The Effect of Mandatory Disclosure on Market Inefficiencies: Evidence from Statement of Financial Accounting Standard Number 161

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ABSTRACT

Prior research finds that unrealized gains/losses on cash flow hedges are negatively associated with future earnings. However, equity investors and analysts fail to anticipate this association. These studies speculate that the mispricing is due to poor derivative disclosures. In this study, we examine whether the enhanced mandatory derivatives disclosures set forth in FAS 161 improve users' understanding of firms' hedging activities, and offer two main findings. First, we find no evidence of mispricing after FAS 161, suggesting that enhanced mandatory derivative disclosures helped correct investors' understanding of the implication of unrealized cash flow hedge gains/losses for future firm performance. Second, we find that analysts' forecasts exhibit less error related to cash flow hedges after FAS 161, suggesting that these enhanced disclosures improve the information environment for sophisticated information intermediaries. In additional analysis, we find that the reduction in mispricing holds regardless of a firm's institutional ownership level, suggesting that the additional disclosures appear to have benefited all investors regardless of their sophistication. Overall, our results suggest that the enhanced mandatory derivative disclosures required by FAS 161 improved investors' and analysts' understanding of the effects of derivative and hedging activities on future firm performance and firm value.

Keywords: Derivatives; Mandatory Disclosure; Market inefficiency; Effectiveness of Regulation

I. INTRODUCTION

The Financial Accounting Standards Board's (FASB) mission is to provide decision useful information to a firm's current and potential investors. In this study, we examine the usefulness of enhanced derivative disclosures required by Statement of Financial Accounting Standard (FAS) 161, *Disclosures about Derivative Instruments and Hedging Activities*. Specifically, we investigate whether FAS 161 disclosures improve the ability of financial statement users to understand the information conveyed by unrealized cash flow hedge gains/losses.

A cash flow hedge is a derivative instrument that hedges a firm's exposure to variability in expected future cash flows arising from changes in the prices of commodities, foreign currency exchange rates, or interest rates (FASB 1999). FAS 133, *Accounting for Derivative Instruments and Hedging Activities*, establishes the accounting rules for cash flow hedges.[1] Under FAS 133, firms recognize cash flow hedges on the balance sheet at fair value and record the change in fair value of their cash flow hedges at each reporting date in accumulated other comprehensive income (AOCI), a component of shareholders' equity on firms' balance sheets. When the hedge expires and the underlying hedged transaction occurs, firms reclassify the unrealized gains and losses out of AOCI and into net income. Cash flow hedges protect firms from adverse price changes in commodities, foreign currencies, or interest rates, and this protection usually expires within one year (Bodnar, Hayt, and Marston 1998). Thus, an unrealized gain on a cash flow hedge implies that the price of the underlying hedged item moved in a direction that will negatively affect the firm's profits after the hedge expires. Similarly, a

[1] FAS 133 is codified as part of Accounting Standards Codification (ASC) Topic 815. We use the pre-codification classification of accounting standards related to derivatives to discuss changes in accounting and disclosure requirements.

loss implies that prices moved in a direction that will positively affect the firm's profits after the hedge expires.[2]

FAS 133 has been criticized by practitioners and academics for not providing adequate information about derivative instruments and hedging activities (FASB 2008).[3] Prior research finds that unrealized gains/losses on cash flow hedges are negatively associated with future earnings, however, investors' and analysts' expectations as reflected in stock prices and earnings forecasts, respectively, fail to anticipate this association (Makar, Wang, and Alam 2013; Campbell 2015; Campbell, Downes, and Schwartz 2015; Bratten, Causholli, and Khan 2016). These studies generally speculate that the reason for the mispricing is that derivative disclosures are incomplete, complex, and disaggregated. Effective in 2009, FAS 161, requires enhanced derivative disclosures because "existing disclosure requirements…[did] not provide adequate information about how derivative and hedging activities affect an entity's financial position, financial performance, and cash flows" (FASB 2008).

In this study, we examine whether the enhanced mandatory derivatives disclosures set forth in FAS 161 were effective in improving users' understanding of the implications of unrealized cash flow hedge gains/losses for future firm performance. Specifically, we examine two research questions. First, do investors no longer delay the pricing of unrealized cash flow hedge gains/losses after the passage of FAS 161? Second, do analysts no longer make predictable forecast errors related to unrealized cash flow hedge gains/losses after the passage of FAS 161?

[2] Appendix A provides a simple illustration of how unrealized cash flow hedge gains/losses provide a signal in today's financial statements about a firm's profitability after the hedges expire. In addition, Section 2 provides additional institutional details on the use of and accounting for cash flow hedges. There we state the necessary conditions under which our hypotheses should hold and point to prior research that confirms that these assumptions generally hold.

[3] Thapa and Brown (2005) and Khan, Li, Rajgopal and Venkatachalm (2017) find that the passage of FAS 133 resulted in equity-value destruction of affected companies.

We begin by establishing that unrealized cash flow hedge gains/losses are negatively associated with future profitability in the pre- as well as post-FAS 161 period. Next, we examine whether the mispricing identified by prior research in the pre-FAS 161 period persists in the post-FAS 161 period. Specifically, we form a zero net-investment trading strategy that is long in firms with the largest unrealized cash flow hedge losses and short in firms with the largest unrealized cash flow hedge gains, and hold these investments for two years. Consistent with the disclosures of FAS 161 reducing the delay with which investors price the information conveyed by unrealized cash flow hedge gains/losses, we find that this trading strategy produces annualized returns of around 9.5 percent prior to FAS 161 but statistically insignificant returns after FAS 161. Additional tests provide evidence that these returns are not explained by traditional risk factors such as market beta, firm size, growth, and stock price momentum.

Next, we examine whether the predictable analyst forecast errors related to unrealized cash flow hedge gains/losses documented by prior research persists in the post-FAS 161 time period. To do so, we again follow the research design of prior literature, and regress analyst forecast accuracy on unrealized cash flow hedge gains/losses and several control variables. Consistent with the disclosures of FAS 161 improving analysts' ability to forecast future earnings, we find a negative association between unrealized cash flow hedge gains/losses and forecast accuracy in the time period prior to FAS 161, but no statistical association between unrealized cash flow hedge gains/losses and forecast accuracy in the time period after FAS 161.

In additional analysis, we examine whether the effect of enhanced disclosures set forth in FAS 161 appears to have reduced the mispricing more or less depending on the sophistication of a firm's investor base. We assume that firms with high institutional ownership have a more sophisticated investor base. We first confirm that the relation between unrealized cash flow

hedge gains/losses and future firm profitability is not affected by whether a firm has a higher percentage of institutional investors. Then, we re-examine the trading strategy results but partition the sample based on the level of institutional ownership. We continue to find that FAS 161 reduced investor mispricing of the information conveyed by unrealized cash flow hedge gains/losses in both samples. These results suggest that the mandatory derivative disclosures set forth in FAS 161 helped all investors, regardless of their sophistication.

We contribute to the literature in several ways. First, we contribute to the derivatives literature. Most of the prior research examines the reason that firms decide to use derivatives, and focuses on the negative association between derivatives use and the *volatility* of cash flows (i.e. σ_{CF}) (Minton and Schrand 1999; Guay 1999) and whether market participants fully impound this reduced volatility into contemporaneous firm value (Schrand 1997; Wong 2001). Using the cash flow hedge setting, prior work shows that derivative disclosures also predict *levels* of *future* cash flows (i.e. μ_{CF} in future time periods) and finds that investors and analysts do not fully incorporate this information into their forecasts of profitability, leading to predictable future stock returns (Makar et al. 2013; Campbell 2015; Campbell et al. 2015; Bratten et al. 2016; Campbell, D'Adduzio, Downes, and Utke 2017). These studies largely conclude that investors would benefit from more transparent derivatives disclosures. More specifically, Campbell (2015) suggests that future research should investigate whether the enhanced disclosure requirements of FAS 161 improve investor pricing of cash flow hedge information, or whether even further enhanced disclosures might be necessary. We answer this call by documenting that the enhanced disclosures set forth in FAS 161 appear to have addressed the deficiencies that led to investor and analyst confusion.

Second, we contribute to the literature on accounting-based pricing anomalies. Prior theoretical, archival, and behavioral research suggests that investors under-react to information that is costly to process, incomplete, or presented in disaggregated and inconsistent forms (Bloomfield 2002; Hirshleifer and Teoh 2003; Barth, Clinch, and Shibano 2003). Furthermore, even those sophisticated investors who recognize the under-reaction fail to mitigate it due to arbitrage risk and transaction costs (Ali, Hwang, and Trombley 2003; Collins, Gong, and Hribar 2003; You and Zhang 2009; Ayers, Li, and Yeung 2011). Prior to FAS 161, derivative disclosures were complex, disaggregated, and incomplete. Specifically, the disclosures did not convey information consistently across firms (i.e., some disclosures were tabular, others in text) and were disaggregated across several footnotes (FASB 2008). Additionally, the vast majority of firms did not disclose when their existing cash flow hedges would be reclassified into earnings (Campbell 2015; Campbell, D'Adduzio, and Duchac 2017). FAS 161 attempts to correct many of these disclosure deficiencies by requiring firms to provide more complete disclosures, in a consistent, tabular format, and in a single footnote location that displays, in the aggregate, the ways in which derivatives affect the firm's financial statements. By finding that FAS 161's improvements to disclosure completely mitigate investors and analysts mispricing related to unrealized cash flow hedge gains/losses, we provide direct evidence that information-processing costs affect asset prices and can lead to accounting-based pricing anomalies, and that more transparent and salient disclosures can help to reduce information-processing costs.

Third, in deciding to issue new standards, the FASB carefully weighs the benefits associated with improved financial information available to users against the expected costs of complying with the new rules. Practitioners criticize the FASB for issuing accounting standards that are mostly about compliance and impose high costs on their firms (Dichev, Graham, Harvey,

and Rajgopal 2013). Examining stock market reaction around important dates in the passage of accounting standards, Khan, Li, Rajgopal, and Venkatachalam (2017) find that between 1973-2009 investors initially perceive that the standards will increase firm value in only 15 out of 138 instances. Furthermore, investors perceived that FAS 161 was actually value *destructive* (although, this was before the new disclosures were made available to investors). We demonstrate the benefits of the enhanced derivative-related disclosures mandated by FAS 161 in the form of improved understanding of cash flow hedging activities by equity investors and analysts. Our evidence suggests that in the case of FAS 161, the FASB was successful in its mission to improve the quality of financial information available to users.

Fourth, a long line of literature investigates the extent to which voluntary disclosures can serve as a substitute for mandatory disclosures (e.g., Dye 1990; Daske, Hail, Leuz, and Verdi 2008; Beyer, Cohen, Lys, and Walther 2010). In general, these studies note that requiring firms to disclose information imposes significant costs in terms of regulator and constituents' time and effort, as well as potential unintended consequences associated with 'one-size-fits-all' disclosure requirements, and that in a multi-period setting voluntary disclosure might provide a more optimal solution. Specifically related to hedging, regulators have expressed concerns that firms' disclosure practices are not adequate for capital market participants to fully understand the implications of these transactions, and that mandatory disclosures might improve this problem (SEC 2009; FASB 2009). As discussed above, prior empirical research confirms regulators concerns. Our results show that enhanced mandatory disclosure alleviates this problem, suggesting that, at least in the case of cash flow hedges, voluntary disclosure did not serve as an adequate substitute for mandatory disclosure. Furthermore, we find evidence that the reduction in mispricing holds regardless of a firm's institutional ownership level. These results highlight that

the additional disclosure mandate appears to have similar benefits for all investors, regardless of their sophistication.

Finally, regulators and practitioners are likely to be interested in our results. Cash flow hedge accounting has been referred to as a "mixed attribute" model because it mixes elements of fair value accounting and historical cost accounting for the same underlying economic event (Makar et al. 2013; Campbell 2015). Specifically, the *derivative position* (e.g., a hedge tied to jet fuel prices) follows a "fair value" model whereby unrealized gains/losses are currently reflected in the financial statements. However, the *future transaction that is being hedged* (in this case, the future purchase of fuel) follows a historical cost model whereby the transaction is neither recorded nor disclosed until the transaction occurs. Prior research suggests that users may fail to consider offsetting unrealized gains and losses that are not recognized in the current accounting model (Bloomfield 2002; Hirshliefer and Teoh 2003; Bloomfield, Nelson, and Smith 2006; Bamber, Jiang, Petroni, and Wang 2010).[4] Furthermore, regulators have questioned whether the "mixed attribute" model leads to investor confusion across time periods (FASB 2011). By providing evidence that FAS 161 disclosure enhancements eliminate the mispricing associated with cash flow hedge disclosures, we provide regulators with evidence that the accounting model for cash flow hedges does not lead to investor confusion across time periods when investors are provided with sufficient disclosures. Furthermore, our study suggests that existing disclosures (i.e., those promulgated by FAS 161) are sufficient to help investors understand the implications of unrealized cash flow hedge gains/losses for future profitability, and that additional disclosures are not necessary.

[4] For example, Hirshliefer and Teoh (2003, 380) state that their model "suggests that firms that hedge may be viewed by investors as more risky than those that do not if hedge profits are marked-to-market whereas the long-term business risk the firm is hedging is not marked-to-market."

II. INSTITUTIONAL BACKGROUND AND PRIOR LITERATURE

2.1. Institutional details on cash flow hedges

A cash flow hedge is a derivative instrument used to hedge variability in expected future cash flows arising from exposure to volatile commodity prices, foreign currency exchange rates, and interest rates (FASB 1999). FAS 133, in effect since 2001, dictates the accounting for cash flow hedges. FAS 133 requires that firms must recognize derivatives designated as cash flow hedges on the balance sheet at fair value on a recurring basis, and the related unrealized gains and losses are included in accumulated other comprehensive income (AOCI). When the hedge expires and the hedged transaction occurs, firms must reclassify unrealized gains and losses out of AOCI into earnings.[5]

An unrealized gain (loss) on a cash flow hedge suggests that the price of the underlying hedged item has moved in an unfavorable (favorable) direction and consequently future earnings are likely to be lower (higher) after the hedge expires.[6] Two conditions must be met for unrealized cash flow hedge gains/losses to be negatively associated with two-year ahead profitability: (1) the majority of hedges in existence at the end of the accounting period must expire, so that the unrealized gains/losses are largely reclassified into earnings within one year; and (2) the change in the price of the underlying hedged item (i.e., commodity price, foreign currency exchange rate, or interest rate) does not fully mean revert over that time period. That is, the shock to the price of the hedged item does not completely reverse within the next year. Prior studies document that both these conditions are likely to be met (e.g., Bodnar et al. 1995; Campbell 2015; Campbell et al. 2015). For example, for a sample of 486 non-financial firms that use cash flow hedges, Campbell et al. (2015) report that the majority of non-interest rate cash

[5] A comprehensive illustration of the accounting for cash flow hedges is provided in Fischer et al. (2009, pp. 538-542).
[6] Appendix A provides a simplified example of how unrealized gains and losses on cash flow hedges impact future firm profitability. The example is adapted from Campbell et al. (2015).

flow hedges will affect earnings within one year. They also show that the price shocks to the underlying hedged items are non-transitory and persist into the future.

The unrealized gains and losses on cash flow hedges arise from changes in the price of the underlying hedged item. However, users of financial statements cannot infer the impact of the underlying price movement on a firm's future performance by simply observing the change in the relevant underlying commodity price, foreign currency exchange rate, or interest rate. The reason for this is because (i) each underlying hedged item comprises a different percentage of a firm's revenue and expenses, (ii) each firm hedges a different ratio of their future transactions, and (iii) most firms hedge a large number of underlying items (Campbell 2015). In essence, the unrealized cash flow hedge gains/losses serve as an inverse *summary measure* for the impact of recent underlying price changes on the firm's future profitability after the hedges have expired.

Finally, prior research finds that most firms commit to a rolling, continuous hedge program. However, the firm can only "lock in" prices at the current spot price of the underlying hedged item. Therefore, any future hedge will "lock in" an underlying price that reflects any recent movements and, thus, these future transactions will reflect newer prices. Accordingly, although cash flow hedges protect the firm from volatility in cash flows, they do not protect the firm from long-term price shifts in the underlying hedged item.[7]

Until FAS 161, disclosures pertaining to cash flow hedges were limited and insufficient which hindered the assessment of the impact of changes in the prices of hedged items on future firm profitability. Next, we discuss the changes in the accounting and mandatory disclosures for derivatives over time.

[7] Firms with pricing power may be able to pass some portion of the price fluctuations on to their customers (e.g., firms in the utility or oil/gas industries). However, it is unlikely that these firms can fully and instantaneously pass the price changes to their customers if, for example, these firms contract with customers for discrete time periods or are subject to regulations that limit the extent to which they can pass price changes to customers. Thus, we expect that the average firm will be exposed to a significant portion of the underlying price movement. Otherwise, we would not expect to see these firms engage in hedging in the first place.

2.2 Evolution of derivatives accounting and required disclosures

Prior to FAS 133, accounting for derivatives was regulated by several different FASB standards. For example, FAS 52, *Foreign Currency Translation*, regulated hedging activities related to foreign exchange rates and FAS 80, *Accounting for Futures Contracts*, determined the accounting for using future contracts to hedge other transactions. Most non-financial firms recognized derivatives used for hedging purposes at historical cost and disclosed the notional values of the derivatives in footnotes. Hedging derivatives had minimal impact on the balance sheet and income statement prior to FAS 133 because most derivative contracts have small values when initiated.

FAS 133, effective since 2001, standardized the accounting for derivatives. It requires that a firm recognize all derivatives as assets or liabilities on the balance sheet at fair value. The accounting for changes in the fair value of derivatives depends on their intended use. If certain conditions are met and a derivative is designated as a hedging instrument, unrealized gains and losses arising from the changes in the fair value of derivatives are included in other comprehensive income. The unrealized gains and losses are subsequently reclassified into earnings when the hedge expires and the forecasted transaction affects earnings. For a derivative not designated as a hedging instrument, the change in fair value is recognized in earnings in the period of change (FASB 1999).

While FAS 133 comprehensively revised and standardized the accounting for derivatives, it also decreased the disclosure about derivative usage that was required under the previous standards that it superseded. FAS 133 allows firms to net all derivative assets and liabilities on the balance sheet (typically, reported as a part of other assets and liabilities) and does not require firms to disclose the notional value or fair value of individual derivatives. Similarly, the income

statement effect of derivatives is reported as a part of other income making it difficult for users to assess the effect of derivatives on firms' financial performance. In addition to the FAS 133 requirement that derivatives be recognized as assets and liabilities on the balance sheet, Financial Reporting Release No. 48 (FRR 48), effective 1997, requires firms to provide information about their different risk exposures and can include some information about derivatives. However, FRR 48 allows various disclosure methods, and most firms choose to disclose using value-at-risk or sensitivity analysis, which are difficult for investors or researchers to use in a meaningful way (Roulstone 1999). In general, disclosures about derivatives prior to FAS 161 were complex and insufficient, inconsistent across firms and presented in disaggregated form across footnotes, failed to specify when the hedges will be reclassified into earnings, and did not typically provide details about the fair value changes of the underlying hedged item (Campbell 2015; Campbell et al. 2015; Pierce 2017).

Facing criticism for inadequate disclosure about derivatives and hedging activities, FASB reconsidered the disclosure requirements under FAS 133 and issued FAS 161. FAS 161, effective since 2009, requires firms to provide "…enhanced disclosures about (a) how and why an entity uses derivative instruments, (b) how derivative instruments and related hedged items are accounted for under Statement 133 and its related interpretations, and (c) how derivative instruments and related hedged items affect an entity's financial position, financial performance, and cash flows" (FASB 2008). The new rules improved disclosure quality and allowed users to better assess the impact of derivative usage and hedging activities on a firm's performance by requiring disclosures in consistent tabular formats of the fair value of derivatives and the impact of derivatives and hedging on earnings and cash flows by risk category. In addition, firms are no longer allowed to net their various derivative positions into one amount, but instead must

disclose them separately. In Appendix B, we provide an example of the enhanced disclosures required under FAS 161.

2.3. Prior research on derivatives and cash flow hedges

A large literature investigates *why* firms use derivatives to hedge various risks. For instance, Smith and Stulz (1985) argue that firms benefit from the reduced volatility of cash flows provided by hedging activities. They argue that firms with high cash flow volatility experience lower investment levels, higher tax burdens, and a higher likelihood of default on debt instruments. Firms could avoid these problems through the use of derivative instruments. Other work on derivatives has produced similar hypotheses and empirical findings consistent with these predictions (Stulz 1990; Froot, Scharfstein and Stein 1993; Minton and Schrand 1999; Beatty et al. 2012). Prior research has also concluded that market participants impound the effects of reduced cash flow volatility into stock prices (Schrand 1997; Wong 2001). More recently, Pierce (2017) uses new disclosure about derivatives required by FAS 161 to investigate the impact of hedge accounting on firm risk and investors' perception of firm risk. He finds that hedge accounting decreases firms' earnings volatility. However, the decrease in earnings volatility from hedge accounting is not associated with a decrease in equity investors' assessment of firm risk.

These above mentioned studies largely focus on how derivatives affect the *second* moment of cash flows (i.e. σ_{CF}) and firm value. More recent studies investigate whether derivative disclosures are able to predict *future* levels of the *first* moment of cash flows and gross profit (i.e. μ_{CF}), and whether this information is reflected in stock prices (e.g., Makar et al. 2014; Campbell 2015; Bratten et al. 2016). These studies find that unrealized gains and losses are

negatively associated with future profitability and cash flows. In addition, it appears that equity investors fail to fully incorporate the predictable effects of unrealized gains and losses on firm's future earnings and cash flows (e.g., Makar et al. 2014; Campbell 2015).

Campbell et al. (2015) report that equity investors are not alone in failing to fully anticipate the effects of unrealized gains and losses related to cash flow hedges on future profitability, sophisticated users of financial statements (e.g., sell-side analysts) are also unable to anticipate these effects. Sell-side analysts do not correctly incorporate the effect of cash flow hedging unrealized gains and losses into their 2- and 3-year ahead earnings forecasts. However, analysts process the information contained in cash flow hedging gains and losses better when managers provide voluntary disclosures in the form of management forecasts.

Finally, Campbell, D'Adduzio, Downes, and Utke (2017) illustrate that not only do unrealized cash flow hedge gains/losses provide a signal about a firm's future profitability, they also distort financial statement ratios that debt investors use when evaluating a firm's creditworthiness. These arguments are consistent with those made by Fitch credit analysts, who note that it is "appropriate, for analytical purposes, to consider the core ratios…with and without the effects of hedge accounting adjustments if the adjustments are material," specifically noting that cash flow hedges do not behave like other equity components (Fitch 2005). Consistent with these arguments, Campbell et al. (2017) find that – even in time periods prior to FAS 161 – debt investors adjusted leverage and profitability ratios for the implications of cash flow hedges and thus document a positive association between unrealized cash flow hedge gains/losses and firms' cost of new debt issuances.

Our study, which examines the effectiveness of FAS 161, also adds to a long line of literature examining the effectiveness of the several attempts made by regulators and standard

setters to improve disclosure about derivative usage. For example, Rajgopal (1999) finds a positive association between proxies of FRR 48 disclosures and firms' oil and gas betas for a sample of oil and gas firms. Linsmeier et al. (2002) find that the FRR 48 disclosures reduced uncertainty and diversity of opinion about firms' various risk exposures. Jorion (2002) finds that value-at-risk disclosures, one of the allowed disclosure methods under FRR 48, are informative about the volatility of trading revenues in banks. Wong (2000) finds that the quantitative disclosures required under FAS 119 are associated with the information used by investors to assess currency exposure of manufacturing firms. Using regulatory filings, Schrand (1997) examines whether disclosures similar to those required by FAS 119 are informative about the interest rate exposure of a sample of savings and loan associations. Most recently, Ahmed, Kilic, and Lobo (2011) find evidence that FAS 133 improved the risk relevance of accounting measures of derivative exposures.

III. HYPOTHESIS DEVELOPMENT

3.1. The effect of FAS 161 on investor mispricing

As mentioned above, prior research finds that unrealized gains/losses on cash flow hedges are negatively associated with future earnings (Makar et al. 2013; Campbell 2015). Furthermore, investors' expectations, as reflected in stock prices, do not appear to anticipate this negative association (Makar et al. 2013; Campbell 2015). These studies speculate that there are at least two reasons for this mispricing.

First, in the pre-FAS 161 period, derivative disclosures are complex and insufficient. They do not convey information consistently across firms (i.e., some disclosures are tabular, others in text) and are disaggregated across several footnotes (FASB 2008). Additionally, the majority of disclosures do not convey when firms will reclassify their hedges into earnings. Prior

theoretical, archival, and behavioral research suggests that investors under-react to information that is costly to process, incomplete, or presented in disaggregated or inconsistent forms (Bloomfield 2002; Hirshleifer and Teoh 2003; Barth et al. 2003; Ahmed et al. 2006).

Second, firms must record unrealized cash flow hedge gains/losses each period in AOCI, but they do not record changes in the fair value of the future hedged transaction until it occurs (known as the "mixed attribute" model because the derivative is recorded at fair value while the forecasted transaction is neither disclosed nor recorded until it occurs). Investors may not realize that current period unrealized hedging gains/losses are offset by an opposite (and unreported) gain/loss on the future hedged transaction. If so, investors will be surprised when the future transaction occurs and the offsetting gains/losses are revealed in gross profit.

Beginning in 2009, FAS 161 enhanced derivative disclosures because "existing disclosure requirements…[did] not provide adequate information about how derivative and hedging activities affect an entity's financial position, financial performance, and cash flows" (FASB 2008). FAS 161 requires firms to disclose, in aggregate, the financial statement effects of using derivatives and hedging activities in a more complete, consistent, and tabular format in a single footnote location. If the reason for the mispricing is due to incomplete and disaggregated disclosures, and not due to the "mixed attribute" accounting model for cash flow hedges, then we should find a reduction in mispricing after the implementation of FAS 161. The leads to H1:

> **H1:** The negative association between unrealized cash flow hedge gains/losses and future stock returns is weaker after the enhanced mandatory disclosures required by FAS 161.

3.2. The effect of FAS 161 on analyst forecast errors

Similarly, prior research finds that analysts' expectations, as reflected in analyst forecast errors, fail to reflect the negative association between unrealized cash flow hedge gains/losses

and future profitability (Campbell et al. 2015). If the reason for the forecast errors is due to incomplete and disaggregated disclosures, and not due to the "mixed attribute" accounting model for cash flow hedges, then we should find a reduction in forecast errors after the implementation of FAS 161. Our second hypothesis follows:

> **H2:** The negative association between unrealized cash flow hedge gains/losses and analyst forecast errors is weaker after the enhanced mandatory disclosures required by FAS 161.

IV. RESEARCH DESIGN AND RESULTS

4.1. Sample selection and descriptive statistics

To test our first hypothesis, we identify a sample of firms that engage in cash flow hedge activity. We identify firms as engaging in cash flow hedge activity if AOCIDERGL in COMPUSTAT is non-missing and non-zero. We begin our sample in 2001 because that is when FAS 133 first required the recognition of unrealized cash flow hedge gains and losses in AOCI. We end our sample in 2013 because it allows us to examine mispricing two years after the disclosure of unrealized cash flow gains and losses. We remove firms in the financial services industry (SIC codes 6,000-6,999), and firms that are missing the necessary variables for our multivariate regression analysis. The final sample we use for our gross profit and returns analysis contains 13,006 firm-year observations belonging to 2,226 unique firms.

Table 1, Panel A describes the sample selection process in detail. Table 1, Panel B shows the distribution of our sample by year. The sample is well distributed throughout the sample period. Each year contains between 855 and 1,186 firm-year observations. Over time, there appears to be a slight increase in the number of observations per year, which is consistent with increased derivative use over time. The slightly lower number of observations in 2001 is partially attributable to not all firms being required to adopt FAS 133 in 2001. Table 1, Panel C shows the

distribution of the sample across industries both before and after FAS 161. There does not appear to be a significant change in the sample composition around FAS 161, based on industry groupings. The industries with the highest representation in our sample both before and after FAS 161 include petroleum and natural gas, utilities, and business services. Table 2 provides summary statistics for the sample. To mitigate the influence of outliers, we winsorize all variables at 1% and 99%.

To test our second hypothesis related to analyst forecast accuracy, we combine our initial sample with analyst forecast data from I/B/E/S. We require that observations have all of the regression control variables and the variables necessary to calculate analyst forecast properties. To maintain a consistent sample across our regressions examining forecasts of years t+2 and t+3, we also require that the observation has an analyst forecast for both years t+2 and t+3. As detailed in Table 1, Panel A, the final sample we use to test the effect of FAS 161 on analyst forecast accuracy has 5,570 firm-year observations.

4.2. Validation that unrealized gains/losses predict future profitability after FAS 161

Before we can test whether mispricing persists after FAS 161, we must first establish that the previously documented relation between unrealized cash flow hedge gains/losses and future profitability does not change around FAS 161. While there is no major reason to anticipate that this relation would change around FAS 161, we confirm that it continues to hold, for completeness. To verify this, we test the following model:

$$\textit{Gross Profit}_{t+2} = \alpha_0 + \beta_1 \textit{AOCI Hedge}_t + \beta_2 \textit{AOCI Hedge}_t \times \textit{Post} + \beta_3 \textit{Post} + \beta_i \text{Controls}_t + \varepsilon_{i,t} \quad (1)$$

where *Gross Profit* is gross profit in year *t+2* scaled by net sales in year *t+2*, *AOCI Hedge* is the amount of unrealized cash flow hedge gain/loss in accumulated other comprehensive income

(AOCI) at the end of year t divided by net sales in year t, and *Post* is an indicator variable equal to one for all years after the effective date of FAS 161 and equal to zero otherwise.[8,9] By design, in this paper we assume that the majority of cash flow hedges expire within a year, which is consistent with the results documented in prior literature (Campbell 2015; Campbell et al. 2015). We control for gross profit, size, leverage, and growth at time *t*. We include industry fixed effects based on the 48 Fama-French industry groupings and use White (1980) standard errors that are clustered by firm to control for heteroscedasticity and the potential of serial correlation in errors terms. Appendix C provides detailed definitions of all variables included in our tests.

Consistent with prior studies, we expect that $\beta_1 < 0$, which indicates that unrealized cash flow hedge gains/losses are negatively related to future profitability during the pre FAS 161 period. If β_2 is not significantly different from zero, this suggests that the relation between unrealized cash flow hedge gains and losses did not change around FAS 161. Further, if $\beta_1 + \beta_2 < 0$, this suggests that unrealized cash flow hedge gains/losses continue to be negatively related to future profitability in the post FAS 161 time period. We predict that gross profit and growth in period *t* will be positively related to gross profit in period *t+2*. We do not have directional predictions about the other control variables.

Table 3 provides the results of estimating equation (1) using ordinary least squares (OLS) regressions. As expected, we find that *AOCI Hedge* is significantly negatively related to future *Gross Profit* ($\beta_1 = -0.324$, t = -3.34) in the pre FAS 161 period. This is consistent with unrealized cash flow hedge gains and losses predicting future profitability in the pre FAS 161 period. We

[8] *Post* is equal to one when the period we observe gross profit and future returns occurs after FAS 161. Thus, if *t+2* occurs after FAS 161's effective date, *Post* is equal to one. Otherwise, it is equal to zero.

[9] A concern with this research design is that our tests span across two years. For example, the 2007 and 2008 Form 10-Ks use pre-FAS 161 disclosures. However, we label them as *Post* because at least some time period during the two-year ahead window has post-FAS 161 disclosures available to investors. We view this approach as conservative in that it should bias against us finding differences between pre- and post-FAS 161 time periods. Consistent with this idea, in Section 4.5.1, we remove those observations that span across pre- and post- time periods, and all of our inferences are unchanged.

find that this relation does not significantly change after FAS 161 (β_2 = -0.0174, t = -0.41). Further, we find that $\beta_1 + \beta_2$ is significantly negative. As expected, we find that gross profit and growth at time *t* are significantly and positively associated with future gross profit. Overall, the evidence in Table 3 suggests that unrealized cash flow hedge gains/losses are negatively related to future profitability in both the pre- and post-FAS 161 periods, with no significant change around the adoption of FAS 161.

4.3. The effect of FAS 161 on mispricing – H1

Next, we examine our first hypothesis that the disclosures mandated by FAS 161 helped to improve the mispricing of cash flow hedge information. To do so, we perform two main analyses. First, we implement a zero net-investment strategy that invests in (sells) the bottom (top) decile of firms based on *AOCI Hedge* during the pre- and post-FAS 161 periods. Firms in the lowest (highest) decile are those that have the greatest unrealized cash flow hedge losses (gains). Given the negative relation between unrealized cash flow hedge gains/losses and two-year ahead profitability throughout the sample period, we accumulate returns over two years after forming our portfolios. We measure the two-year buy and hold return from the fourth month of year *t+1* through the third month of year *t+3*. We calculate returns from the fourth month of year *t+1* because it is the first month that the unrealized cash flow hedge gains/losses included in AOCI are made public through firms' filing of their 10-k for year *t*. We expect that firms in the lowest (highest) decile of *AOCI Hedge* will experience higher (lower) returns if investors are surprised by the future profitability implications of unrealized cash flow hedge gains/losses.

Given the evidence of mispricing in Campbell (2015) in a sample period that covers 2001 to 2006, we expect that our investment strategy will result in positive returns in the pre-FAS 161

period. If the new disclosures required by FAS 161 improved investors' ability to understand the information conveyed by unrealized cash flow hedge gains/losses for future profitability, we expect that the investment strategy will not generate significant returns during the post-FAS 161 period.

Table 4 presents the results of our trading strategy. We report the mean value of *AOCI Hedge* and the two-year buy-and-hold stock return for each decile of firms, based on *AOCI Hedge*, in both the pre- and post-FAS 161 period. Consistent with Campbell (2015), we find that the magnitude of unrealized cash flow hedge losses and gains is relatively large for firms in the lowest and highest decile. As expected, we find that in the pre-FAS 161 period, firms in the lowest decile have significantly higher two-year stock returns than do the firms in the highest decile. Over the two-year period, the return for investing in firms in the lowest decile and selling firms in the highest decile of *AOCI Hedge* is 20.23 percent (p-value = 0.008). Annualized, this investment strategy results in a return of 9.64 percent.[10]

The results in the post-FAS 161 period are dramatically different. The two-year return for investing in firms in the lowest decile and selling firms in the highest decile of *AOCI Hedge* is statistically insignificant (p-value = 0.34). This lack of mispricing of unrealized cash flow hedge gains/losses in the post-FAS 161 period suggests that the disclosures required under FAS 161 helped investors to better understand the implications of unrealized cash flow hedge gains/losses for firm profitability.

In our second test of H1, we examine whether the difference in returns across *AOCI Hedge* deciles are robust to controlling for common risk factors. We do this to provide confidence that investor surprise rather than other common risk factors drives the results reported

[10] These returns are similar in magnitude to those documented in Campbell (2015) who finds annual returns of 7.94 percent for his sample period between 2001 and 2006.

in Table 4. Specifically, we examine the difference in two-year stock returns of firms in the bottom and top deciles of *AOCI Hedge* after controlling for the Fama and French (1993) factors and momentum (Carhart 1997). As before, we expect that if investors misprice the unrealized cash flow hedge gains/losses information recognized in AOCI, firms in the lowest decile of AOCI will have higher stock returns than those in the highest decile. We examine both the pre- and post-FAS 161 time periods and estimate the following model within each AOCI hedge decile:

$$R_{i,t} - R_{f,t} = \alpha_0 + b_{i,M}(R_{M,t} - R_{f,t}) + s_i SMB_t + h_i HML_t + m_i UMD_t + \varepsilon_{i,t} \quad (2)$$

where the dependent variable is the monthly excess stock return, which is calculated as a firm's monthly raw return minus the monthly risk-free rate factor from Fama and French (1993). As independent variables, we include a constant, *MKT_RF*, *SMB*, and *HML* as defined in Fama French (1993), and *UMD* as used in Carhart (1997). Within each decile, the coefficient on the constant (α_0) represents the abnormal return for firms in that decile after controlling for the common risk factors. We compare the coefficients from the lowest and highest decile to identify mispricing of cash flow hedge information.

Table 5 Panel A presents results for the Fama-French abnormal return regressions by *AOCI Hedge* decile in the pre-FAS 161 period. We find that firms in the lowest decile of *AOCI Hedge* have an abnormal return that is greater than that of firms in the highest decile of *AOCI Hedge*. An investment strategy of buying (selling) firms in the lowest (highest) decile earns a significantly positive monthly return 0.31 percent (p-value = 0.007). In summary, the evidence in Table 5 Panel A suggests that even after controlling for common risk factors, there is significant mispricing of cash flow hedge information in the pre-FAS 161 period.

Table 5 Panel B presents results for the Fama-French abnormal return regressions by *AOCI Hedge* decile in the post-FAS 161 period. In the post-FAS 161 period, the magnitude of the difference between the returns of the lowest and highest *AOCI Hedge* decile is small and statistically insignificant (α_0 = 0.045, p-value = 0.877). These results suggest that there is no significant mispricing of cash flow hedge information after the increased derivative disclosures required by FAS 161. The results in Table 5 complement our previous trading strategy results reported in Table 4 and provide evidence that the hedge portfolio return results we document are driven by investor surprise rather than omitted risk-related factors. In conclusion, we find evidence consistent with H1 suggesting that mandatory enhanced disclosures about derivative usage and hedging activities improved investors' assessment of the implication of unrealized cash flow hedge gains/losses for future firm performance.

4.4. The effect of FAS 161 on analyst forecast error – H2

In H2, we hypothesize that the negative association between unrealized cash flow hedge gains/losses and analyst forecast errors documented in prior literature is weaker after the enhanced mandatory disclosures required by FAS 161. To test H2, we follow the methodology in Campbell et al. (2015). The one exception is that to examine whether the relation between unrealized cash flow hedge gains/losses and analyst forecast errors changes after FAS 161, we add a variable that interacts *AOCI Hedge* and *Post*. Specifically, we estimate the following model:

$$FError_{t+k} = \alpha_0 + \beta_1 AOCI\ Hedge_t + \beta_2 AOCI\ Hedge_t \times Post + \beta_3 Post + \beta_i Controls + \varepsilon_{i,t} \quad (3)$$

where $FError_{t+k}$ is the analyst earnings forecast error based on the realized earnings in year $t+k$ minus the first mean consensus analyst forecast of earnings for year $t+k$ following the filing of

year t's 10-k, scaled by the price at the end of the year.[11] Our measurement of the forecast error captures how accurately analysts predict earnings in future periods immediately after having observed the unrealized cash flow hedge gains/losses and other derivative disclosures included in the firm's 10-K. We examine forecast errors at time *t+2* and *t+3* because cash flow hedges largely expire in year *t+2* and *t+3*. Moreover, Campbell et al. (2015) demonstrates that analysts' forecast errors at time *t+2* and *t+3* are negatively associated with unrealized cash flow hedge gains/losses in year *t*. *AOCI Hedge* and *Post* are defined as previously. In line with Campbell et al. (2015), we predict that β_1 will be negative, indicating that analysts do not correctly incorporate the effect of current unrealized cash flow hedge gains/losses on future earnings in the pre FAS 161 period. If the mandatory disclosures required by FAS 161 improve analysts' ability to account for the effect of unrealized cash flow hedge gains/losses on future profitability, we predict that β_2 will be positive. Further, if $\beta_1 + \beta_2$ is not significantly different from zero, this suggests that analysts correctly incorporate the effect of current unrealized cash flow hedge gains/losses on future earnings in the post-FAS 161 period

We include the following controls in Equation (3): the natural log of market value (*LMVAL*) at the end of year *t*, an indicator equal to one if the firm is audited by a Big 4 audit firm, and zero otherwise (*AUDITOR*), market-to-book ratio at the end of year *t* (*MKBK*), and an indicator variable equal to one if the firm experience a loss in year *t+k*, and zero otherwise (*LOSS*), the horizon of the forecast (*HORIZON*), the number of analysts used to calculate the mean consensus forecast (*NUMANALYSTS*), the earnings surprise in year *t* estimated using a time-series expectation model (*SURPRISE*), and the firm's quarterly earnings volatility over the prior twelve quarters (*EARNVOL*). We define these variables in detail in Appendix C. We also

[11] For a detailed demonstration of the timeline of cash flow hedge reporting, analyst forecast calculation, and future earnings we use in our tests see Appendix 2 from Campbell et al. (2015).

control for industry fixed effects, and use White standard errors that are clustered by firm to control for heteroscedasticity and serial correlation.

Table 6 presents results of estimating Equation (3) using OLS regressions. Column (1) provides results for forecast errors at time *t+2* and column (2) provides results for forecast errors at time *t+3*. In column (2), as expected, the coefficient on *AOCI Hedge* is significantly negative for forecast errors at time t+3 (β_1 = -0.507, p-value = 0.012). This finding is consistent with Campbell et al. (2015) and suggests that analysts fail to correctly incorporate the implications of unrealized cash flow hedge gains/losses for firm's *t+3* earnings in the pre-FAS 161 period. Importantly, the coefficient on the interaction of *AOCI Hedge* and *Post* is positive and significant (β_2 = 0.553, p-value = 0.006). Furthermore, the sum of β_1 and β_2 is statistically insignificant suggesting that in the post-FAS 161 period analysts correctly impound the implications of unrealized cash flow hedge gains/losses in their earnings forecasts for year *t+3*.

In column (1), where the earnings forecast error for year *t+2* is the dependent variable, the coefficient on *AOCI Hedge* is negative but statistically insignificant (β_1 = -0.127, p-value = -0.982), suggesting that analysts correctly incorporate the information about unrealized cash flow hedge gains/losses in their year *t+2* earnings forecasts even in the pre-FAS 161 period. This finding is inconsistent with the evidence in Campbell et al. (2015) who document that analysts fail to correctly incorporate the effect of unrealized cash flow hedge gains/losses in their two-year ahead earnings forecasts in the pre-FAS 161 period. Furthermore, the coefficient on the interaction of *AOCI Hedge* and *Post* is statistically insignificant (β_2 = 0.0848, p-value = 0.619) and the sum of β_1 and β_2 is also statistically insignificant. This suggests that analysts continue to correctly impound the information in unrealized cash flow hedge gains/losses for firm's future profitability in their year *t+2* earnings forecasts. Overall, our evidence supports H2 and suggests

that the enhanced disclosures about derivative usage and hedging activities mandated by FAS 161 helped sophisticated users (i.e., equity analysts) to better understand the implications of unrealized cash flow hedge gains/losses for firm's future profitability.

4.5. Additional analyses

4.5.1 Disclosure availability and forward-looking tests

In our primary research design, we label all observations as occurring in the *Post* period where the dependent variable occurs in years after FAS 161 became effective. A concern with this research design is that our tests span across two (or three) years and in some instances the test observations span across both pre- and post-FAS 161 periods. For example, the test based on 2008 Form 10-Ks use pre-FAS 161 disclosures. However, we label them as *Post* because at least some time period during the two-year ahead window has post-FAS 161 disclosures available to investors.

We view this approach as conservative in that it should bias against us finding differences between pre- and post-FAS 161 time periods. To test whether this is the case, in untabulated results, we remove from our sample those observations that span across the disclosure time periods (i.e., in our returns tests, we remove the 2007 – 2009 and 2008 – 2010 observations). Across all of our tests, our results hold and – in nearly every case – the statistical significance is even stronger. This provides further assurance that our results are indeed due to the disclosure changes set forth in FAS 161.

4.5.2 Investor sophistication

Next, we examine whether the effect of the enhanced disclosures under FAS 161 on mispricing depends on the sophistication of a firm's ownership. If sophisticated investors possess

superior skills to gather and process information regarding firms' derivative usage and hedging activities, we expect stocks owned by sophisticated investors to display no (or lower) mispricing with respect to the information in unrealized cash flow hedge gains/losses in the pre-FAS 161 period. Hence, the incremental benefit of the enhanced disclosures mandated under FAS 161 will be smaller for such stocks. Following prior studies (e.g., Hand 1990; Utama and Cready 1997; Walther 1997; Bartov, Radhakrishnan and Krinsky 2000), we use the institutional holdings of a stock to proxy for the sophistication of the firm's investor base and re-estimate our gross profit and market mispricing tests (tests of H1) in subsamples of firms partitioned based on the level of institutional ownership.

For this analysis, we use the same sample selection criteria we used in our previous tests of H1. However, we lose 155 firm-year observations that lack institutional ownership data, giving us a sample of 12,851 firm-year observations. We measure *Institutional Ownership* as the sum of institutional shares as per Thomson Reuter's 13F database, scaled by shares outstanding at year end. Firm-year observations are designated as *High* (*Low*) *IO* if they fall above (below) the median value for *Institutional Ownership* by year.

Table 2, Panel C provides sample statistics for the *Low IO* and *High IO* samples. Institutional ownership is higher in smaller firms and firms with higher gross profits. Most relevant to our analysis of the mispricing of unrealized cash flow hedge gains/losses, are the differences between *AOCI Hedge* and *BH_RET*. While, the differences between groups for these two variables do not appear to be economically significant, they show some mixed statistical evidence of differences. [12]

[12] Using t-tests, the means are significantly different across groups for all variables except BH_RET. Using the Wilcoxon Rank Sum test, the values are significantly different for all variables except AOCI Hedge.

We first confirm that the negative relation between *AOCI Hedge* and future *Gross Profit* holds for both the *Low IO* and *High IO* firms in the pre- and post-FAS 161 periods. Table 7 presents the results of estimating equation (1) using OLS regressions for both subsample. Column (1) presents results for *Low IO* firms and column (2) presents results for *High IO* firms. For *Low IO* firms, the coefficient on *AOCI Hedge* is significantly negative (β_1 = -0.323; p-value = 0.031) and the coefficient on the interaction of *AOCI Hedge* and *Post* is not significantly different from zero (β_2 = -0.0395; p-value = 0.346). The results are similar for *High IO* firms (β_1 = -0.3969 p-value = 0.014; β_2 = 0.123 p-value = 0.360). Also, for both *Low IO* and *High IO*, the sum of β_1 and β_2 is significantly negative. Overall, these results suggest that unrealized cash flow hedge gains/losses are negatively associated with future gross profits for both high and low institutional ownership firms in the pre- as well as post-FAS 161 periods.

Table 8 presents the replication of our trading strategy results conditioned on institutional ownership. Panel A (B) provides the results for *Low IO* (*High IO*) firms. We find that both *Low IO* and *High IO* firms exhibit significant mispricing in the pre-FAS 161 period but not in the post-FAS 161 period. Specifically, a trading strategy that purchases (sells) the lowest (highest) decile based on unrealized cash flow gains/losses produces significantly positive returns for both *Low IO* and *High IO* firms in the pre-FAS 161 periods. For *Low IO* (*High IO*) firms, the trading strategy results in an annualized return of 9.28% (10.11%) in the pre period.[13] The fact that mispricing exists in the pre-FAS 161 period for firms with higher institutional ownership suggests that even institutional investors, who are arguably sophisticated users of financial statements, fail to fully comprehend the implications of unrealized cash flow hedge gains/losses for future performance when disclosures related derivative usage and hedging activities were

[13] Using a two-tailed test of significance, the returns are statistically significant with p-values of 5.6% and 6.8%, respectively for *Low IO* and *High IO* firms.

limited and disaggregated.[14] With respect to the effect of FAS 161 on mispricing, we find no significant evidence of mispricing in the post-FAS 161 period for either group. The trading strategy produces annualized returns of 1.21% (p-value = 0.625) and -1.48% (p-value = 0.591) in the *Low IO* and *High IO* groups, respectively. These results suggest that the mandatory disclosures required by FAS 161 helped improve mispricing for firms with both low and high investor sophistication.

Table 9 presents results for the replication of the Fama-French abnormal return regressions by level of institutional ownership. Panel A (B) presents results for *Low IO* (*High IO*) firms. Similar to Table 8, we find significant mispricing for firms with both low and high institutional ownership in the pre-FAS 161 period. For *Low IO* (*High IO*) firms the difference in alphas of portfolios comprising of firms belonging to the largest *AOCI Hedge* decile and the smallest *AOCI Hedge* decile is equal to 0.296 (0.321) and is statistically significant with a p-value of 0.077 (0.039) during the pre-FAS 161 period.

The results in the post-FAS 161 period paint a different picture with no evidence of mispricing for either subsample. For the *High IO* firms, the difference in alphas of the extreme portfolios of firms based on *AOCI Hedge* is statistically insignificant (p-value = 0.576). For *Low IO* firms, the difference in alphas is also statistically insignificant (p-value = 0.270). Overall, our institutional ownership analysis provides evidence that the limited derivative disclosures prior to FAS 161 resulted in mispricing related to unrealized cash flow hedge gains/losses for both sophisticated and unsophisticated investors. Furthermore, the improved disclosures under FAS 161 helped investors to better understand the implications of unrealized cash flow hedge

[14] This finding is consistent with Campbell et al. (2015), who show that another group of sophisticated investors (i.e., analysts) also struggled to correctly understand the implications of unrealized cash flow hedge gains/losses for future firm performance without the help of management guidance in the pre-FAS 161 period.

gains/losses for future firm performance for both sophisticated and other investors as we find no evidence of mispricing by either group in the post-FAS 161 period.

V. CONCLUSION

Prior research finds that unrealized gains/losses on cash flow hedges are negatively associated with future earnings and that investors' and analysts' expectations fail to anticipate this association (Makar et al. 2013; Campbell 2015; Campbell et al. 2015; Bratten et al. 2016). These studies generally speculate that the reason for the mispricing is derivative disclosures that are incomplete, complex, and disaggregated. We examine whether the enhanced mandatory derivatives disclosures set forth in FAS 161 reduce the extent of the mispricing identified in prior research, and offer two main findings. First, we find no evidence of mispricing after FAS 161, suggesting that these enhanced mandatory derivative disclosures effectively reduce investor mispricing. Second, we find that analysts' forecasts exhibit less error related to unrealized cash flow hedge gains/losses after FAS 161, suggesting that these enhanced disclosures improve the information environment for sophisticated information intermediaries.

In additional analysis, we find that the reduction in mispricing holds regardless of a firm's institutional ownership level. These results suggest that the additional disclosure mandate appears to have similar benefits for all investors, regardless of their sophistication. Overall, our results suggest that the enhanced mandatory derivative disclosures required by FAS 161 improved investors' and analysts' ability to understand the effects of derivative and hedging activities on future firm performance and firm value.

References

Ahmed, A., E. Kilic, and G. Lobo, 2006. Does recognition versus disclosure matter? Evidence from value-relevance of banks' recognized and disclosed derivative financial instruments. *The Accounting Review* 81, 567-588.

Ahmed, A., E. Kilic, and G. Lobo, 2011. Effects of SFAS 133 on the risk relevance of accounting measures of banks' derivative exposures. *The Accounting Review* 86, 769-804.

Ajinkya, B. B., and M.J. Gift, 1984. Corporate Managers Earnings Forecasts and Symmetrical Adjustments of Market Expectations. *Journal of Accounting Research* 22, 425–44.

Allayannis, G. and J. Weston, 2001. The use of foreign currency derivatives and firm market value. *Review of Financial Studies* 14, 243-276.

Baginski, S. P., J. M. Hassell, and M. D. Kimbrough, 2002. The Effect of Legal Environment on Voluntary Disclosure: Evidence from Management Earnings Forecasts Issued in US and Canadian Markets. *The Accounting Review* 77, 25–50.

Bamber, L., J. Jiang, K. Petroni, and I. Wang, 2010. Comprehensive income: Who's afraid of performance reporting? *The Accounting Review* 85, 97-126.

Barth, M . and A. Hutton, 2004. Analyst earnings forecast revisions and the pricing of accruals. *Review of Accounting Studies* 9, 59-96.

Barth, M., W. Beaver and W. Landsman, 1996. Value-relevance of banks' fair value disclosures under SFAS No. 107. *The Accounting Review* 71, 513–537.

Barth, M., W. Landsman, and J. Wahlen, 1995. Fair value accounting: Effects on banks' earnings volatility, regulatory capital, and value of contractual cash flows. *Journal of Banking and Finance* 19, 577-605.

Bartov, E., S. Radhakrishnan, and I. Krinsky, 2000. Investor sophistication and patterns in stock returns after earnings announcements. *The Accounting Review* 75 (1), 43-63.

Bernard, V. and J. Thomas, 1989. Post-earnings-announcement drift: Delayed price response or risk premium? *Journal of Accounting Research* 27, 1-36.

Bernard, V. and J. Thomas, 1990. Evidence that stock prices do not fully reflect the implications of current earnings for future earnings. *Journal of Accounting and Economics* 13, 305–340.

Bhushan, R., 1989. Collection of information about publicly traded firms: theory and evidence. *Journal of Accounting and Economics* 11, 183–207.

Bloomfield, R., 2002. The *Incomplete revelation hypothesis* and financial reporting. *Accounting Horizons* 16, 233-243.

Bloomfield, R., M. Nelson, and S. Smith, 2006. Feedback loops, fair value and correlated investments. *Review of Accounting Studies* 11: 377-416.

Bodnar, G., G. Hayt, R. Marston, and C. Smithson, 1995. Wharton survey of derivatives usage by U.S. non-financial firms. *Financial Management* 24, 104-114.

Bodnar, G., G. Hayt, and R. Marston, 1998. Wharton survey of financial risk management by U.S. non-financial firms. *Financial Management* 27, 70-91.

Bradshaw, M., R. Sloan, and S. Richardson, 2001. Do analysts and auditors use information in accruals? *Journal of Accounting Research* 39, 45-74.

Bratten, B., M. Causholli, and U. Khan, 2016. Usefulness of fair values for predicting banks' future earnings: Evidence from other comprehensive income and its components. *Review of Accounting Studies* 21: 280-315.

Brown, L., P. Griffin, R. Hagerman, and M. Zmijewski, 1987. Security analyst superiority relative to univariate time-series models in forecasting quarterly earnings. *Journal of Accounting and Economics* 9, 61–87.

Brown, L. and Rozeff, M., 1978. The superiority of analyst forecasts as measures of expectations: evidence from earnings. *Journal of Finance* 33, 1–16.

Campbell, J., 2015. The Fair Value of Cash Flow Hedges, Future Profitability, and Stock Returns. *Contemporary Accounting Research* 32 (1), 243-279.

Campbell, J., J. Downes, and W. Schwartz, Jr., 2015. Do Sophisticated Investors use the Information provided by the Fair Value of Cash Flow Hedges? *Review of Accounting Studies* 20 (2), 934-975.

Campbell, J., J. D'Adduzio, J. Downes, and S. Utke, 2017. Do Investors Adjust Financial Statement Ratios for Accounting-Based Timing Distortions? Evidence from Cash Flow Hedges. Working paper, University of Georgia.

Campbell, J., J. D'Adduzio, and J. Duchac, 2017. "The Use of Fair Value Accounting in Risk Management in Non-Financial Firms." *The Routledge Companion to Fair Value Accounting*, ed. by Livne and Markarian.

Carter, D., D. Rogers, and B. Simkins, 2006. Does hedging affect firm value? Evidence from the US airline industry. *Financial Management*, 53-86.

Collins, D., Salatka, W., 1993. Noisy accounting earnings signals and earnings response coefficients: The case of foreign currency accounting. *Contemporary Accounting Research* 10, 119-159.

Cheng, Q. and K. Lo, 2006. Insider trading and voluntary disclosures. *Journal of Accounting Research* 44, 815-848.

Dechow, P., Hutton, A., and R. Sloan, 2000. The relation between analysts' forecasts of long-term earnings growth and stock price performance following equity offerings. *Contemporary Accounting Research*, 17, 1−32.

Dichev, I., J. Graham, C. Harvey, and S. Rajgopal. 2013. Earnigns quality: Evidence from the field. *Journal of Accounting and Economics* 56 (2-3): 1-33.

Dhaliwal, D., K.R. Subramanyam, and R. Trezevant, 1999. Is comprehensive income superior to net income as a measure of firm performance? *Journal of Accounting and Economics* 26, 43-67.

Diamond, D., and R. Verrechia. 1991. Disclosure, Liquidity, and the Cost of Capital. *Journal of Finance* 46, 1325–59.

Eccher, E.A., K. Ramesh, and S. Thiagarajan, 1996. Fair value disclosures by bank holding companies. *Journal of Accounting and Economics* 22, 79–117.

Fama, E., and K. French, 1997. Industry costs of equity. *Journal of Accounting and Economics* 43, 153-193.

FASB, 1999. Statement of Financial Accounting Standards No. 133, Accounting for derivative instruments and hedging activities. http://fasb.org/pdf/aop_FAS133.pdf

FASB, 2008. Statement of Financial Accounting Standards No. 161, *Disclosures about Derivative Instruments and Hedging Activities*. http://www.fasb.org/pdf/fas161.pdf

FASB, 2009. Current technical plan and project updates. As of September 17, 2009. http://www.fasb.org/jsp/FASB/Page/SectionPage&cid=1218220137074

FASB, 2011. Current technical plan and project updates. As of June 30, 2011. http://www.fasb.org/jsp/FASB/Page/SectionPage&cid=1218220137074

Fischer, P., W. Taylor, and R. Cheng, 2009. *Advanced Accounting*, 10th edition. Mason, OH: South-Western Cengage Learning.
Froot, K., D. Scharfstein, and J. Stein, 1993. Risk Management: Coordinating corporate investment and financing policies. *Journal of Finance* 48, 1629-1658.
Fried, D and Givoly, D., 1982. Financial analysts' forecasts of earnings: a better surrogate for market expectations. *Journal of Accounting and Economics* 4 (2), 85–108.
Hand, J., 1990. A test of the extended functional fixation hypothesis. *The Accounting Review* 65, 740-763.
Hirshleifer, D., and S. Teoh, 2003. Limited attention, information disclosure, and financial reporting. *Journal of Accounting and Economics* 36, 337-386.
IASB. 2010. Staff Paper. http://www.ifrs.org/NR/rdonlyres/849384E6-4119-4354-8690-E90163E5479F/0/FI0310b13obs.pdf
Jennings, R., 1987. Unsystematic Security Price Movements, Management Earnings Forecasts, and Revisions in Consensus Analyst Earnings Forecasts. *Journal of Accounting Research* 25 (1), 90-110.
Jorion, P., 2002. How Informative Are Value-at-Risk Disclosures? *The Accounting Review* 77 (4), 911-931.
Kang, S., J. O'Brien, and K. Sivaramakrishnan, 1994. Analysts interim earnings forecasts: Evidence on the forecasting process. *Journal of Accounting Research* 32, 103-112.
Kennedy, P., 2003. A Guide to Econometrics, 3rd edition, MIT Press, Cambridge, MA.
Khan, U., B. Li, S. Rajgopal, and M. Venkatachalam, 2017. Do the FASB's standards add shareholder value? *The Accounting Review* (Forthcoming).
Kothari, S.P., 2001. Capital markets research in accounting. *Journal of Accounting and Economics* 31, 105-231.
Lang, M., and R. Lundholm, 1993. Cross-Sectional Determinants of Analyst Ratings of Corporate Disclosures. *Journal of Accounting Research* 31, 246–71.
Linsmeier, T., D. Thornton, M. Venkatachalam, and M. Welker, 2002. The effect of mandated market risk disclosures on trading volume sensitivity to interest rate, exchange rate, and commodity price movements. *The Accounting Review* 77 (2), 343-377.
Louis, H. 2004. Earnings management and the market performance of acquiring firms. *Journal of Financial Economics*, 74, 121−148
Louis, H., 2003. The value relevance of the foreign translation adjustment. *The Accounting Review* 78, 1027-1047.
Makar, S., L. Wang, and P. Alam, 2013. The mixed attribute model in SFAS 133 cash flow hedge accounting: implications for market pricing. *Review of Accounting Studies* 18, 66–94.
Minton, B., and C. Schrand, 1999. The impact of cash flow volatility on discretionary investment and the costs of debt and equity financing. *Journal of Financial Economics* 45, 423-460.
Nagar, V., D. Nanda, and P. Wysocki, 2003. Discretionary Disclosure and Stock-based Incentives. *Journal of Accounting and Economics* 34, 283-309.
Petroni, K. and J. Wahlen, 1995. Fair Value of Equity and Debt Securities and Share Prices of Property-Liability Insurers. *The Journal of Risk and Insurance* 62, 719-737.
Pierce, S., 2017 Does the accounting for derivative affect risk and value? Working paper, Florida State University.

Rajgopal, S., 1999. Early evidence on the informativeness of the SEC's market risk disclosures: The case of commodity price risk exposure of oil and gas producers. *The Accounting Review* 74 (3), 251-280.

Roulstone, D., 1999. Effects of SEC Financial Reporting Release No. 48 on derivative and market risk disclosures. *Accounting Horizons* 13 (December), 343-363.

SEC, 2008. Report and recommendations pursuant to Section 133 of the Emergency Economic Stabilization Act of 2008: Study on mark-to-market accounting. http://www.sec.gov/news/studies/2008/marktomarket123008.pdf

Schrand, C., 1997. The association between stock-price interest rate sensitivity and disclosures about derivative instruments. *The Accounting Review* 72, 87-109.

Shane, P. and P. Brous, 2001. Investor and (Value Line) analyst underreaction to information about future earnings: the corrective role of non-earnings-surprise information. *Journal of Accounting Research*, 39, 387−404.

Shleifer, A. and R. W. Vishny, 1989. Management Entrenchment: The Case of Manager-specific Investments. *Journal of Financial Economics* 25, 123-139.

Skinner, D., 1994. Why firms voluntarily disclose bad news, *Journal of Accounting Research* 32, 38-60.

Sloan, R., 1996. Do stock prices fully reflect information in accruals and cash flows about future earnings? *The Accounting Review* 71, 289-315.

Smith, C. W., and R. Stulz, 1985, The determinants of firms' hedging policies, *Journal of Financial and Quantitative Analysis* 20, 391-405.

Smithson, C., C. Smith, and D. Wilford, 1995. Managing financial risk: A guide to derivatives products, financial engineering and value maximization. New York: Irwin Professional Publishing.

Stulz, R., 1990. Rethinking risk management. *Journal of Applied Corporate Finance* 9, 8-24.

Teoh, S. and T. Wong. 2002. Why new issues and high-accrual firms underperform: The role of analysts' credulity. *The Review of Financial Studies*, 15, 869−900.

Thapa, S. B., and C. L. Brown, 2005. The impact of FAS 133, accounting for derivatives and hedging, on financial institution returns. *Journal of Commercial Banking and Finance* 4: 91-97.

Tufano, P., 1996. Who manages risk? An empirical examination of risk management practices in the gold mining industry. *Journal of Finance* 51 (4), 1097-1137.

Utama, S., and W. Cready, 1997. Institutional ownership, differential predisclosure precision and trading volume at announcement dates. *Journal of Accounting and Economics* 24, 129-150.

Walther, B., 1997. Investor sophistication and market earnings expectations. *Journal of Accounting Research* 35 (2): 157-179.

Waymire, G., 1986. Additional Evidence on the Accuracy of Analyst Forecasts before and after Voluntary Management Earnings Forecasts. *The Accounting Review* 61 (1): 129-142.

White, H., 1980. A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica* 48, 817-838.

Wong, M.H.F., 2001. The association between SFAS No. 119 derivatives disclosures and the foreign exchange risk exposure of manufacturing firms. *Journal of Accounting Research* 38, 387-417.

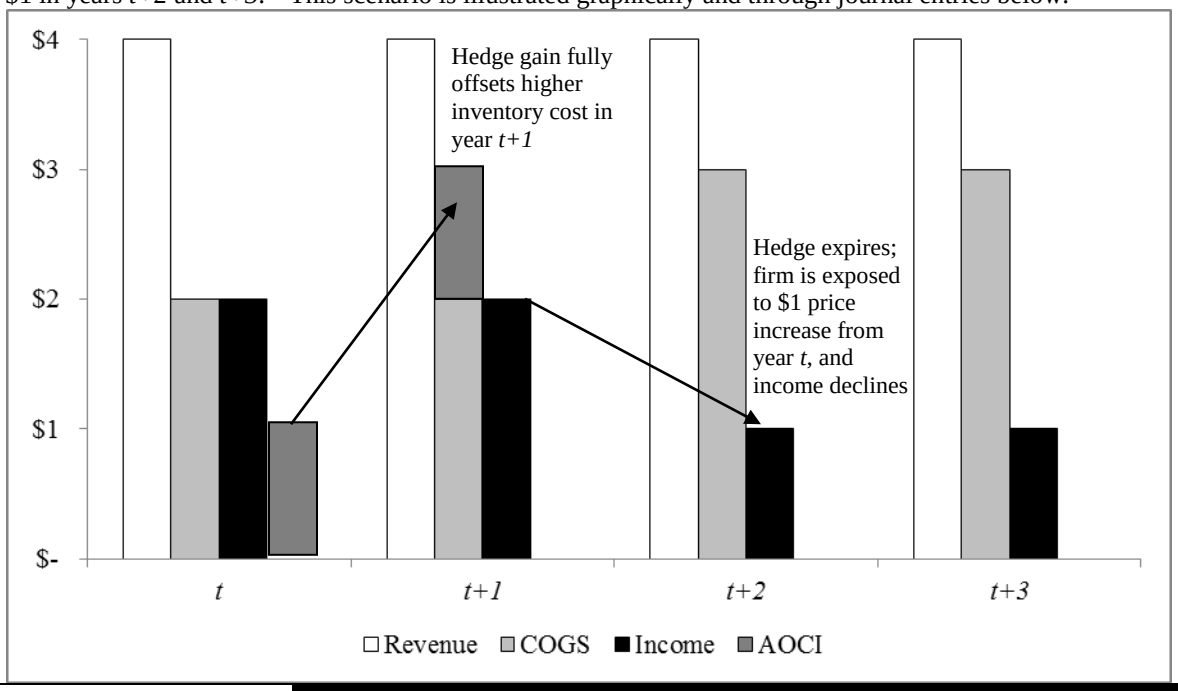
Appendix A: Example Illustrating the Impact of Unrealized Gains/Losses on Cash Flow Hedges on Future Profitability

This appendix is taken verbatim from Campbell, Downes, and Schwartz (2015) to illustrate how unrealized gains/losses provide a signal about future profitability after the hedge has been reclassified into earnings and the firm is fully exposed to the underlying price movements that created the gain or loss:

Suppose a firm has revenue of $4 and cost of goods sold (COGS) of $2. Revenue is constant over the next few years. The firm sells only one product. And taxes are ignored. During year *t*, the firm hedges its year *t+1* inventory costs. After the hedge is in place and the current year's inventory has been purchased, the price of inventory rises by $1, from $2 to $3. Therefore, in year *t*, the firm has a hedge gain of $1 in AOCI. However, because the firm had purchased its inventory at $2, COGS would be $2 in year *t*.

In year *t+1*, the firm benefits from the hedge. It purchases inventory at the "new" price of $3 but has the offsetting hedge gain of $1 being reclassified into the income statement. Thus COGS would again be $2.

However, after year *t+1*, there is no hedge, so COGS is $3 in years *t+2* and *t+3*. Therefore income is $2 in *t* and *t+1* but $1 in years *t+2* and *t+3*.[15] This scenario is illustrated graphically and through journal entries below:



	Year *t*	Year *t+1*	Year *t+2*	Year *t+3*
Dr. Accounts Receivable (or Cash)	$4	$4	$4	$4
Cr. Revenue	$4	$4	$4	$4
Dr. COGS	$2	$2 →	$3	$3
Dr. AOCI (hedge gain)		$1		
Cr. Inventory (at cost)	$2	$3	$3	$3
Dr. Derivative Asset	$1			
Cr. AOCI (hedge gain)	$1			
Dr. Cash		$1		
Cr. Derivative Asset		$1		

[15] This illustration assumes that inventory costs follow a random walk (and stay at $3 for the foreseeable future), that the firm only hedges in year *t*, and that it only hedges for the next year. Campbell et al. (2015) test and validate the random-walk and one-year-horizon assumptions. Furthermore, as explained in Section 2, even if the firm enters into hedges in year *t+1*, these hedges will lock the firm in to a $3 cost for its inventory and thus only protect the firm from *additional* cost increases beyond those experienced in year *t*.

Appendix B: Example of derivative disclosures required before and after FAS 161

Disclosures prior to FAS 161 (Archer-Daniels-Midland Company 2008 10-K):

The Company, from time to time, uses derivative contracts designated as cash flow hedges to fix the purchase price of anticipated volumes of commodities to be purchased and processed in a future month, to fix the purchase price of the Company's anticipated natural gas requirements for certain production facilities, and to fix the sales price of anticipated volumes of ethanol. The change in the market value of such derivative contracts has historically been, and is expected to continue to be, highly effective at offsetting changes in price movements of the hedged item. Gains and losses arising from open and closed hedging transactions are deferred in other comprehensive income, net of applicable income taxes, and recognized as a component of cost of products sold in the statement of earnings when the hedged item is recognized. If it is determined that the derivative instruments used are no longer effective at offsetting changes in the price of the hedged item, then the changes in the market value of these exchange-traded futures and exchange-traded and over-the-counter option contracts would be recorded in the statement of earnings as a component of cost of products sold.

The Company, from time to time, uses futures or options contracts to fix the purchase price of anticipated volumes of commodities to be purchased and processed in a future month. The Company also uses futures, options, and swaps to fix the purchase price of the Company's anticipated natural gas requirements for certain production facilities. In addition, certain of the Company's ethanol sales contracts are indexed to gasoline prices. The Company uses futures and options to fix the sales price of anticipated volumes of these ethanol sales in future months. These derivatives are designated as cash flow hedges. The changes in the market value of such derivative contracts have historically been, and are expected to continue to be, highly effective at offsetting changes in price movements of the hedged item. The amounts representing the ineffectiveness of these cash flow hedges are immaterial. Gains and losses arising from open and closed hedging transactions are deferred in other comprehensive income, net of applicable income taxes, and recognized as a component of cost of products sold in the statement of earnings when the hedged item is recognized. As of June 30, 2008, the Company has recorded $81 million of after-tax gains in accumulated other comprehensive income related to gains and losses from cash flow hedge transactions. The Company expects to recognize these after-tax gains in the statement of earnings principally during fiscal year 2009.

At June 30, 2008, accumulated other comprehensive income included $5 million of after-tax gains related to treasury-lock agreements. These treasury-lock agreements were designated as cash flow hedges of anticipated proceeds from the Company's issuance of debentures in 2005 and 2008. The Company will recognize the $5 million of after-tax gain in the statement of earnings over the terms of the debentures. At June 30, 2008, accumulated other comprehensive income also included $4 million of after-tax gains representing the Company's share of derivative gains reported by unconsolidated affiliates of the Company.

Item 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

The market risk inherent in the Company's market risk sensitive instruments and positions is the potential loss arising from adverse changes in: commodity market prices as they relate to the Company's net commodity position, foreign currency exchange rates, and interest rates as described below.

Commodities
The availability and price of agricultural commodities are subject to wide fluctuations due to unpredictable factors such as weather, plantings, government programs and policies, changes in global demand resulting from population growth and changes in standards of living, and global production of similar and competitive crops.
To reduce price risk caused by market fluctuations, the Company generally follows a policy of using exchange-traded futures and exchange-traded and over-the-counter options contracts to minimize its net position of merchandisable agricultural commodity inventories and forward cash purchase and sales contracts. The Company will also use exchange-traded futures and exchange-traded and over-the-counter options contracts as components of merchandising strategies designed to enhance margins. The results of these strategies can be significantly impacted by factors such as the volatility of the relationship between the value of exchange-traded commodities futures contracts and the cash prices of the underlying commodities, counterparty contracts defaults, and volatility of freight

markets. In addition, the Company from time-to-time enters into derivative contracts which are designated as hedges of specific volumes of commodities that will be purchased and processed, or sold, in a future month. The changes in the market value of such futures contracts have historically been, and are expected to continue to be, highly effective at offsetting changes in price movements of the hedged item. Gains and losses arising from open and closed hedging transactions are deferred in other comprehensive income, net of applicable taxes, and recognized as a component of cost of products sold in the statement of earnings when the hedged item is recognized.

A sensitivity analysis has been prepared to estimate the Company's exposure to market risk of its daily net commodity position. The Company's daily net commodity position consists of merchandisable agricultural commodity inventories, related purchase and sale contracts, and exchange-traded futures and exchange-traded and over-the-counter option contracts, including those contracts used to hedge portions of production requirements. The fair value of such daily net commodity position is a summation of the fair values calculated for each commodity by valuing each net position at quoted futures prices. Market risk is estimated as the potential loss in fair value resulting from a hypothetical 10% adverse change in such prices. Actual results may differ.

	2008		**2007**	
Long/(Short)	**Fair Value**	**Market Risk**	**Fair Value**	**Market Risk**
	(In millions)			
Highest position	**$ 1,260**	**$ 126**	$ 703	$ 70
Lowest position	**(915)**	**(92)**	(565)	(57)
Average position	**251**	**25**	180	18

The change in fair value of the average position for 2008 compared to 2007 was principally a result of increases in commodity prices and, to a lesser extent, quantities underlying the daily net commodity position.

Currencies

In order to reduce the risk of foreign currency exchange rate fluctuations, except for amounts permanently invested as described below, the Company follows a policy of entering into currency exchange forward contracts to mitigate its foreign currency risk related to transactions denominated in a currency other than the functional currencies applicable to each of its various entities. The instruments used are forward contracts, swaps with banks, and exchange-traded futures contracts. The changes in market value of such contracts have a high correlation to the price changes in the currency of the related transactions. The potential loss in fair value for such net currency position resulting from a hypothetical 10% adverse change in foreign currency exchange rates is not material.

The amount the Company considers permanently invested in foreign subsidiaries and affiliates and translated into dollars using the year-end exchange rates is $7.0 billion at June 30, 2008, and $5.4 billion at June 30, 2007. This increase is due to an increase in retained earnings of the foreign subsidiaries and affiliates and appreciation of foreign currencies versus the U.S. dollar. The potential loss in fair value resulting from a hypothetical 10% adverse change in quoted foreign currency exchange rates is $695 million and $543 million for 2008 and 2007, respectively. Actual results may differ.

Interest

The fair value of the Company's long-term debt is estimated using quoted market prices, where available, and discounted future cash flows based on the Company's current incremental borrowing rates for similar types of borrowing arrangements. Such fair value exceeded the long-term debt carrying value. Market risk is estimated as the potential increase in fair value resulting from a hypothetical .5% decrease in interest rates. Actual results may differ.

	2008	**2007**
	(In millions)	
Fair value of long-term debt	**$ 7,789**	$ 4,862
Excess of fair value over carrying value	**99**	110
Market risk	**308**	232

Additional disclosures under FAS 161 (Archer-Daniels-Midland Company 2011 10-K):

NOTE 6 — DERIVATIVE INSTRUMENTS AND HEDGING ACTIVITIES

The Company recognizes all of its derivative instruments as either assets or liabilities at fair value in its consolidated balance sheet. The accounting for changes in the fair value (i.e., gains or losses) of a derivative instrument depends on whether it has been designated and qualifies as part of a hedging relationship and further, on the type of hedging relationship. The majority of the Company's derivatives have not been designated as hedging instruments. For those derivative instruments that are designated and qualify as hedging instruments, a reporting entity must designate the hedging instrument, based upon the exposure being hedged, as a fair value hedge, a cash flow hedge, or a hedge of a net investment in a foreign operation. As of June 30, 2011, and 2010, the Company has certain derivatives designated as cash flow hedges. Within the Note 4 tables, zeros represent minimal amounts.

Derivatives Not Designated as Hedging Instruments

The Company generally follows a policy of using exchange-traded futures and exchange-traded and OTC options contracts to manage its net position of merchandisable agricultural commodity inventories and forward cash purchase and sales contracts to reduce price risk caused by market fluctuations in agricultural commodities and foreign currencies. The Company also uses exchange-traded futures and exchange-traded and OTC options contracts as components of merchandising strategies designed to enhance margins. The results of these strategies can be significantly impacted by factors such as the volatility of the relationship between the value of exchange-traded commodities futures contracts and the cash prices of the underlying commodities, counterparty contract defaults, and volatility of freight markets. Exchange-traded futures and exchange-traded and OTC options contracts, and forward cash purchase and sales contracts of certain merchandisable agricultural commodities accounted for as derivatives by the Company are stated at fair value. Inventories of certain merchandisable agricultural commodities, which include amounts acquired under deferred pricing contracts, are stated at market value. Inventory is not a derivative and therefore is not included in the tables below. Changes in the market value of inventories of certain merchandisable agricultural commodities, forward cash purchase and sales contracts, exchange-traded futures and exchange-traded and OTC options contracts are recognized in earnings immediately. Unrealized gains and unrealized losses on forward cash purchase contracts, forward foreign currency exchange (FX) contracts, forward cash sales contracts, and exchange-traded and OTC options contracts represent the fair value of such instruments and are classified on the Company's consolidated balance sheets as receivables and accrued expenses, respectively.

At March 31, 2010, the Company de-designated and discontinued hedge accounting treatment for certain interest rate swaps. At the date of de-designation of these hedges, $21 million of after-tax gains was deferred in accumulated other comprehensive income (AOCI). These gains remain in AOCI and are being amortized over 30 years. The Company recognized in earnings $30 million of pre-tax gains and $59 million in pre-tax losses from these interest rate swaps for the year ended June 30, 2011 and 2010, respectively.

The following table sets forth the fair value of derivatives not designated as hedging instruments as of June 30, 2011 and 2010.

	2011		**2010**	
	Assets	**Liabilities**	**Assets**	**Liabilities**
	(In millions)		(In millions)	
FX Contracts	**$ 237**	**$ 178**	$ 200	$ 266
Interest Contracts	**3**	**–**	–	26
Commodity Contracts	**2,766**	**2,553**	2,727	3,152
Total	**$ 3,006**	**$ 2,731**	$ 2,927	$ 3,444

The following table sets forth the pre-tax gains (losses) on derivatives not designated as hedging instruments that have been included in the consolidated statements of earnings for the years ended June 30, 2011 and 2010.

	Years ended June 30	
	2011	**2010**
	(In millions)	
Interest Contracts		
Interest expense	**$ 0**	$ 0
Other income (expense) - net	**30**	(57)
FX Contracts		
Net sales and other operating income	**$ (14)**	$ 0
Cost of products sold	**150**	61
Other income (expense) - net	**43**	(42)
Commodity Contracts		
Cost of products sold	**$ (1,303)**	$ 242
Total gain (loss) recognized in earnings	**$ (1,094)**	$ 204

Inventories of certain merchandisable agricultural commodities, which include amounts acquired under deferred pricing contracts, are stated at market value. Inventory is not a derivative and therefore is not included in the table above. Changes in the market value of inventories of certain merchandisable agricultural commodities, forward cash purchase and sales contracts, exchange-traded futures and exchange-traded and OTC options contracts are recognized in earnings immediately.

Derivatives Designated as Cash Flow Hedging Strategies

For derivative instruments that are designated and qualify as cash flow hedges (i.e., hedging the exposure to variability in expected future cash flows that is attributable to a particular risk), the effective portion of the gain or loss on the derivative instrument is reported as a component of AOCI and reclassified into earnings in the same line item affected by the hedged transaction and in the same period or periods during which the hedged transaction affects earnings. The remaining gain or loss on the derivative instrument that is in excess of the cumulative change in the cash flows of the hedged item, if any (i.e., the ineffective portion), hedge components excluded from the assessment of effectiveness, and gains and losses related to discontinued hedges are recognized in the consolidated statement of earnings during the current period.

For each of the commodity hedge programs described below, the derivatives are designated as cash flow hedges. The changes in the market value of such derivative contracts have historically been, and are expected to continue to be, highly effective at offsetting changes in price movements of the hedged item. Once the hedged item is recognized in earnings, the gains/losses arising from the hedge are reclassified from AOCI to either net sales and other operating income, cost of products sold, interest expense or other (income) expense – net, as applicable. As of June 30, 2011, the Company has $1 million of after-tax gains in AOCI related to gains and losses from commodity cash flow hedge transactions. The Company expects to recognize the $1 million of gains in its consolidated statement of earnings during the next 12 months.

The Company, from time to time, uses futures or options contracts to fix the purchase price of anticipated volumes of corn to be purchased and processed in a future month. The objective of this hedging program is to reduce the variability of cash flows associated with the Company's forecasted purchases of corn. The Company's corn processing plants currently grind approximately 75 million bushels of corn per month. During the past 12 months, the Company hedged between 1% and 100% of its monthly anticipated grind. At June 30, 2011, the Company has designated hedges representing 1% of its anticipated monthly grind of corn for the next 6 months.

The Company, from time to time, also uses futures, options, and swaps to fix the purchase price of the Company's anticipated natural gas requirements for certain production facilities. The objective of this hedging program is to reduce the variability of cash flows associated with the Company's forecasted purchases of natural gas. These production facilities use approximately 3.8 million MMbtus of natural gas per month. During the past 12 months, the Company hedged between 48% and 58% of the quantity of its anticipated monthly natural gas purchases. At June 30, 2011, the Company has designated hedges representing between 13% to 37% of its anticipated monthly natural gas purchases for the next 12 months.

The Company, from time to time, also uses futures, options, and swaps to fix the sales price of certain ethanol sales contracts. The objective of this hedging program is to reduce the variability of cash flows associated with the Company's sales of ethanol under sales contracts that are indexed to unleaded gasoline prices. During the past 12 months, the Company hedged between 7 million to 17 million gallons of ethanol per month under this program. At June 30, 2011, the Company has designated hedges representing between 1 million to 14 million gallons of contracted ethanol sales per month over the next 9 months.

To protect against fluctuations in cash flows due to foreign currency exchange rates, the Company from time to time will use forward foreign exchange contracts as cash flow hedges. Certain production facilities have manufacturing expenses and equipment purchases denominated in non-functional currencies. To reduce the risk of fluctuations in cash flows due to changes in the exchange rate between functional versus non-functional currencies, the Company will hedge some portion of the forecasted foreign currency expenditures. At June 30, 2011, the Company has $2 million of after-tax gains in AOCI related to foreign exchange contracts designated as cash flow hedging instruments. The Company will recognize the $2 million of gains in its consolidated statement of earnings over the life of the hedged transactions.

The Company, from time to time, uses treasury lock agreements and interest rate swaps in order to lock in the Company's interest rate prior to the issuance or remarketing of its long-term debt. Both the treasury-lock agreements and interest rate swaps were designated as cash flow hedges of the risk of changes in the future interest payments attributable to changes in the benchmark interest rate. The objective of the treasury-lock agreements and interest rate swaps was to protect the Company from changes in the benchmark rate from the date of hedge designation to the date when the debt was actually issued. At June 30, 2011, AOCI included $22 million of after-tax gains related to treasury-lock agreements and interest rate swaps, of which, $21 million relates to the interest rate swaps that were de-designated at March 31, 2010 as discussed earlier in Note 4. The Company will recognize the $22 million of gains in its consolidated statement of earnings over the terms of the hedged items which range from 10 to 30 years.

The following tables set forth the fair value of derivatives designated as hedging instruments as of June 30, 2011 and 2010.

	2011		**2010**	
	Assets	**Liabilities**	**Assets**	**Liabilities**
	(In millions)		(In millions)	
Interest Contracts	**$ –**	**$ –**	$ 0	$ 0
Commodity Contracts	**1**	**1**	2	2
Total	**$ 1**	**$ 1**	$ 2	$ 2

The following table sets forth the pre-tax gains (losses) on derivatives designated as hedging instruments that have been included in the consolidated statement of earnings for the years ended June 30, 2011 and 2010.

	Consolidated Statement of Earnings Locations	**Years ended June 30**	
		2011	**2010**
		(In millions)	
Effective amounts recognized in earnings			
FX Contracts	:her income/expense – net	**$ 0**	$ (1)
Interest contracts	Interest expense	**0**	0
Commodity Contracts	Cost of products sold	**375**	(85)
	:t sales and other operating income	**(13)**	0
Ineffective amount recognized in earnings			
Interest contracts	Interest expense	**1**	–
Commodity contracts	Cost of products sold	**46**	(55)
Total amount recognized in earnings		**$ 409**	$ (141)

APPENDIX C: Variable Definitions

AOCI Hedge	The amount of unrealized cash flow hedging gains and losses recorded in AOCI (aocidergl) at the end of year *t*, scaled by sales (sale) for year *t*
Assets	Total assets (at) at the end of year *t*
Auditor	Equals 1 if the firm is audited by a Big 4 firm and 0 otherwise (au)
BH_RET	The 2-year buy and hold return assuming purchase in the fourth month of year *t*+1 and holding through the third month of year *t*+3. We select the fourth month of year *t*+1 because it is the first month that the unrealized hedging amount in AOCI is made public through firms filing of their 10-K for year *t*. We include delisting returns when available from CRSP. If a firm is delisted but the delisting return is missing, we assume a -30 percent delisting return in the delisting month and the portfolio return thereafter (Shumway 1997).
Earnvol	The standard deviation of the prior 12 quarter of earnings (niq) divided by the lagged quarterly assets (atq). The fouth quarter of year *t* is the final quarter included in the calculation.
Ferror	Realized earnings in year *t*+k minus the first mean consensus analyst forecast of earnings for year *t*+k following year t's filing of the 10-k, scaled by price at the end of the year. Calculated following the methodology in Campbell et al. (2015).
Gross Profit	Gross profit for year *t* (gp)
Growth	The market value of assets at the end of year *t* divided by the book value of assets at the end of year *t*. The market value of assets is calculated as the book value of assets (at) minus the book value of shareholders equity (seq) plus the market value of equity (csho x prcc_f).
Horizon	Number of days from analysts' earnings forecast (statpers) to year *t*+k fiscal period end (fpedats)
Institutional Ownership	Calculated as the sum of institutional shares as per Thomson Reuter's 13F database, scaled by shares outstanding at year end. Firm years are designated as having high (low) institutional ownership if they fall above (below) the median value for *Institutional Ownership* by year.
Leverage	Total liabilities (lt) at the end of year *t* scaled by total assets (at) at the end of year *t*
LMVAL	The natural log of market value (prcc_f x csho) at the end of year t

Loss	Equals 1 if the firm has a loss in year t+k and 0 otherwise
MKBK	Market-to-book ratio measured at the end of year t
Post	An indicator variable equal to 1 for all firm-year observations that occur after the adoption of FAS 161
NumAnalysts	The number of analysts used to calculate the mean consensus forecast for the year t+k
Surprise	Net income (ni) in year t minus net income in year t-1 scaled by price in year t-1

TABLE 1

Sample selection and composition

Panel A: Sample selection	
Number of firms in COMPUSTAT with nonmissing derivatives data and total assets>0 and nonmissing, nonzero levels of AOCIDERGL from 2001 to 2013	20,398
Remove SIC codes 6000-6999 (financial services)	(4,176)
Missing necessary dependent and control variables for gross profit and return tests	(2,833)
Subtotal: Number of firm-years available for gross profit and return tests	13,006
Missing analyst forecast data or regression control variables for analyst forecast tests	(7,436)
Number of firm-years available for analyst forecast tests	5,570

Panel B: Distribution by year

Year	Number	%
2001	855	6.6%
2002	906	7.0%
2003	913	7.0%
2004	919	7.1%
2005	971	7.5%
2006	979	7.5%
2007	1,076	8.3%
2008	1,186	9.1%
2009	1,129	8.7%
2010	1,075	8.3%
2011	1,040	8.0%
2012	1,008	7.8%
2013	949	7.3%

(This table is continued on the next page)

TABLE 1 (continued)

Panel C: Industry classification (Fama-French 48 industry classification)

	Pre-FAS 161		Post-FAS 161	
Industry	Number	%	Number	%
Petroleum and Natural Gas	618	7.9%	351	6.7%
Utilities	593	7.6%	354	6.8%
Business Services	524	6.7%	428	8.2%
Transportation	396	5.1%	270	5.2%
Machinery	392	5.0%	247	4.7%
Electronic Equipment	391	5.0%	302	5.8%
Retail	362	4.6%	233	4.5%
Communications	340	4.4%	225	4.3%
Chemicals	297	3.8%	166	3.2%
Food Products	265	3.4%	157	3.0%
Wholesale	265	3.4%	195	3.7%
Computers	212	2.7%	174	3.3%
Pharmaceutical Drugs	196	2.5%	164	3.2%
Consumer Goods	186	2.4%	118	2.3%
Steel Works Etc.	184	2.4%	99	1.9%
Automobiles and Trucks	179	2.3%	129	2.5%
Measuring and Control Equipment	171	2.2%	122	2.3%
Electrical Equipment	168	2.2%	112	2.2%
Medical Equipment	164	2.1%	124	2.4%
Business Supplies	156	2.0%	88	1.7%
Apparel	152	1.9%	79	1.5%
Restaurants, hotels, motels	149	1.9%	114	2.2%
Construction Materials	133	1.7%	65	1.2%
Other	126	1.6%	83	1.6%
Healthcare	116	1.5%	85	1.6%
Personal Services	112	1.4%	59	1.1%
Entertainment	110	1.4%	68	1.3%
Rubber and Plastic Products	84	1.1%	42	0.8%
Aircraft	81	1.0%	57	1.1%
Industries with <1%	683	8.8%	491	9.4%

This table presents our sample selection process and sample composition. Panel A demonstrates the sample selection process. Panel B presents the distribution of the sample across years between 2001 and 2013. Panel C presents the distribution of the sample across industries based on the Fama-French 48 industry classification.

TABLE 2

Summary statistics

Panel A: Gross profit and returns sample

	n	Mean	S.D.	P25	Median	P75
AOCI Hedge	13,006	-0.0033	0.0148	-0.0031	-0.0005	0.0003
BH_RET	13,006	0.392	1.2277	-0.1432	0.2061	0.609
Gross Profit	13,006	0.3673	0.1966	0.2188	0.3311	0.4844
Assets	13,006	12,780.69	36,325.14	865.92	2,878.17	9,674.16
Leverage	13,006	0.613	0.2269	0.469	0.6094	0.7327

Panel B: Analyst forecast sample

	n	Mean	S.D.	P25	Median	P75
Firm-level statistics						
AOCI Hedge	5,570	-0.0031	0.0131	-0.0025	-0.0004	0.0003
Market Value	5,570	12,323.357	26,378.312	1,311.639	3,422.704	10,499.742
Auditor	5,570	0.9648	0.1842	1	1	1
MKBK	5,570	2.8895	2.9191	1.4934	2.237	3.5924
Surprise	5,570	-21.905	2,745	-1.2352	0.61	4.1136
EARNVOL	5,570	128.0642	278.1966	12.3552	36.2597	106.8695
Variables that change over time						
t+2						
Ferror	5,570	-0.0055	0.051	-0.0199	-0.0025	0.0088
Loss	5,570	0.3839	0.4864	0	0	1
Horizon	5,570	617.4884	26.0338	621	623	625
Number of Analysts	5,570	2.2707	0.6088	1.7918	2.3026	2.7081
t+3						
Ferror	5,570	-0.0102	0.0592	-0.0303	-0.0069	0.0097
Loss	5,570	0.484	0.4998	0	0	1
Horizon	5,570	929.0487	89.1745	868	986	989
Number of Analysts	5,570	1.1867	0.5611	0.6931	1.0986	1.6094

(This table is continued on the next page)

TABLE 2 (continued)

Panel C: Summary statistics for firms with institutional ownership data						
	n	Mean	S.D.	P25	Median	P75
Low IO firms						
AOCI Hedge	6,420	-0.0036	0.0159	-0.0032	-0.0005	0.0003
BH_RET	6,420	0.3939	1.228	-0.1684	0.1859	0.5932
Gross Profit	6,420	0.3627	0.1989	0.2116	0.329	0.4753
Assets	6,420	14,095.43	30,322.35	457.54	2,211.21	11,688.07
Leverage	6,420	0.5927	0.216	0.4502	0.5996	0.7197
High IO firms						
AOCI Hedge	6,431	-0.0026	0.0125	-0.0025	-0.0004	0.0002
BH_RET	6,431	0.3949	1.2439	-0.1207	0.2241	0.6375
Gross Profit	6,431	0.3916	0.1983	0.2429	0.3543	0.5201
Assets	6,431	8,615.69	19,276.04	1,153.46	2,851.00	7,382.50
Leverage	6,431	0.5803	0.2089	0.4437	0.5733	0.7019

This table provides descriptive statistics for the various samples used in the study. Panel A presents descriptive statistics for variables used in gross profit and stock return tests for the full sample of firm-year observations. Panel B presents descriptive statistics for the sample of firm-year observations used in analyst forecast tests. Panel C presents descriptive statistics for variables used in gross profit and stock return tests for the institutional ownership sample. Summary statistics are broken out by firm-years that are identified as having high or low institutional ownership. Continuous variables are winsorized at 1 percent and 99 percent to avoid the influence of outliers. All samples exclude financial firms. Appendix C contains detailed definitions of all variables.

TABLE 3

Cash flow hedges and future gross profit

Dependent Variable		*Gross Profit$_{t+2}$*
Variable	**Prediction**	**Column 1**
AOCI Hedge$_t$	(-)	-0.324***
		(-3.34)
*AOCI Hedge$_t$ * Post*	(?)	-0.0174
		(-0.41)
Post	(?)	-0.00144
		(-0.92)
Gross Profit$_t$		0.855***
		(69.81)
Log(Assets)$_t$		0.000646
		(1.17)
Leverage$_t$		0.00155
		(0.34)
Growth$_t$		0.000857***
		(3.69)
Prob>F(*AOCI Hedge + AOCI Hedge * Post=0*)		0.0001***
Industry fixed effects		Yes
S.E. clustered by:		Firm
Adj. R^2		0.820
N		13,006

This table provides multivariate regression results of future gross profit on the level of unrealized cash flow hedge gain or losses in year t. Continuous variables are winsorized at 1 percent and 99 percent. Industry fixed effects are based on the Fama-French (1997) 48-industry classifications. The symbols, ***, **, and * next to the t-statistic indicate a 1 percent, 5 percent and 10 percent respectively, significance level using two-tailed t-tests. Standard errors are clustered at the firm level. The sample excludes financial firms. Appendix C contains detailed definitions of all variables.

TABLE 4

Buy and hold returns by cash flow hedge decile

	Pre-FAS 161			Post-FAS 161		
AOCI Hedge Decile	N	Mean AOCI_Hedge	*BH_RET*	N	Mean AOCI_Hedge	*BH_RET*
1	776	-0.04882	0.6972	518	-0.04346	0.1773
2	782	-0.00673	0.4954	520	-0.00605	0.3009
3	782	-0.00314	0.4411	520	-0.00287	0.3097
4	779	-0.00174	0.4749	521	-0.00156	0.3174
5	781	-0.00094	0.4561	520	-0.00078	0.2597
6	783	-0.00045	0.4603	521	-0.00032	0.2474
7	780	-0.00006	0.4374	521	-0.0001	0.2857
8	782	0.00034	0.3966	520	0.00018	0.2281
9	782	0.00140	0.4534	521	0.00107	0.2525
10	778	0.021691	0.4949	519	0.01513	0.2119
Return of (1-10)			0.2023			-0.0346
p-value			0.008***			0.34
Annualize Return			9.64%			-1.74%

This table presents two-year buy and hold returns (*BH_RET*) broken down by *AOCI Hedge* deciles for the period before and after FAS 161. The two-year buy and hold return is calculated from the fourth month of year *t*+1 through the third month of year *t*+3. We select the fourth month of year *t*+1 because it is the first month that the unrealized cash flow hedge gains/losses included in AOCI are made public through firms' filing of their 10-K for year *t*. The table presents the difference and the p-value from a two-tailed t-test comparing the mean buy-and-hold return of the first and tenth decile for the both the pre- and post-FAS 161 periods. Appendix C contains detailed definitions of all variables.

TABLE 5

Fama-French risk-adjusted returns by cash flow hedge decile

Model: $R_{i,t} - R_{f,t} = \alpha_0 + b_{i,M}(R_{M,t} - R_{f,t}) + s_i SMB_t + h_i HML_t + m_i UMD_t + \varepsilon_{i,t}$,

Panel A: Pre-FAS 161

AOCI_HEDGE	Firms	Alpha	MKT_RF	SMB	HML	UMD	R^2
1	776	0.624***	1.125***	0.519***	0.186***	-0.164***	0.195
		(7.250)	(50.11)	(13.03)	(5.010)	(-9.201)	
2	782	0.491***	1.123***	0.555***	0.169***	-0.235***	0.193
		(0.0885)	(0.0231)	(0.0409)	(0.0381)	(0.0183)	
3	782	0.418***	0.981***	0.651***	0.285***	-0.183***	0.210
		(5.382)	(48.38)	(18.10)	(8.499)	(-11.34)	
4	779	0.459***	1.004***	0.643***	0.197***	-0.167***	0.209
		(5.942)	(49.70)	(17.97)	(5.913)	(-10.41)	
5	781	0.288***	1.012***	0.659***	0.261***	-0.191***	0.211
		(3.635)	(48.93)	(17.99)	(7.669)	(-11.70)	
6	783	0.349***	1.058***	0.713***	0.146***	-0.205***	0.238
		(4.628)	(53.67)	(20.44)	(4.503)	(-13.14)	
7	780	0.256***	1.067***	0.618***	0.0717**	-0.147***	0.235
		(3.531)	(56.30)	(18.39)	(2.292)	(-9.807)	
8	782	0.189**	1.081***	0.646***	0.0577*	-0.153***	0.225
		(2.503)	(54.58)	(18.49)	(1.770)	(-9.784)	
9	782	0.324***	1.136***	0.488***	0.00375	-0.134***	0.219
		(4.244)	(56.94)	(13.82)	(0.114)	(-8.534)	
10	778	0.314***	1.138***	0.424***	-0.0943***	-0.137***	0.200
		(3.946)	(54.73)	(11.52)	(-2.748)	(-8.353)	
Alpha of (1-10)		0.31					
p-value		0.0071***					

(This table is continued on next page.)

TABLE 5 (continued)

Panel B: Post-FAS 161

AOCI_HEDGE	Firms	Alpha	*MKT_RF*	*SMB*	*HML*	*UMD*	R^2
1	518	-0.292**	0.850***	0.372***	0.105	-0.239***	0.093
		(-2.203)	(20.24)	(6.888)	(1.376)	(-4.463)	
2	520	-0.0870	1.043***	0.148***	0.142**	-0.0675	0.119
		(0.123)	(0.0389)	(0.0500)	(0.0704)	(0.0497)	
3	520	0.0339	0.969***	0.303***	0.0789	-0.117**	0.099
		(0.254)	(22.90)	(5.576)	(1.032)	(-2.162)	
4	521	0.0643	1.025***	0.391***	0.110*	-0.154***	0.147
		(0.556)	(27.97)	(8.322)	(1.663)	(-3.278)	
5	520	-0.00624	1.034***	0.531***	0.310***	-0.0295	0.142
		(-0.0513)	(26.75)	(10.70)	(4.440)	(-0.597)	
6	521	-0.0962	0.958***	0.531***	0.228***	-0.134**	0.113
		(-0.719)	(22.57)	(9.753)	(2.976)	(-2.466)	
7	521	-0.104	1.039***	0.481***	0.226***	-0.120**	0.157
		(-0.900)	(28.29)	(10.20)	(3.400)	(-2.559)	
8	520	0.00821	0.988***	0.483***	0.190**	-0.254***	0.118
		(0.0606)	(23.01)	(8.757)	(2.447)	(-4.631)	
9	521	-0.143	1.078***	0.326***	0.105	-0.187***	0.157
		(-1.245)	(29.58)	(6.963)	(1.590)	(-4.005)	
10	519	-0.337***	0.974***	0.282***	0.144**	-0.208***	0.115
		(-2.661)	(24.21)	(5.456)	(1.976)	(-4.051)	
Alpha of (1-10)		0.045					
p-value		0.877					

This table presents Fama-French (1993) abnormal returns regressions by *AOCI Hedge* decile using monthly stock returns. *MKT_RF, SMB,* and *HML* are defined as in Fama and French (1993), and *UMD* is defined as in Carhart (1997). Panel A presents regressions in the pre FAS 161 period, and Panel B presents results from the post FAS 161 period. The symbols ***, **, and * indicate a 1 percent, 5 percent and 10 percent respectively, significance level using two-tailed t-tests. The bottom of each panel presents the mean difference and the p-value from a two-tailed t-test comparing the difference between the buy and hold return of the first and tenth decile for the both the Pre FAS 161 and Post FAS 161 periods. Appendix C contains detailed definitions of all variables.

TABLE 6

Cash flow hedges and future analyst forecast errors

Dependent Variable		$FError_{t+2}$	$FError_{t+3}$
Variable	**Prediction**	**Column 1**	**Column 2**
AOCI Hedge	-	-0.127	-0.507**
		(-0.982)	(-2.515)
*AOCI Hedge * Post*	+	0.0848	0.553***
		(0.619)	(2.780)
Post	?	0.00523***	0.00902***
		(3.371)	(3.760)
LMVAL		-0.00247***	0.000637
		(-2.638)	(0.601)
AUDITOR		0.00225	0.0101*
		(0.402)	(1.647)
MKBK		-0.000453	-0.000454
		(-1.094)	(-1.402)
LOSS		-0.0284***	-0.0335***
		(-15.28)	(-14.03)
HORIZON		0.000004	-0.0000012
		(0.183)	(-1.031)
NUMANALYSTS		0.00729***	0.00177
		(4.013)	(0.896)
SURPRISE		-0.0000031	-0.0000008
		(-0.147)	(-0.0412)
EARNVOL		0.0000033	-0.0000014
		(0.954)	(-0.274)
Prob>F(*AOCI Hedge + AOCI Hedge * Post=0*)		0.99	0.14
Industry Controls		Y	Y
S.E. Clustered by:		Firm	Firm
Adj. R2		0.087	0.097
N		5,570	5,570

This table presents piecewise multivariate regressions of future analyst forecast errors on the level of unrealized cash flow hedge gain or losses in year t. Variables are winsorized at 1 percent and 99 percent. Industry fixed effects are based on the Fama-French (1997) 48-industry classifications. The symbols, ***, **, and * next to the t-statistic indicate a 1 percent, 5 percent and 10 percent respectively, significance level using two-tailed t-tests. Standard errors are clustered at the firm level. The sample excludes financial firms. Appendix C contains detailed definitions of all variables.

TABLE 7

Cash flow hedges and future gross profit by institutional ownership

Dependent Variable		*Gross Profit*$_{t+2}$	
		Low IO	*High IO*
Variable	**Prediction**	**Column 2**	**Column 3**
AOCI Hedge$_t$	(-)	-0.323**	-0.397**
		(-2.16)	(-2.47)
AOCI Hedge$_t$ * *Post*	(?)	-0.0395	0.123
		(-0.94)	(0.92)
Post	(?)	-0.00112	-0.000996
		(-0.50)	(-0.43)
Gross Profit$_t$		0.838***	0.869***
		(47.80)	(49.85)
Log(Assets)$_t$		0.00149**	-0.000307
		(2.01)	(-0.32)
Leverage$_t$		0.00109	0.00213
		(0.13)	(0.35)
Growth$_t$		0.00120***	0.000510**
		(2.84)	(1.96)
Prob>F(*AOCI Hedge + AOCI Hedge * Post=0*)		0.008***	0.042**
Industry Fixed Effects		Yes	Yes
S.E. Clustered by:		Firm	Firm
Adj. R2		0.803	0.839
N		6,241	6,337

This table provides multivariate regression results of future gross profit on the level of unrealized cash flow hedge gains or losses in year t in subsamples of firms with high and low institutional ownership. Continuous variables are winsorized at 1 percent and 99 percent. Industry fixed effects are based on the Fama-French (1997) 48-industry classifications. The symbols ***, **, and * next to the t-statistic indicate a 1 percent, 5 percent and 10 percent respectively, significance level using two-tailed t-tests. Standard errors are clustered at the firm level. The sample excludes financial firms. Appendix C contains detailed definitions of all variables.

TABLE 8

Buy and hold returns by cash flow hedge decile and institutional ownership

Panel A: Low Institutional Ownership

	Pre-FAS 161		Post-FAS 161	
AOCI Hedge Decile	N	*BH_RET*	N	*BH_RET*
1	416	0.7381	308	0.1723
2	400	0.5288	271	0.2658
3	389	0.4906	256	0.2857
4	388	0.5021	243	0.2642
5	383	0.5146	242	0.2252
6	364	0.4545	218	0.2641
7	333	0.4016	197	0.2281
8	380	0.3665	255	0.1873
9	389	0.4732	279	0.2175
10	435	0.5438	274	0.1479
Return of (1-10)		0.1943		0.0244
p-value		0.0564*		0.625
Annualized Return		9.28%		1.21%

Panel B: High Institutional Ownership

	Pre-FAS 161		Post-FAS 161	
AOCI Hedge Decile	N	*BH_RET*	N	*BH_RET*
1	355	0.6612	198	0.2545
2	376	0.4988	239	0.3341
3	389	0.4025	255	0.3098
4	388	0.4177	267	0.3768
5	394	0.4098	266	0.2825
6	413	0.4583	292	0.2439
7	444	0.4776	314	0.3193
8	397	0.4143	255	0.2728
9	388	0.4297	231	0.2665
10	337	0.4488	233	0.2838
Return of (1-10)		0.2124		-0.0293
p-value		0.0683*		0.5912
Annualized Return		10.11%		-1.48%

This table presents two year buy and hold returns (*BH_RET*) broken down by *AOCI Hedge* decile for the period before and after FAS 161 in subsamples of firms with high and low institutional ownership. Panel A presents results for the subsample of firms with low institutional ownership, and Panel B presents results for the subsample of firms with high institutional ownership. The 2-year buy and hold return is calculated from the fourth month of year *t*+1 through the third month of year *t*+3. We select the fourth month of year *t*+1 because it is the first month that the unrealized hedging amount in AOCI is made public through firms filing of their 10-K for year *t*. The table presents the mean difference and the p-value from a two-tailed t-test comparing the mean buy and hold return of the first and tenth decile for the both the Pre FAS 161 and Post FAS 161 periods. Appendix C contains detailed definitions of all variables.

TABLE 9

Fama-French risk-adjusted returns by cash flow hedge decile and institutional ownership

Panel A: Low institutional ownership

Pre-FAS 161

AOCI_HEDGE Decile	Firms	Alpha	MKT_RF	SMB	HML	UMD	R^2
1	416	0.676***	1.093***	0.522***	0.122**	-0.204***	0.165
		(5.287)	(33.12)	(8.805)	(2.210)	(-7.828)	
10	435	0.380***	1.110***	0.364***	-0.176***	-0.168***	0.172
		(3.369)	(37.71)	(6.977)	(-3.621)	(-7.193)	
Alpha of (1-10)		0.296					
p-value		0.077*					

Post-FAS 161

AOCI_HEDGE Decile	Firms	Alpha	MKT_RF	SMB	HML	UMD	R^2
1	308	-0.118	0.747***	0.277***	0.0488	-0.139**	0.066
		(-0.685)	(13.66)	(3.937)	(0.496)	(-1.970)	
10	274	-0.389**	0.921***	0.139*	0.276**	-0.174**	0.093
		(-2.095)	(15.60)	(1.870)	(2.562)	(-2.339)	
Alpha of (1-10)		0.271					
p-value		0.2697					

Panel B: High institutional ownership

Pre-FAS 161

AOCI_HEDGE Decile	Firms	Alpha	MKT_RF	SMB	HML	UMD	R^2
1	355	0.560***	1.170***	0.493***	0.250***	-0.123***	0.238
		(4.910)	(38.95)	(9.400)	(5.102)	(-5.134)	
10	337	0.239**	1.166***	0.515***	0.0179	-0.0966***	0.246
		(2.186)	(40.83)	(10.25)	(0.381)	(-4.313)	
Alpha of (1-10)		0.321					
p-value		0.0391**					

Post-FAS 161

AOCI_HEDGE Decile	Firms	Alpha	MKT_RF	SMB	HML	UMD	R^2
1	198	-0.0199	1.023***	0.391***	0.285***	-0.162**	0.145
		(-0.104)	(16.87)	(5.032)	(2.584)	(-2.116)	
10	233	-0.176	1.028***	0.395***	-0.0712	-0.242***	0.144
		(-1.015)	(18.76)	(5.463)	(-0.726)	(-3.378)	
Alpha of (1-10)		-0.023					
p-value		0.5760					

This table presents Fama-French (1993) abnormal returns regressions by *AOCI Hedge* decile using monthly stock returns 161 in subsamples of firms with high and low institutional ownership. Panel A presents results for the subsample of firms with low institutional ownership, and Panel B presents results for the subsample of firms with high institutional ownership. *MKT_RF*, *SMB,* and *HML* are defined as in Fama and French (1993), and *UMD* is defined as in Carhart (1997). Panel A presents regressions in the pre FAS 161 period, and Panel B presents results from the post FAS 161 period. The symbols ***, **, and * indicate a 1 percent, 5 percent and 10 percent respectively, significance level using two-tailed t-tests. The bottom of each panel presents the mean difference and the p-value from a two-tailed t-test comparing the difference between the buy and hold return of the first and tenth decile for the both the Pre FAS 161 and Post FAS 161 periods. Appendix C contains detailed definitions of all variables.