides useful information incremental to stock prices for evaluating managerial contributions.

There are several reasons why FVI may be more useful for the valuation purpose than NI. First, proponents of fair value accounting argue that fair values better reflect current market conditions and risk, and hence provide more relevant and timely information for valuation than historical costs (FASB [2010], BC57). As FVI includes unrealized changes in the fair value of financial instruments, it reflects all changes in the expected cash flows or risk of these instruments during the current period. For example, if the expected credit quality of a bank's loan portfolio deteriorates in a given period, the price market participants would pay for the portfolio would go down. FVI would reflect this unrealized loss on a timely basis, and give users a potential "early warning" of increasing credit risk. NI, on the other hand, would provide insufficient warning of this credit deterioration because the loan loss reserve and impairment model are often too backward-looking and focused on "probable" losses that have already been incurred (Linsmeier [2011], Trott [2009]). Similarly, when the market

liquidity for a particular financial instrument improves, FVI would include an unrealized gain for any reduction in the liquidity discount a bank would incur if the instrument were converted to cash at current exit prices. In contrast, unless the instrument is a trading security or a derivative, NI would generally ignore this unrealized change in value.

Second, proponents of fair value accounting argue that FVI can be more comparable than NI (FASB [2010]). FVI contains unrealized gains/losses for *all* financial instruments, regardless of how they are held (e.g., loans vs. loan-backed securities) or classified (e.g., trading vs. held-to-maturity). In contrast, whether unrealized gains/losses are included in NI varies across banks, depending on how the instrument is held and classified. For example, unrealized gains and losses for the same security could be included in NI for banks that classify this security as a trading asset but excluded from NI of banks that classify it as an AFS or HTM investment. In contrast, FVI would include the unrealized gains and losses for this security for *all* banks, leading to higher comparability of FVI across banks. As another example, if different firms purchased the same asset at different points of time, current fair values would be the same but the historical costs could be significantly different due to over-time changes in the purchase price. FVI contains these unrealized gains/losses to recognize the asset at fair value and thus allows investors to better compare firms' abilities to time the market and their performance since asset acquisition. The higher comparability of FVI reduces the costs of analyzing financial statements and allows investors to extract more useful information for forecasting future cash flows and valuing a bank.

However, there are also reasons to believe that FVI may be less useful for valuation than NI. First, critics of fair value accounting argue that fair values are less compatible with banks' business model than historical costs. Many bank practitioners contend that unrealized fair value gains and losses on instruments not held for sale are irrelevant in light of how most bank executives "run their business" because banks create value by ensuring that the long-run

return on their loans and investments exceeds their cost of funds (ABA [2010]). For financial instruments that banks intend to hold until maturity, short-run fluctuations in estimated fair values are transitory and will reverse over the life of the instrument, and thus bear little or no relation to this long-term value creation process.[2] Therefore, recognizing such fair value gains and losses may add noise into FVI that bears little relation to banks' long-term value.

Second, fair values may contain larger measurement errors than historical costs. Most of the financial instruments that are measured at historical cost under current GAAP are not traded in active and liquid markets. These instruments include most loans, deposits, and many investment securities as well as non-public bank debt.[3] For this reason, fair values for these items are not usually based upon quoted market prices but rather are estimates by management using some valuation models that rely on a combination of market and non-market inputs. Given the inherent difficulty in estimating fair values for financial instruments, this subjective estimation process can result in large unintentional errors in FVI. Further, relative to measuring historical costs, estimating fair values of financial instruments without liquid markets affords managers discretion in choosing inputs and valuation models. This discretion gives managers more flexibility to manipulate earnings for opportunistic reasons (Dechow et al. [2010]), resulting in more potential for intentional errors in FVI.[4]

Overall, ex ante it is unclear whether FVI or NI is more useful for valuing a bank. Our first hypothesis, stated in the null form, is:

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[2] However, supporters of fair value accounting counter that even if bank executives do not care about the current fair value of their financial instruments, suppliers of bank capital do, and that banks that do not manage the risks that changes in fair values convey will likely encounter future financial difficulties (Ryan [2007]).

[3] While loans are occasionally sold by some banks, the average bank either does not sell loans or does not sell a large portion of loans. Less than one third of the bank-years in our sample report any loan sales over the year and the mean (median) balance of loans-held-for-sale at the end of the period is less than 2 (0.2) percent of gross loans. For the banks that do report loan sales over the fiscal year, the mean (median) percentage of net loans sold is approximately 2.7 (0.7) percent (untabulated).

[4] However, prior research has also argued that fair value accounting can constrain earnings manipulation better than historical cost accounting, because the former requires banks to recognize gains/losses in the period they occur, while the latter does not till a transaction (e.g., asset sale) occurs (Ryan [2007]).

H1: FVI and NI are equally useful summary measures of banks' performance for the valuation purpose.

Next, we compare the contracting usefulness of FVI versus NI for banks. Unlike valuation, the contracting usefulness of income measures depends on their ability to provide useful information for investors to evaluate managers' contributions to firm value. Similar to the discussion above, FVI can be more useful than NI for contracting if it provides a timelier, more relevant, and more comparable signal for managerial effort. For example, if managers make decisions to expose a bank to significant interest rate risk due to a mismatch in the duration of assets (loans) and liabilities (deposits and loans), increases in interest rates can lead to large losses in investor wealth and insolvency. FVI would include such losses in the period they occur, while NI would generally ignore these losses in the current period. On the other hand, if fair values are less compatible with banks' business models and contain larger measurement errors, FVI could be a noisier signal of managerial effort and thus less useful for contracting. Note that while these reasons affect both valuation and contracting usefulness in the same direction, the magnitude of their impacts on the two can differ.

Further, the efficient contracting literature (e.g., Ball [2001], Watts [2006]) suggests that FVI may be less useful than NI for contracting because of its lack of verifiability and ex post settling-up problems. First, when there are no liquid secondary markets, fair values are managers' estimates based on the subjective, unobservable inputs they choose. These fair value estimates are difficult to verify because they typically rely on assumptions about the future that even experts cannot agree upon. Because contracts written on unverifiable performance measures are difficult to be enforced in a court of law, the lack of verifiability for fair values can compromise the contracting usefulness of FVI.

Second, the inclusion of unrealized gains in FVI can cause ex-post settling up problems (e.g., Watts [2006], Leone et al. [2006]). As discussed above, managers have larger

discretion in estimating fair values, especially for financial instruments without liquid markets. When managers' compensation contracts are written on FVI, managers will receive more pay when they estimate an increase in the fair value of the financial instruments. However, it is difficult for investors to recover the pay when the unrealized fair value gain fails to materialize in the future. This ex-post settling-up problem can make FVI less useful for contracting than NI.

Given the discussions above, whether FVI is more or less useful for contacting than NI is an empirical question. Our second hypothesis, stated in the null form, is:

H2: FVI and NI are equally useful summary measures of banks' performance for the contracting purpose.

3. Research design

3.1 Test of the Valuation Hypothesis (H1)

Our main analysis uses the empirical framework in Bushman et al. [2006] to test our two hypotheses. To test H1, we evaluate how changes in NI versus changes in FVI fare in explaining contemporaneous stock returns. The idea behind this test is that a summary income measure should convey to users the underlying economic performance of the entity during the reporting period. This test uses contemporaneous stock returns, which represent revisions in investor expectations of future cash flows and the riskiness of those cash flows, as a proxy for the underlying economic performance. Specifically, to compare the association between stock returns and the two performance measures, we estimate the following regressions:

$$XRET_{it} = \alpha_o + \alpha_1 \Delta NI_{it} + \epsilon \quad (1)$$

$$XRET_{it} = \alpha_o + \alpha_1 \Delta FVI_{it} + \epsilon \quad (2)$$

$XRET_{it}$ is the annual buy and hold stock return for year t less the value-weighted market return over the same period. NI_{it} is net income before extraordinary items for year t scaled by market value of equity at the end of year t-1, and ΔNI_{it} is the first difference of this variable. FVI_{it} is fair value income for year t scaled by market value of equity at the end of year t-1 and ΔFVI_{it} is the first difference. FVI is essentially the net change in equity from non-owner transactions when all financial instruments are measured at fair value. Similar to prior research (e.g., Hodder et al. [2006]), we calculate FVI as income before extraordinary items plus items in OCI, plus any fair gains or losses on held to maturity securities, loans, deposits, bank debt, and any other financial instruments recognized at historical cost on the balance sheet, net of tax. The Appendix provides an example of how we calculate FVI for a sample firm.

Following Bushman et al. [2006], we evaluate the usefulness of each summary performance measure for valuation by comparing the α_1 coefficients in Equations (1) and (2), which capture the valuation weight on income measures in stock price formation. If FVI is a better (worse) summary measure of performance than NI for the valuation purpose, we expect it to receive a higher (lower) valuation weight (i.e., α_1).

Prior research (e.g., Collins and Kothari [1989]) finds that more transitory income measures have lower earnings response coefficients (ERC). Thus, because FVI includes more unrealized fair value gains and losses on financial instruments than NI and these components are generally transitory, it is tempting to conclude that the valuation coefficient (i.e., α_1) must be smaller for FVI than NI. However, by incorporating those unrealized fair value gains and losses, FVI can also contain more relevant information for firm valuation, which works to improve the association between FVI and stock returns. Barth [2006] contends that incorporating more forward looking information into income via fair values will tend to make

income less persistent and predictable but more strongly associated with future cash flows and changes in current firm value.

To better see this point, consider the following example. Suppose a bank raises only equity capital and invests solely in actively-traded marketable securities. The value of the bank's equity claim should equal the value of its security portfolio. A historical cost income measure like NI would include only realized interest and dividend income and would be highly persistent from period to period. FVI, on the other hand, would include realized income and all unrealized gains and losses on the security portfolio and would be more transitory from period to period. In this example, FVI is more transitory but also more relevant for valuation, and thus it is unclear whether FVI will receive a higher or lower valuation coefficient.

To further mitigate the concern that the valuation coefficients merely capture the transitory nature of FVI, we also follow prior research (e.g., Dechow [1994], Dhaliwal et al. [1999]) to compare the overall explanatory power (R^2) of Equations (1) and (2) using Vuong's Z-test [1989]. As long as transitory items are relevant to valuation and are measured reliably, their inclusion in FVI should not diminish the overall association between FVI and stock returns. In the above example, FVI would track perfectly with changes in equity values, while NI would have a weaker overall association (lower R^2) with changes in equity values. Empirically, Dhaliwal et al. [1999] find that for banks, comprehensive income that includes unrealized gains and losses on available for sale securities – which are completely transitory – has a stronger overall association with stock returns than net income.[5] This finding suggests that adding transitory elements to NI will *not* necessarily result in a weaker overall association with equity returns, particularly for banks. Therefore, we evaluate both the slope

[5] In untabulated analysis, we replicate the Dhaliwal et al. [1999] tests in our sample and find results consistent with theirs. Overall, comprehensive income for banks is more strongly associated with contemporaneous stock returns than traditional GAAP net income.

coefficient (α_1) and overall R^2 in Equations (1) and (2) when testing the valuation usefulness of FVI vs. NI (H1).

3.2 Test of the Contracting Hypothesis (H2)

To test the contracting usefulness of FVI vs. NI (H2), we also follow Bushman et al. [2006] to examine NI and FVI in their respective abilities to help explain changes in compensation. The idea behind this test is that a good summary performance measure should be useful to the extent it captures managerial contribution to firm success. The better a measure fares in this regard, the higher the weight it should receive in determining managerial compensation. We therefore estimate:

$$\Delta COMP_{it} = \alpha_o + \alpha_1 \Delta NI_{it} + \alpha_2 RET_{it} + \epsilon \quad (3)$$

$$\Delta COMP_{it} = \alpha_o + \alpha_1 \Delta FVI_{it} + \alpha_2 RET_{it} + \epsilon \quad (4)$$

$\Delta COMP_{it}$ is the percentage change in CEO cash compensation (salary and bonus). Following Bushman et al. [2006] and also consistent with prior compensation studies (Bushman and Smith [2001]), we focus on cash compensation as opposed to measures of total compensation because prior research finds that equity compensation has a weaker association with accounting and market performance measures than cash compensation. RET_{it} is the annual buy and hold return for the year. If FVI is a more (less) useful summary measure of performance for contracting with managers, we expect that the compensation weight or coefficient for FVI (i.e., α_1 in Equation (4)) is higher than that for NI (i.e., α_1 in Equation (3)). Similar to our test of the valuation usefulness, we also compare the overall explanatory power (R^2) of Equations (3) and (4) using Vuong's Z-test [1989].

4. Sample and descriptive statistics

We obtain the income and other banking data for our empirical tests from the SNL Financial Institutions database. We obtain stock return data from CRSP and compensation data from Execucomp. SNL collects regulatory data for all financial institutions required to file with the Federal Reserve and financial statement data from their SEC filings. SNL collects SFAS 107 data on the fair value of financial instruments that banks must disclose in the notes to their financial statements.

Our sample consists of all calendar-year commercial banks and thrifts (referred to simply as "banks" throughout the paper) from 1996 to 2010 for which we can obtain data. In total, for our main valuation analysis, we have 6,572 bank-year observations from 1996 to 2010 and 1,050 unique banks with necessary SNL and CRSP data required for the tests. The sample for the contracting analysis is much smaller due to the requirement of the compensation data from Execucomp, with 798 bank-year observations consisting of 175 unique banks. This small sample size limits the power of our contracting tests.

Panel A of Table 1 presents descriptive statistics for the variables in our empirical tests. To minimize the influence of outliers, ΔCOMP is truncated at the 5% and 95% levels; variables other than ΔNI and ΔFVI are truncated at the 1% and 99% levels.[6] For ΔNI and ΔFVI, Table 1 reports their raw values, while both decile ranks and truncated values (at the 1% and 99% levels) are used in the following regression analyses to mitigate the influence of skewness and potential outliers.

The average bank over our sample period has increasing profitability, with mean ΔNI equal to 1.0% of equity and the median equal to 0.6% of equity. For the average bank, the difference between ΔNI and ΔFVI is quite small at only 0.1% of market equity. However, we note that ΔFVI is more dispersed across banks and over time than ΔNI (the standard deviation =0.317 and 0.395 for ΔNI and ΔFVI, respectively). Thus, consistent with Hodder et al.

[6] Inferences are similar if we winsorize instead of truncate extreme values.

[2006], ΔFVI is more volatile than ΔNI. Stock returns, our proxy for economic income, are positive on average over our sample period, with a mean of 10%, and are (not surprisingly) more volatile than either ΔNI or ΔFVI once they are also adjusted for outliers. Finally, the average CEO in our sample has an increase in compensation of about 4.6% per year.

Panel B of Table 1 presents correlations between the income measures and returns. We discuss Spearman correlations for convenience. ΔNI and ΔFVI are positively correlated at 0.308 (p-value < 0.01). The correlation between contemporaneous abnormal returns and ΔNI, at 0.335 (p-value < 0.01), is stronger than the correlation between abnormal returns and ΔFVI, at 0.148 (p-value < 0.01). The correlation between ΔCOMP and ΔNI, at 0.286 (p-value < 0.01), is positive while the correlation between ΔCOMP and ΔFVI is 0.031 and statistically insignificantly. Overall, from the evidence in Table 1, it appears that ΔNI may be a better summary measure of performance than ΔFVI.

5. Results

5.1 Valuation usefulness (H1)

In Table 2, we present estimates of Equations (1) and (2). Panel A uses decile-ranked values (converted to [0,1]) of ΔNI and ΔFVI. Specifically, each year we rank each raw variable into deciles of 0–9 and then divide the decile ranks by 9. We use deciles ranks for two reasons. First, they mitigate the influence of high skewness and potential outliers. Second, they equalize the distribution for ΔNI and ΔFVI and thus eliminate the concern that any difference between the coefficients on ΔNI and ΔFVI may be attributable to the difference in their distributions (e.g., a smaller coefficient on ΔFVI may be merely due to the higher standard deviation (volatility) of ΔFVI). Panel B reports the results of using raw values of ΔNI and ΔFVI that have been trimmed at the 1st and 99th percentiles to mitigate the influence of skewness and potential outliers.

As the inferences from Panels A and B are similar, we focus our discussion here on Panel A for brevity. Not surprisingly, both ΔNI (t = 7.56) and ΔFVI (t = 3.76) are significantly positively associated with abnormal stock returns. However, the coefficient on ΔNI is larger than the coefficient on ΔFVI ($\chi 2 = 111.97$, two-tailed $p < 0.01$), indicating that NI receives a higher valuation weight/coefficient than FVI. Moving from the lowest to the highest decile of ΔNI, abnormal returns increase by 27%, while a similar movement across deciles of ΔFVI yields a predicted increase in returns of only about 10%. Moreover, the R^2 of Equation (1) is 5.9%, which is significantly larger than the R^2 of Equation (2) of 0.8% ($Z = 8.93$, two-tailed $p < 0.01$), indicating that FVI has a higher explanatory power of stock returns than NI.

The tests in Panels A and B have focused on a changes specification. In Panel C, we examine the robust of these findings to a levels specification similar to Dhaliwal et al. [1999], which regresses stock returns (RET) on the level of NI or FVI:

$$RET_{it} = \alpha_o + \alpha_1 NI_{it} + \epsilon \quad (1')$$
$$RET_{it} = \alpha_o + \alpha_1 FVI_{it} + \epsilon \quad (2')$$

We find that this alterative specification yields similar results: The coefficient on NI is higher than that on FVI, and NI also has greater explanatory power (R^2) than FVI.

Overall, the findings in Table 2 reject the null hypothesis in H1 in favor of NI. They are consistent with NI being a more useful summary measure of bank performance for the valuation purpose than FVI.

5.2 Contracting usefulness (H2)

In Table 3, we present estimates of Equations (3) and (4). As in Table 2, Panel A uses decile-ranked values of ΔNI and ΔFVI, while Panel B uses raw values that have been trimmed at the 1st and 99th percentiles. Across both panels, the contracting coefficient on ΔNI is significantly larger than the contracting coefficient on ΔFVI ($\chi^2 = 6.19$ and 12.34 in Panels

A and B, respectively). While the contracting coefficient on ΔNI is significantly different from zero in both panels (t = 3.76 and 2.47 in Panels A and B, respectively), it is statistically insignificant for ΔFVI (t = 1.50 and -0.16 in Panels A and B, respectively). Further, we find that ΔNI generally has a higher explanatory power (R^2) for CEO cash compensation than ΔFVI (Z=2.07 and 1.61 in Panels A and B, respectively). Overall, the results in Table 3 suggest that NI is a more useful summary measure of bank performance for the contracting purpose than FVI, and we therefore reject the null in H2 in favor of NI.

5.3 Comparability and predictive power for future cash flows

Having a summary performance measure that is comparable and can better predict future cash flows is critical for valuation and contracting purposes. Therefore, to supplement our main tests in Tables 2 and 3 we also examine the abilities of NI and FVI along these two dimensions (comparability and cash flow prediction).

5.3.1 Comparability

To test the comparability of FVI versus NI, we follow the approach in De Franco et al. [2011]. The idea behind their approach is that an income measure is comparable to the extent that two firms with the same economic news for the period have the same reported income. In the De Franco et al. [2011] approach, the accounting system maps economic news (proxied by stock returns) into an income measure. We first estimate the following bank-specific regressions each year from 2000 to 2010:

$$NI_{it} = \alpha_i + \beta_i RET_{it} + \epsilon_{it} \quad (5)$$

$$FVI_{it} = \alpha_i + \beta_i RET_{it} + \epsilon_{it} \quad (6)$$

These regressions are estimated each year for each bank using the current and prior four years' data. The estimated coefficients from this regression each year for each bank i, α_i and β_i, measure the mapping of returns into income (either FVI or NI). Then, we calculate bank i's expected income each year given its economic news using bank i's coefficients over the

five years in the estimation regression, and compare it to bank j's expected income each year assuming it experienced bank i's returns over the same five year period. The *negative* of the average absolute value of the difference between these two expected income figures over the five year period ending in year t, denoted $COMPACCT_{ijt}$, measures comparability between the incomes of any bank i and j combination as of year t. Note this measure can be calculated using either FVI or NI as the income measure.[7]

Following De Franco et al. [2011], we calculate two comparability measures at the bank-year level. The first, $COMPACCT4_{it}$, is the mean $COMPACCT_{ijt}$ for the four j banks with the highest (least negative) comparability to bank i as of year t. The second, $COMPACCTIND_{it}$, is the median $COMPACCT_{ijt}$ for bank i among all possible pairings with j banks as of year t. We use the median for this measure to mitigate the effect of extreme values of $COMPACCT_{ijt}$ among the universe of all banks in a given year.

Table 4 presents differences in comparability using FVI or NI as income measures. COMPACCT4 gauges how consistently income reflects the economic news in returns for the four most comparable banks. We find that both mean and median values of COMPACCT4 are higher when NI is used to measure income relative to FVI (two-tailed $p < 0.01$ in both cases). Results are similar using the COMPACCTIND measure, which gauges how consistently income reflects the economic news in returns for a given bank relative to all other banks in a given year. We find that both mean and median values of COMPACCTIND are higher when NI is used to measure income relative to FVI (two-tailed $p < 0.01$ in both

[7] We note that although both the returns test in Table 2 and the comparability test involve regressions of income measures and returns, they capture potentially different constructs. The returns test is designed to determine which income measure better explains equity returns, which are a proxy for underlying economic income. The comparability test is designed to determine which income measure maps return news into income more *consistently* across banks. It is therefore possible for one income measure to yield a lower overall association with returns for the average firm while at the same time yielding a more *consistent* mapping of returns and earnings *across* firms.

cases). Overall, the evidence in Table 4 suggests that using NI as a summary measure of bank performance leads to greater comparability relative to using FVI.

5.3.2 Cash flow prediction

If investors set stock prices and CEO compensation efficiently, then a stronger association between a particular performance measure and returns or compensation should mean that the performance measure is a better predictor of future cash flows. Thus, by comparing NI and FVI in their ability to predict future cash flows, we can help mitigate the concern that net income better explains stock returns or CEO cash compensation simply because investors and boards (irrationally) fixate on the income statement (see Skinner [1999] for an argument along these lines). Further, testing predictive power for future cash flows also rules out the possibility that fair value income is less strongly associated with stock returns simply because it has lower persistence. Specifically, we estimate the following regressions:

$$CF_{it+x} = \alpha_0 + \alpha_1 \Delta NI_{it} + \epsilon \quad (7)$$

$$CF_{it+x} = \alpha_0 + \alpha_1 \Delta FVI_{it} + \epsilon \quad (8)$$

Where CF_{it+x} is operating and financing cash flow for bank i and year t+x. Similar to our main analyses, we evaluate both the slope coefficient (α_1) and overall R^2 in Equations (7) and (8) to test the predictive power for future cash flows of FVI vs. NI.

One difficulty with this test is that operating cash flows are not well defined for financial institutions (e.g., Johnson [2009], Weiss and Yang [2007]). For example, increases and decreases in deposits are characterized as financing cash flows even though the health of a bank's operations is largely driven by the ability of a bank to grow their deposits, so some researchers argue that changes in deposits should be classified as operating cash flows (Johnson [2009]). As a result, we sum both operating and financing cash flows from SNL and

scale them by beginning market value of equity to calculate CF_{it}. We estimate future cash flows one, three, and five years ahead.

Results from estimating Equations (7) and (8) are presented in Table 5. Across all specifications that look one, three, and five years ahead, ΔNI is significantly related to future cash flows for all the three specifications (t = 5.47, 6.07 and 2.45, respectively). ΔFVI, on the other hand, is not significantly related to future cash flows in any of the three specifications in Table 5. Moreover, the coefficient on ΔNI is larger the ΔFVI in all three specifications (χ^2 = 52.51, 15.38 and 7.70, respectively) and the R^2 of Equation (7) is significantly larger than the R^2 in Equation (8) for future cash flows one or three years ahead. Overall, the results in Table 5 suggest that NI has higher predictive power for future cash flows than FVI. These findings corroborate our main analyses using stock returns and CEO compensation and suggest that NI dominates FVI for valuation and contracting at least in part because NI provides better information for predicting future cash flows.

5.4 Sources of the inferiority of FVI relative to NI

In this subsection we conduct two cross-sectional tests to shed light on the source of the inferiority of FVI relative to NI. Specifically, we test two potential explanations which could lower the reliability of FVI. The first is the inherent difficulty in estimating fair values, especially for financial instruments that are not traded, such as many loans, deposits, and bank debt. The second reason is managerial reporting flexibility. Many of the reported fair values that comprise FVI may not be as scrutinized as other figures in the financial statements since these fair values are not recognized and are instead disclosed in the notes (Libby, Nelson, and Hunton [2006]). Further, the greater flexibility afforded by fair value measurement can give managers more discretion for opportunistic reporting (Dechow et al. [2010]).

Our first test examines the presence of more reputable auditors. Banks with more reputable auditors are likely to have their fair value estimates scrutinized more closely, reducing the amount of measurement errors in fair value estimates due to the managerial reporting flexibility discussed above. In contrast, auditors should not affect the inherent difficulty in estimating fair values. Therefore, if managerial reporting flexibility contributes to the inferior performance of FVI relative to NI, we expect this relative inferiority to be smaller for banks with more reputable auditors. Consistent with prior auditing research, we use Big N auditors to proxy for more reputable auditors.

Our second test examines the extent to which banks' loan portfolio is comprised of consumer real estate loans. Relative to other types of loans, consumer real estate loans are more standardized and are sold and securitized more often and thus involve relatively less difficulty for fair value estimation (Ryan [2007]). If the inherent difficulty contributes to the inferior performance of FVI relative to NI, we expect this relative inferiority to be smaller for banks with a higher proportion of loans being consumer real estate loans. We conduct these two cross-sectional tests for the valuation usefulness only, because our contracting sample is confined to relatively large banks (as it requires CEO compensation from Execucomp) and also only few banks in our contracting sample (57 bank-years) have non-Big N auditors.

Panel A of Table 6 reports the results of how the relative contracting usefulness of FVI compared with NI varies with Big-N auditors. We find that the difference in the valuation coefficient between NI and FVI is smaller for banks with Big-N auditors (0.158) than for banks with non-Big-N auditors (0.178), though this difference is not statistically significant. Further, the difference in the explanatory power between NI and FVI is also smaller for banks with Big-N auditors (0.044) than for banks with non-Big-N auditors (0.059) and this difference is marginally significant (Z= -1.39, one-tailed $p < 0.10$). These results indicate that the presence of more reputable auditors is associated with a smaller difference in

the valuation usefulness between the two income measures, suggesting that the inferiority of FVI relative to NI is at least partially attributable to managerial reporting discretion.

Panel B reports the cross-sectional results using the proportion of loans being consumer real estate loans. Each year we split all banks into two groups based on the median of the proportion of loans being consumer real estate loans. The difference in the valuation coefficient between the two income measures is significantly smaller for banks with a higher proportion of consumer real estate loans (0.148 and 0.213 for banks with a higher and lower proportion of consumer real estate loans, respectively; χ^2=3.66). Further, the difference in the explanatory power between the two income measures is also smaller for is banks with a higher proportion of consumer real estate loans (0.044 and 0.063 for banks with a higher and lower proportion of consumer real estate loans respectively; Z=1.66, one-tailed $p < 0.05$). These results suggest that the relative performance of FVI compared with NI improves when the fair value of loans is relatively easier to estimate. Overall, the results in Table 6 suggest that both inherent estimation difficulties and managerial reporting flexibility contribute to the inferiority of FVI relative to NI as a summary performance measure for banks.

5.5 Relative performance of FVI vs. NI pre- and post- the credit crisis

The debate on the costs and benefits of fair values relative to historical costs was intensified by the credit crisis that occurred in 2007. In this subsection we examine how the relative performance of FVI vs. NI changes from the pre-credit crisis (before 2007) period to the post-credit crisis (2007 and after) period. On one hand, the illiquidity of many markets during the crisis increases the inherent difficulty in fair value measurement (FASB [2008], Ryan [2008]), and managers may also have heightened incentives to manipulate fair value estimates to delay the reporting of losses (Ramanna and Watts [2007], Laux and Leuz [2010]). Therefore, one might expect the performance of FVI relative to NI is worsened by

the crisis. However, on the other hand, proponents of fair value accounting contend that fair values for many financial instruments can provide especially more relevant and timelier information about bank performance than historical costs during crisis times (e.g., Linsmeier [2011]). Thus, one might expect the relative performance of FVI compared with NI to improve in the post-crisis period.

Table 7 reports the results of our pre- and post-crisis tests for the valuation usefulness of FVI relative to NI. Because of the sample size limitation, we do not examine the contracting usefulness for this test. We find that the difference in the valuation coefficient between FVI and NI is larger in the post-crisis period (0.186) than in the pre-crisis period (0.162), although this difference across the two periods is not statistically significant. We observe the same pattern for the explanatory power: the difference in the explanatory power between FVI and NI is also larger in the post-crisis period (0.093) than in the pre-crisis period (0.042) and this difference across the two periods is statistically significant ($Z= -3.51$, one-tailed $p < 0.01$). Overall, the results in Table 7 indicate that the relative usefulness of FVI compared with NI decreases during the financial crisis, consistent with the crisis increasing the inherent difficulty in fair value measurement and/or heightening managers' incentives to manipulate fair values to delay reporting losses.

6. Conclusion

In this study we compare the ability of income based on fair values (FVI) and GAAP net income (NI) to summarize periodic performance for a large sample of banks from 1996 to 2010. Providing a useful summary performance measure represents an important goal of financial reporting because investors and contracting parties demand a single performance measure that can be benchmarked against other firms and used for investment and contracting decision making. Firms also rely on a single earnings metric in their external financial

reporting and internal decision-making.We focus on banks because the ongoing fair value debate centers primarily around the accounting for financial instruments and these items comprise the vast majority of banks' assets and liabilities.

We consider summarizing periodic performance from both a valuation perspective and a contracting perspective. From a valuation standpoint, we find that NI has both a larger valuation weight in a returns regression and a stronger overall association with stock returns relative to FVI. From a contracting standpoint, we find that NI has both a larger coefficient and a higher explanatory power in explaining CEO cash compensation than FVI. Further, we find that relative to FVI, NI is more comparable across banks and also performs better in predicting future cash flows up to five years ahead. In addition, we find that the relative inferior performance of FVI compared with NI is smaller when a bank hires a more reputable auditor and/or owns a higher proportion of consumer real estate loans, suggesting that both the inherent difficulty in fair value measurement and managerial reporting flexibility contribute to lower reliability and usefulness of FVI compared with NI. Finally, we find that the relative performance of FVI compared with NI worsens during the recent credit crisis, consistent with the credit crisis increasing the inherent difficulty in fair value measurement and/or heightening managers' incentives to report fair values opportunistically.

Our findings contribute to our understanding of the costs and benefits of fair value accounting versus historical cost accounting by providing new evidence on the relative ability of fair value versus historical cost accounting to provide a summary measure of banks' performance for both valuation and contracting purposes. Our findings also have potential implications for standard setters. Despite the apparent conceptual appeal of fair value accounting, our results show that FVI based upon currently reported data does not provide a better summary measure of bank performance relative to NI for valuation or contracting purposes.

Our findings are subject to some important caveats, however. First, summarizing periodic performance in a single measure is an important role for financial reporting, but it is not the only role. It is possible that fair value measures enhance the usefulness of financial reporting along other dimensions. Our results cannot speak to these effects. Second, since many of the unrealized gains and losses in FVI are currently only disclosed, it is possible that the performance of FVI would improve in our tests if these gains and losses were forced to be recognized in the financial statements. Our results cannot speak to these effects either. Finally, to the extent that investors fail to efficiently use income measures in setting stock prices and designing executive compensation contracts, our results may be confounded by such inefficiency. However, our finding that NI predicts fundamentals like future cash flows better than FVI helps mitigate this concern.

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Appendix

This appendix provides an example of how the fair value income (FVI) is calculated for this paper in a specific year using a real company randomly selected from our sample, MidSouth Bancorp, Inc. (hereafter referred to as "MidSouth").

Excerpt from MidSouth 2005 10-K (in thousands)

Net income before extraordinary items	7,274
Other comprehensive income (OCI)	(1,405)

	2005 Carrying amount	Fair value	2004 Carrying amount	Fair value
Financial assets:				
Securities held-to-maturity	19,611	20,151	22,852	24,171
Loans, net	438,439	441,100	382,621	382,661
Financial liabilities:				
Interest bearing deposits	446,992	446,899	405,724	405,614
Junior subordinated debentures	15,465	15,253	15,465	16,165

FVI is calculated as the net income before extraordinary items plus OCI[8] and the implied gain/loss from the SFAS 107 disclosures. For MidSouth in 2005, the implied gain/loss from the SFAS 107 disclosures is calculated as follows:

	2005 Carrying amount	Fair value	2004 Carrying amount	Fair value
Total financial assets	458,050	461,251	405,473	406,832
Fair value difference	3,201		1,359	
Change in fair value difference	1,842			
Total financial liabilities	462,457	462,152	421,189	421,779
Fair value difference	305		(590)	
Change in fair value difference	895			
Net change in fair value difference	2,737			

Accordingly, the fair value income for MidSouth in 2005 is calculated as follows:

	Pre-tax	Tax-adjusted[9]
Net income before extraordinary items		7,274
Other comprehensive income		(1,405)
Implied SFAS 107 gain/loss	2,737	1,779
FVI		7,649

[8] Note, while OCI includes unrealized gains and losses on AFS securities, foreign-currency translation adjustments, minimum-pension liability adjustments, unrealized gains/losses related to the effective portion of cash-flow hedges, and the non-credit portion of an other-than-temporary impairment for debt securities (beginning in 2009), gains and losses on AFS securities are the most material component for the average bank (Hodder et al. [2006]). For our sample, the mean (median) of the unrealized gains and losses on AFS securities as a percentage of total OCI is approximately 94 (100) percent (untabulated). In the example used in this appendix, the unrealized losses on AFS securities for MidSouth are 99.98 percent of their OCI in 2005.

[9] To tax-adjust, we follow Hodder et al. [2006] and use the 35 percent corporate income tax rate.

Table 1: Descriptive Statistics and Correlations

Panel A: Descriptive statistics

Variable	*N*	*Mean*	*P10*	*P25*	*P50*	*P75*	*P90*	*Std Dev*
ΔNI_{it}	6,572	0.010	-0.036	-0.006	0.006	0.018	0.041	0.317
ΔFVI_{it}	6,572	0.009	-0.185	-0.065	0.003	0.067	0.188	0.395
RET_{it}	6,572	0.096	-0.304	-0.117	0.075	0.287	0.527	0.339
$XRET_{it}$	6,572	0.009	-0.424	-0.228	-0.024	0.228	0.490	0.349
$\Delta COMP_{it}$	798	0.046	-0.221	0.000	0.047	0.141	0.285	0.202
CF_{it}	5,597	0.619	-0.191	0.128	0.461	0.956	1.723	0.932

Panel B: Pearson (top) and Spearman (bottom) Correlations

	ΔNI_{it}	ΔFVI_{it}	RET_{it}	$XRET_{it}$	$\Delta COMP_{it}$
ΔNI_{it}		**0.602**	**0.089**	**0.053**	0.033
ΔFVI_{it}	**0.308**		**0.089**	**0.057**	0.005
RET_{it}	**0.420**	**0.147**		**0.824**	**0.185**
$XRET_{it}$	**0.335**	**0.148**	**0.823**		**0.153**
$\Delta COMP_{it}$	**0.286**	0.031	**0.213**	**0.208**	

Bold text indicates significance at the 0.01 level or better, two-tailed.

The full sample for our main analysis includes 6,572 bank-year observations, averaging 438 banks per year, for the years 1996 – 2010. A total of 1,050 unique banks are included during the sample period. The subsample for which we have compensation data includes 798 bank-year observations from a total of 175 unique banks during the sample period. Panel A reports descriptive statistics over the entire sample period where data is available. Panel B reports correlations between the variables of interest. To minimize the influence of outliers, $\Delta COMP_{it}$ is truncated at the 5% and 95% levels; variables other than ΔNI_{it} and ΔFVI_{it} are truncated at the 1% and 99% levels. ΔNI_{it} and ΔFVI_{it} are not truncated for this table because we use ranks of the variables in our main analysis. Variable definitions are as follows:

NI_{it} = Net income before extraordinary items for firm i in year t divided by market value of equity at the end of year t-1.

ΔNI_{it} = Change in NI_{it} for firm i from year t-1 to year t.

FVI_{it} = Fair value income before extraordinary items for firm i in year t divided by market value of equity at the end of year t-1. Fair value income is the sum of net income before extraordinary items plus other comprehensive income and the implied gain (loss) related to the SFAS 107 fair value disclosures, net of the related tax effect, in year t (see the Appendix).

ΔFVI_{it} = Change in FVI_{it} for firm i from year t-1 to year t.

RET_{it} = Annual buy-and-hold return for firm i accumulated over year t.

$XRET_{it}$ = Annual buy-and-hold return for firm i accumulated over year t less the CRSP value-weighted market return over the same period.

$\Delta COMP_{it}$ = Percentage change in CEO total cash compensation (salary and bonus) from year t-1 to year t.

CF_{it} = Total operating and financing cash flows in year t divided by market value of equity at the end of year t-1.

Table 2: Valuation Role of Earnings

$$XRET_{it} = \alpha_o + \alpha_1 \Delta NI_{it} + \epsilon \quad (1)$$
$$XRET_{it} = \alpha_o + \alpha_1 \Delta FVI_{it} + \epsilon \quad (2)$$

Panel A: Valuation Earnings Coefficient – Ranks

	NI Model			*FVI Model*		
	Coefficient	*t-stat*		*Coefficient*	*t-stat*	
Constant	-0.124	-1.902	*	-0.040	-0.593	
ΔNI_{it}	0.266	7.563	***			
ΔFVI_{it}				0.098	3.763	***
Adjusted R^2	0.059			0.008		
Observations	6,572			6,572		
Test the difference in α_1 across the two equations						
χ^2-stat		111.97	***			
Test the difference in R^2 across the two equations						
Z-stat		8.93	***			

Panel B: Valuation Earnings Coefficient – Raw

	NI Model			*FVI Model*		
	Coefficient	*t-stat*		*Coefficient*	*t-stat*	
Constant	0.011	0.174		0.014	0.217	
ΔNI_{it}	1.091	5.181	***			
ΔFVI_{it}				0.183	2.318	**
Adjusted R^2	0.050			0.010		
Observations	6,406			6,406		
Test the difference in α_1 across the two equations						
χ^2-stat		132.08	***			
Test the difference in R^2 across the two equations						
Z-stat		6.26	***			

Table 2, continued

$$RET_{it} = \alpha_o + \alpha_1 NI_{it} + \epsilon \quad (1')$$
$$RET_{it} = \alpha_o + \alpha_1 FVI_{it} + \epsilon \quad (2')$$

Panel C: Valuation Earnings Coefficient – Levels Specification

	NI Model			*FVI Model*		
	Coefficient	*t-stat*		*Coefficient*	*t-stat*	
Constant	-0.055	-1.001		0.010	0.187	
NI_{it}	0.309	10.780	***			
FVI_{it}				0.178	7.877	**
Adjusted R^2	0.093			0.031		
Observations	6,886			6,886		
Test the difference in α_1 across the two equations						
χ^2-stat		105.41	***			
Test the difference in R^2 across the two equations						
Z-stat		9.61	***			

This table tests the hypothesis that NI and FVI are equally useful measures of performance for valuation. Panel A follows the valuation analysis in Bushman et al. [2006] and examines the ability of ΔNI_{it} and ΔFVI_{it} to independently explain $XRET_{it}$. We use yearly decile ranks of ΔNI_{it} and ΔFVI_{it} (converted to [0,1]) in our analysis. The regressions are estimated simultaneously due to correlated residuals to test coefficient equality between ΔNI_{jt} and ΔFVI_{jt} in Equations (1) and (2). Vuong's [1989] Z-statistic is also reported and tests the null hypothesis that the NI model and FVI model are equally close in their ability to explain $XRET_{it}$. A positive number indicates that ΔNI_{it} is better at explaining $XRET_{it}$; a negative number indicates that ΔFVI_{it} is better at explaining $XRET_{it}$. Panel B performs the same analysis with the raw values of ΔNI_{it} and ΔFVI_{it}, truncated at the 1% and 99% levels. Panel C follows the valuation analysis in Dhaliwal et al. [1999] which uses a levels specification. Consistent with Panel A, we use yearly decile ranks of NI_{it} and FVI_{it} (converted to [0,1]) in our analysis. To minimize the influence of outliers, all other variables are truncated at the 1% and 99% levels. t-statistics and p-values are based on standard errors that have been adjusted for clustering by firm and year (Peterson [2009]). *, **, *** indicates significance (two-tailed) at the 10%, 5%, and 1% levels, respectively. Variables are as defined in Table 1.

Table 3: Contracting Role of Earnings

$$\Delta COMP_{it} = \alpha_o + \alpha_1 \Delta NI_{it} + \alpha_2 RET_{it} + \epsilon \quad (3)$$

$$\Delta COMP_{it} = \alpha_o + \alpha_1 \Delta FVI_{it} + \alpha_2 RET_{it} + \epsilon \quad (4)$$

Panel A: Contracting Earnings Coefficient – Ranks

	NI Model			*FVI Model*		
	Coefficient	*t-stat*		*Coefficient*	*t-stat*	
Constant	-0.023	-1.277		0.011	0.513	
ΔNI_{it}	0.121	3.760	***			
ΔFVI_{it}				0.049	1.501	
RET_{it}	0.090	2.833	***	0.118	3.601	***
Adjusted R^2	0.065			0.037		
Observations	798			798		
Test the difference in α_1 across the two equations						
	χ^2-stat	6.19	**			
Test the difference in R^2 across the two equations						
	Z-stat	2.07	**			

Panel B: Contracting Earnings Coefficient – Raw

	NI Model			*FVI Model*		
	Coefficient	*t-stat*		*Coefficient*	*t-stat*	
Constant	0.035	2.855	***	0.034	2.647	***
ΔNI_{it}	0.560	2.465	**			
ΔFVI_{it}				-0.008	-0.161	
RET_{it}	0.101	3.019	***	0.130	4.040	***
Adjusted R^2	0.045			0.032		
Observations	779			779		
Test the difference in α_1 across the two equations						
	χ^2-stat	12.34	***			
Test the difference in R^2 across the two equations						
	Z-stat	1.61				

This table tests the hypothesis that NI and FVI are equally useful measures of performance for contracting. Panel A follows the contracting analysis in Bushman et al. [2006] and examines the ability of ΔNI_{it} and ΔFVI_{it} to explain $\Delta COMP_{it}$. We use yearly decile ranks of ΔNI_{it} and ΔFVI_{it} (converted to [0,1]) in our analysis. The regressions are estimated simultaneously due to correlated residuals to test coefficient equality between ΔNI_{jt} and ΔFVI_{jt} in Equations (3) and (4). Vuong's [1989] Z-statistic is also reported and tests the null hypothesis that the NI model and FVI model are equally close in their ability to explain $\Delta COMP_{it}$. A positive number indicates that ΔNI_{it} is better at explaining $\Delta COMP_{it}$; a negative number indicates that ΔFVI_{it} is better at explaining

$\Delta COMP_{it}$. Panel B performs the same analysis with the raw values of ΔNI_{it} and ΔFVI_{it}, truncated at the 1% and 99% levels. To minimize the influence of outliers, $\Delta COMP_{it}$ is truncated at the 5% and 95% levels; all other variables are truncated at the 1% and 99% levels. t-statistics and p-values are based on standard errors that have been adjusted for clustering by firm and year (Peterson [2009]). *, **, *** indicates significance (two-tailed) at the 10%, 5%, and 1% levels, respectively. Variables are as defined in Table 1.

Table 4: Comparability Measures

		$COMPACCT4_{it}$				$COMPACCTIND_{it}$			
Variable	*Obs.*	*Mean*		*Median*		*Mean*		*Median*	
NI_{it}	2,895	(0.367)		(0.200)		(2.609)		(1.970)	
FVI_{it}	2,895	(0.854)		(0.560)		(5.675)		(4.810)	
NI_{it} -FVI_{it}	2,895	0.487	***	0.360	***	3.066	***	2.840	***

This table tests the comparability of NI versus FVI for the years 2000 – 2010. The years 1996 – 1999 are excluded because we require data for the prior four years to calculate comparability. The comparability measures are bank-year level measures calculated in the same manner as in De Franco et al. [2011]. The comparability measures are based on the premise that if firms have experienced the *same* set of economic events they should have similar financial statements. These measures are operationalized by first developing a mapping of economic events into a firm's accounting system by estimating the following regression for each firm i using the prior four years and current year: $Income_{it} = \alpha_i + \beta_i RET_{it} + \epsilon_{it}$, where $Income_{it}$ is separately estimated as NI_{it} or FVI_{it}. To estimate the "closeness" or comparability of two firms, the predicted earnings of each firm i is calculated using the parameters from the prior regression, and it is compared to the predicted earnings of each other firm j using the economic events of firm i. That is, we calculate $PredictedIncome_{it} = \hat{\alpha}_i + \hat{\beta}_i RET_{it}$ and $PredictedIncome_{jt} = \hat{\alpha}_j + \hat{\beta}_j RET_{it}$ for each other firm j in our sample, and the comparability between firm i and firm j ($COMPACCT_{ijt}$) is calculated as the negative value of the average absolute difference between the predicted incomes for firm i and firm j over the five year period. $COMPACCT4_{it}$ is the average $COMPACCT_{ijt}$ for the four firms j with the highest comparability to firm i in year t. $COMPACCTIND_{it}$ is the median $COMPACCT_{ijt}$ for all other firms j to firm i in year t. Firms with less negative $COMPACCT4_{it}$ and $COMPACCTIND_{it}$ have accounting functions that are more comparable than those in their peer group and the banking industry, respectively. The differences between the mean and median of $COMPACCT4_{it}$ and $COMPACCTIND_{it}$ calculated using the two alternative income measures are then calculated and tested for statistical significance. To minimize the influence of outliers, all variables are truncated at the 1% and 99% levels. *, **, *** indicates significance (two-tailed) at the 10%, 5%, and 1% levels, respectively. Other variables are as defined in Table 1.

Table 5: Predictability of Cash Flows

$$CF_{it+x} = \alpha_o + \alpha_1 \Delta NI_{it} + \epsilon \quad (7)$$

$$CF_{it+x} = \alpha_o + \alpha_1 \Delta FVI_{it} + \epsilon \quad (8)$$

1-Year Ahead

	NI Model			*FVI Model*		
	Coefficient	*t-stat*		*Coefficient*	*t-stat*	
Constant	0.368	7.017	***	0.569	11.570	***
ΔNI_{it}	0.411	5.466	***			
ΔFVI_{it}				0.018	0.562	
Adjusted R^2	0.021			-0.000		
Observations	4,683			4,683		
Test the difference in α_1 across the two equations						
χ^2-stat		52.51	***			
Test the difference in R^2 across the two equations						
Z-stat		4.55	***			

3-Years Ahead

	Coefficient	*t-stat*		*Coefficient*	*t-stat*	
Constant	0.370	6.357	***	0.495	6.538	***
ΔNI_{it}	0.287	6.072	***			
ΔFVI_{it}				0.038	0.732	
Adjusted R^2	0.011			-0.000		
Observations	3,372			3,372		
Test the difference in α_1 across the two equations						
χ^2-stat		15.38	***			
Test the difference in R^2 across the two equations						
Z-stat		2.85	***			

5-Years Ahead

	Coefficient	*t-stat*		*Coefficient*	*t-stat*	
Constant	0.340	7.590	***	0.447	8.493	***
ΔNI_{it}	0.210	2.451	**			
ΔFVI_{it}				-0.006	-0.114	
Adjusted R^2	0.006			-0.000		
Observations	2,157			2,157		
Test the difference in α_1 across the two equations						
χ^2-stat		7.70	***			
Test the difference in R^2 across the two equations						
Z-stat		1.58				

This table examines the ability of ΔNI_{it} and ΔFVI_{it} to independently predict CF_{it+x}. We use yearly decile ranks of ΔNI_{it} and ΔFVI_{it} (converted to [0,1]) in our analysis. The regressions are estimated simultaneously due to correlated residuals to test coefficient equality between ΔNI_{jt} and ΔFVI_{jt} in Equations (7) and (8). Vuong's [1989] Z-statistic is also reported and tests the null hypothesis that the NI model and FVI model are equally close in their ability to explain CF_{it+x}. A positive number indicates that ΔNI_{it} is better at predicting CF_{it+x}; a negative number indicates that

ΔFVI_{it} is better at predicting CF_{it+x}. To minimize the influence of outliers, all other variables are truncated at the 1% and 99% levels. t-statistics and p-values are based on standard errors that have been adjusted for clustering by firm and year (Peterson [2009]). *, **, *** indicates significance (two-tailed) at the 10%, 5%, and 1% levels, respectively. Variables are as defined in Table 1.

Table 6: Valuation Earnings Coefficients – Cross-Sectional Analysis

$XRET_{it} = \alpha_o + \alpha_1 \Delta NI_{it} + \epsilon$ (1)

$XRET_{it} = \alpha_o + \alpha_1 \Delta FVI_{it} + \epsilon$ (2)

Panel A: Big N Auditors

	Big N Auditors						*Non-Big N Auditors*					
	NI Model			*FVI Model*			*NI Model*			*FVI Model*		
	Coefficient	*t-stat*		*Coefficient*	*t-stat*		*Coefficient*	*t-stat*		*Coefficient*	*t-stat*	
Constant	-0.080	-6.968	***	0.000	0.022		-0.165	-15.730	***	-0.077	-7.198	***
ΔNI_{it}	0.253	13.150	***				0.277	15.650	***			
ΔFVI_{it}				0.095	4.707	***				0.099	5.543	***
Adjusted R^2	0.051			0.007			0.068			0.009		
Observations	3,224			3,224			3,347			3,347		
	Difference in α_1 across the two equations	χ^2-*stat*		Difference in the differences across the two subsamples	χ^2-*stat*		Difference in α_1 across the two equations	χ^2-*stat*				
	0.158	42.57	***				0.178	72.40	***			
				-0.020	0.37							
	Difference in R^2 across the two equations	*Z-stat*		Difference in the differences across the two subsamples	*Z-stat*		Difference in R^2 across the two equations	*Z-stat*				
	0.044	5.69	***				0.059	6.99	***			
				-0.015	-1.39	*						

Table 6, Continued

Panel B: Consumer Real Estate Loans

	Below Median Consumer Real Estate Loans						*Above Median Consumer Real Estate Loans*					
	NI Model			*FVI Model*			*NI Model*			*FVI Model*		
	Coefficient	*t-stat*		*Coefficient*	*t-stat*		*Coefficient*	*t-stat*		*Coefficient*	*t-stat*	
Constant	-0.145	-11.610	***	-0.033	-2.584	***	-0.109	-9.747	***	-0.040	-3.425	***
ΔNI_{it}	0.297	14.400	***				0.240	12.36	***			
ΔFVI_{it}				0.084	3.937	***				0.092	4.706	***
Adjusted R^2	0.068			0.005			0.051			0.007		
Observations	2,832			2,832			2,850			2,850		
	Difference in α_1 across the two equations	*χ^2-stat*		Difference in the differences across the two subsamples	*χ^2-stat*		Difference in α_1 across the two equations	*χ^2-stat*				
	0.213	76.69	***				0.148	38.38	***			
				0.065	3.66	**						
	Difference in R^2 across the two equations	*Z-stat*		Difference in the differences across the two subsamples	*Z-stat*		Difference in R^2 across the two equations	*Z-stat*				
	0.063	6.76	***				0.044	5.30	***			
				0.019	1.66	**						

This table examines cross-sectional differences in the relative valuation weights placed on ΔNI_{it} and ΔFVI_{it}. Panel A follows the valuation analysis in Bushman et al. [2006] and examines the ability of ΔNI_{it} and ΔFVI_{it} to explain $\Delta XRET_{it}$ separately for firms with and without Big N auditors. Panel B follows the valuation analysis in Bushman et al. [2006] and examines the ability of ΔNI_{it} and ΔFVI_{it} to explain $\Delta XRET_{it}$ separately for firms with above and below median percentages of consumer real estate loans. We use yearly decile ranks of ΔNI_{it} and ΔFVI_{it} (converted to [0,1]) in our analysis. The regressions are estimated simultaneously due to correlated residuals to test coefficient equality between ΔNI_{jt} and ΔFVI_{jt} in Equations (1) and (2). Vuong's [1989] Z-statistic is also reported and tests the null hypothesis that the NI model and FVI model are equally close in their ability to explain $XRET_{it}$. A positive number indicates that ΔNI_{it} is better at explaining $XRET_{it}$; a negative number indicates that ΔFVI_{it} is better at explaining $XRET_{it}$. The difference in R^2 across subsamples is calculated by comparing the Vuong Z-statistics for each subsamples. The difference in Z-statistics is asymptotically normal. Assuming independence in the residuals (which is a maintained assumption with the Vuong test), the standard error of the difference in Z statistics is equal to the square root of the sum of the variances of the two Z-statistics. To minimize the influence of outliers, all other variables are truncated at the 1% and 99% levels. t-

statistics and p-values are based on standard errors that have been adjusted for clustering by firm and year (Peterson [2009]). *, **, *** indicates significance (one-tailed) at the 10%, 5%, and 1% levels, respectively. Variables are as defined in Table 1.

Table 7: Changes in Valuation Earnings Coefficients Pre and Post Financial Crisis

$$XRET_{it} = \alpha_0 + \alpha_1 \Delta NI_{it} + \epsilon \quad (1)$$

$$XRET_{it} = \alpha_0 + \alpha_1 \Delta FVI_{it} + \epsilon \quad (2)$$

	Pre Financial Crisis (1996 – 2006)						*Post Financial Crisis (2007 – 2010)*					
	NI Model			*FVI Model*			*NI Model*			*FVI Model*		
	Coefficient	*t-stat*		*Coefficient*	*t-stat*		*Coefficient*	*t-stat*		*Coefficient*	*t-stat*	
Constant	-0.048	-0.670		0.034	0.452		-0.343	-4.066	***	-0.250	-2.706	***
ΔNI_{it}	0.221	11.04	***				0.397	3.704	***			
ΔFVI_{it}				0.059	4.787	***				0.211	2.911	***
Adjusted R^2	0.045			0.003			0.129			0.036		
Observations	4,874			4,874			1,698			1,698		
	Difference in α_1 across the two equations	χ^2-*stat*		Difference in the differences across the two subsamples	χ^2-*stat*		Difference in α_1 across the two equations	χ^2-*stat*				
	0.162	76.20	***	-0.024	0.57		0.186	48.76	***			
	Difference in R^2 across the two equations	*Z-stat*		Difference in the differences across the two subsamples	*Z-stat*		Difference in R^2 across the two equations	*Z-stat*				
	0.042	7.01	***	-0.051	-3.51	***	0.093	6.48	***			

This table examines the valuation coefficient pre- and post-crisis. We follow the valuation analysis in Bushman et al. [2006] and examine the ability of ΔNI_{it} and ΔFVI_{it} to independently explain $XRET_{it}$ separately in the 1996 – 2006 and 2007 – 2010 periods to examine how the relation changed over time. We use yearly decile ranks of ΔNI_{it} and ΔFVI_{it} (converted to [0,1]) in our analysis. The regressions are estimated simultaneously due to correlated residuals to test coefficient equality between ΔNI_{jt} and ΔFVI_{jt} in Equations (1) and (2). Vuong's [1989] Z-statistic is also reported and tests the null hypothesis that the NI model and FVI model are equally close in their ability to explain $XRET_{it}$. A positive number indicates that ΔNI_{it} is better at explaining $XRET_{it}$; a negative number indicates that ΔFVI_{it} is better at explaining $XRET_{it}$. The difference in R^2 across subsamples is calculated by comparing the Vuong Z-statistics for each subsamples. The difference in Z-statistics is asymptotically normal. Assuming independence in the residuals (which is a maintained assumption with the Vuong test), the standard error of the difference in Z statistics is equal to the square root of the sum of the variances of the two Z-statistics. To minimize the influence of outliers, all other variables are truncated at the 1% and 99% levels. t-statistics and p-values are based on standard errors

that have been adjusted for clustering by firm and year (Peterson [2009]). *, **, *** indicates significance (one-tailed) at the 10%, 5%, and 1% levels, respectively. Variables are as defined in Table 1.