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Fair Value Accounting and Managers' Hedging Decisions

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ABSTRACT

We conduct two experiments with experienced accountants to investigate how fair value accounting affects managers' real economic decisions. In experiment 1, we find that participants are more likely to make suboptimal decisions (e.g., forgo economically sound hedging opportunities) when both the economic and fair value accounting impact information is presented than when only the economic impact information is presented, or when both the economic and historical cost accounting impact information is presented. This adverse effect of fair value accounting is more likely when the price volatility of the hedged asset is higher, which is a situation where, paradoxically, hedging is more beneficial. We find that the effect is mediated by participants' relative considerations of economic factors versus accounting factors (e.g., earnings volatility). Experiment 2 shows that enhancing salience of economic information or separately presenting net income *not* from fair value remeasurements reduces the adverse effect of fair value accounting. Our findings are informative to standard setters in their debate on the efficacy of fair value accounting.

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1. Introduction

Standard setters and regulators have implemented fair value accounting across a wide range of financial instruments and other nonfinancial items (SFAS No. 157 and 159). While standard setters and proponents of fair value accounting believe that it provides the most transparent and relevant information for investors' decision making (Ahmed, Kilic, and Lobo [2011]), fair value accounting has been criticized and resisted by various user groups (Hodder and Hopkins [2012]). Recently, it has also been blamed for causing and exaggerating the 2008 financial crisis (Dontoh et al. [2012]; see Laux and Leuz [2009] for a discussion). A key criticism is that fair value accounting results in excessive volatility when markets become illiquid and market prices are volatile.[1] In particular, it has been argued that, because the volatility may not properly reflect the underlying economic fundamentals, it can distort managerial decisions (Plantin, Sapra, and Shin [2008]). Such allegations, along with general criticisms about the role of fair value accounting in the financial crisis, have led to intense lobbying and even moves to eliminate fair value accounting (Gordon [2009]).

Despite the importance of this issue, there has been little empirical evidence on whether managers' real economic decisions are actually adversely affected by fair value accounting.[2] Prior studies have found that managers opportunistically use fair value estimates to manage earnings (Dietrich, Harris, and Muller [2001]) and achieve higher compensation benefits (Dechow, Myers, and Shakespeare [2010]), but none of them has documented a distortion of real decisions in terms of sacrificing of economic value caused by fair value accounting. Documenting any adverse real effect of fair value accounting on managerial decisions is important because those decisions directly influence firms' economic growth and value creation (Kanodia [2007]).

We examine the real effect of fair value accounting in the context of derivatives because this is an area where the use and alleged benefits/costs of fair value accounting have been especially controversial, and the economic consequences of any distortion of managerial decisions (e.g., not taking up a hedge despite good economic reasons) can be significant. Anecdotal evidence (e.g., McKay and Niedzielski [2000]) and surveys (Lins, Servaes, and Tamayo [2010]) document claims by chief financial officers that the earnings volatility arising from fair value accounting adversely influences managers' decisions, suggesting a cost arising from fair value accounting. An empirical-archival study by Zhang [2009] suggests the opposite. She

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[1] PricewaterhouseCoopers—Point of view: Fair value accounting. Please refer to the Web site: http://www.pwc.com/us/en/point-of-view/fair-value-accounting-finance-proposal.jhtml.

[2] Following the term used in Kanodia [2007], "real effect" of accounting disclosure refers to the impact of accounting measurement and financial reporting on firms' real decisions and resource allocation in the economy. We consider the sacrificing of economic value to report intertemporally smooth earnings as a "real effect" of fair value accounting.

concludes that SFAS No. 133 benefited (in terms of risk reduction) a sample of firms that initiated derivative programs but did not reduce their risk exposures before the implementation of SFAS No. 133; however, this evidence is ambiguous because a significant proportion of these firms actually stopped derivative activities after the implementation of SFAS No. 133.

Our study employs two experiments to address the following research questions. We investigate three related questions in the first experiment. First, we examine whether there is a causal link between managers' foregoing of economically beneficial hedging opportunities and fair value accounting. This issue is important because the current fair value accounting standards, intended to lead to better decisions, have been alleged to cause managers to underhedge or completely avoid hedging to reduce reported earnings volatility, exposing companies to larger risk factors (Leib [2001]). We also assess the moderating role of price volatility. In our experiment, higher (lower) price volatility results in higher (lower) reported earnings volatility when managers choose to hedge and fair value accounting is used. We examine this factor because reported earnings volatility, which does not necessarily correspond to economic fundamentals, has been expressly singled out as a major concern about fair value accounting (e.g., McKay and Niedzielski [2000], Barth [2004]). However, there is no evidence that the reported earnings volatility actually influences managers' decisions. Second, we investigate the process by which fair value accounting influences managers' decisions. Specifically, we posit that this occurs because the fair value accounting information shifts managers' emphasis away from economic factors to accounting factors. Third, we investigate whether managers' decisions will also be impeded if historical cost accounting is used to account for derivatives, in order to provide further causal evidence regarding the role of fair value accounting. In experiment 2, we investigate the effectiveness of two simple debiasing mechanisms—altering the salience of accounting versus economic impact, and separately presenting net income *not* from fair value remeasurements—to mitigate any adverse impact of fair value accounting on managers' decisions.

Managers likely consider both economic and accounting factors when they make hedging decisions, but separating out managers' considerations of economic versus accounting factors is difficult using archival data because managers' considerations of these factors are not observable. We capitalize on the comparative advantage of experiments by holding constant the anticipated economic impact of a hedging decision, and varying the presence/absence of accounting-related information (experiment 1), or the order/manner in which the accounting information is presented (experiment 2). In experiment 1, we manipulate whether managers are provided with information on the economic impact alone (the *economic-only* condition) or both the economic and accounting impact information (the *economic-plus-accounting* condition) when they make their risk hedging decisions. The economic impact of hedging relates to the effect of hedging on the company's expected future cash flow, while the accounting

impact of hedging relates to the effect of hedging on the company's reported earnings volatility. We create a context where it is economically desirable to hedge across all conditions. Specifically, based on the economic impact of hedging versus not hedging, managers benefit from employing derivatives to hedge corporate risk exposures. However, reporting derivatives and hedging activities will result in reported earnings volatility on the financial statements. A lower propensity by participants to hedge in the *economic-plus-accounting* condition compared to the *economic-only* condition will indicate that this is due to their consideration of the accounting impact.

Experiment 1 also manipulates the price volatility (low, high) of the hedged asset. High price volatility implies greater uncertainty over the future cash outlays, which suggests a greater benefit of hedging by locking into an agreed-upon future price. However, in our setting, despite the greater economic benefit of hedging, higher price volatility also results in higher reported earnings volatility when a derivative contract is taken up and fair value accounting is applied. In addition, to compare the effects between fair value accounting and historical cost accounting, we also design a "historical cost accounting" control condition where participants are provided with information on both the economic and historical cost accounting impact when price volatility is high. We further manipulate two presentation formats in experiment 2: (1) the order in which information is presented, either economic impact followed by accounting impact or the reverse order, and (2) whether the net income *not* from fair value remeasurements is reported in a separate column.

Results in experiment 1 show that participants in the *economic-plus-accounting* condition are less likely to hedge the price risk than those in the *economic-only* condition only when fair value accounting is applied, but not when historical cost accounting is applied. This negative effect of fair value accounting on managers' hedging decisions is magnified when price volatility of the hedged asset is higher (vs. lower). We further document that participants in the *economic-only* condition are more likely to hedge when price volatility is higher than lower, consistent with the economic rationale for undertaking risk management. However, the reverse occurs in the *economic-plus-accounting* condition: participants are *less* likely to hedge when price volatility is higher than lower. Furthermore, based on participants' rationales for their decisions, we find that this effect is fully mediated by managers' relative emphasis on economic versus accounting considerations related to hedging. Finally, in experiment 2, we show that notwithstanding managers' concerns about the accounting impact of hedging, their propensity to hedge is increased by making them attend to the economic impact of hedging prior to their decisions, or by separately presenting net income *not* arising from fair value remeasurements.

Our paper contributes toward an improved understanding of the effect of fair value accounting on managers' economic decisions. Prior studies on fair value accounting mostly focus on how fair value measurements influence the value relevance or risk relevance of accounting numbers

(Barth [1994], Barth and Beaver [1996], Nelson [1996], Venkatachalam [1996], Ahmed, Kilic, and Lobo [2011]). Rather than focusing on external users' perspective (e.g., investors or creditors), we examine the effect of fair value accounting on internal managers' decision making. We provide empirical evidence that, despite substantial economic benefits, managers actually abstain from hedging the risk because of their concerns over the fair value accounting impact (e.g., increased earnings volatility). We also provide evidence that this effect is magnified when price volatility of the hedged asset is higher (with expected higher earnings volatility), where the case for hedging is actually stronger from a risk management perspective. These findings have implications for the existing debate about the pros and cons of fair value accounting (Laux and Leuz [2009]). While there have been demonstrated benefits of fair value accounting, such as increased relevance (e.g., Hirst, Hopkins, and Wahlen [2004]), we provide evidence on an unintended effect of fair value accounting. Our findings are particularly relevant to concerns that fair value accounting distorts real decisions by inducing reported earnings volatility that is purely a consequence of the accounting treatment rather than something that reflects the underlying fundamentals.

Our paper also contributes to the literature on the comparison between fair value accounting and historical cost accounting. Prior studies have compared these two different reporting regimes in terms of their different impact on market transparency (Bleck and Liu [2007]), their respective information content in terms of providing early warning of potential financial distress (Gigler, Kanodia, and Venugopalan [2007]), or their relative pros and cons in measuring different types of balance sheet items (Plantin, Sapra, and Shin [2008]). Our study compares the two reporting regimes from a different perspective: their effects on managerial decisions that have direct impact on the firm's profitability. We show that participants tend to forgo an economically desirable hedging opportunity only when fair value accounting impact is considered. When historical cost accounting impact is taken into consideration, participants' decisions are similar to their decisions when only the economic impact is considered. Furthermore, we provide further evidence that the fair value accounting impact shifts managers' concerns over the economic considerations toward accounting considerations, which in turn results in suboptimal economic decisions. This finding illustrates another potential downside of fair value accounting compared to historical cost accounting, and will be useful for regulators who are moving from a historical cost accounting regime to a fair value accounting regime.

Finally, our finding on the remedial effect of making the economic considerations more salient should be helpful to managers and regulators. Fair value accounting is likely to be the de facto reporting norm for many asset and liability classes in the future, and our finding suggests that a simple intervention (i.e., making decision makers attend to the economic impact of hedging prior to their decisions) can possibly help managers make better economic decisions in this reporting regime. In addition, our finding that

separate presentation of net income *not* from fair value remeasurements can reduce managers' concerns over reported earnings volatility should also be of interest to regulators. Specifically, we provide some ex ante evidence on the effect of separately presenting net income changes due to fair value remeasurements from all other changes, which has been proposed by the Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB) in 2008 (FASB/IASB Discussion Paper [2008], Staff Draft [2010]). Although the purpose of this proposal is targeted toward improving users' welfare in their use of financial information, we show that this proposed presentation format has the added effect of improving managers' decisions as well.

In the next section, we review the related literature and develop hypotheses. Section 3 describes the research design, experimental procedure, and results in experiment 1. Section 4 discusses experiment 2, where we examine the effects of two debiasing mechanisms. Finally, we conclude the study in section 5.

2. *Literature Review and Hypothesis Development*

Prior studies demonstrate that fair value measurements lead to more volatile earnings and stock returns. Hodder, Hopkin, and Wahlen [2006] find that the volatility of full-fair-value income is more than three times that of comprehensive income and more than five times that of net income for their sample. Their findings also suggest that full-fair-value income volatility relates more closely to stock price volatility that is not captured by net income or comprehensive income. More recently, Zhou [2009] documents a similar finding in a more specific context—fair value accounting for derivatives. She shows that an earnings measure in the post-SFAS 133 period that includes the fair-value-based hedging performance has a positive association with idiosyncratic stock return volatility. These findings support managers' argument that fair value accounting leads to more volatility on their income statements and stock prices.

Managers are averse to reporting volatile earnings. Smooth earnings help managers avoid negative earnings surprises, and thus are associated with less negative stock price reactions (Bartov, Givoly, and Hayn [2002]) and lower management turnover (DeFond and Park [1997]). Furthermore, investors associate higher earnings volatility with lower disclosure quality and lower earnings quality, resulting in an increase in required risk premium and cost of capital (Sengupta [1998], Francis et al. [2002], Easley and O'Hara [2004]). As reported in Graham, Harvey, and Rajgopal [2005], 96.9% of surveyed CFOs prefer a smooth earnings path and 78% of them report that they would sacrifice economic value to achieve that target. In this study, we propose that this aversion to reporting earnings volatility arising from fair value accounting can cause managers to make suboptimal economic decisions. Fair value accounting cuts across many domains and has the potential to influence a myriad of economic decisions. For instance,

managers' investing or financing decisions may change when their investments or long-term liabilities are recorded at fair value, due to their expectations of greater financial statement volatility with the use of fair value accounting. Furthermore, when earnings incorporating fair value changes are used to evaluate firm performance, managers' operating decisions are likely to change in response to a more volatile performance benchmark. A recent study by Bhat, Frankel, and Martin [2011] documents that fair value accounting exacerbated banks' tendency to sell mortgage-backed securities when these assets faced liquidity-driven price declines during the 2007 financial crisis, and that relaxation of these fair accounting rules in April 2009 reduced this effect. While this finding demonstrates a real effect of fair value accounting, it does not provide causal evidence of the distortional effects of fair value accounting as liquidity-driven selling makes economic sense. In particular, as the authors acknowledge, their results are also consistent with a regulatory forbearance effect. Specifically, analytical models suggest that this selling driven by feedback effects is economically justifiable because it reduces the prospect of a reduction in bank regulatory capital (Allen and Carletti [2008]).[3]

In this study, we provide a more direct demonstration of the distortionary effect of fair value accounting using fair value accounting for derivatives as a context. Current accounting standards for derivative instruments and hedging activities (e.g., SFAS No. 133) require firms to account for derivatives as assets or liabilities at fair value on the balance sheet, with fluctuations in fair value of the derivatives reflected on either the income statement or comprehensive income. We use fair value accounting for derivatives as a setting because it is one that has been particularly controversial, with users claiming that it distorts managers' decisions (McKay and Niedzielski [2000], Lins, Servaes, and Tamayo [2010]). Also, suboptimal risk management decisions can expose firms to substantial economic losses (Adam and Fernando [2006]). It is also a setting where standard setters are sufficiently concerned that they have permitted the hedge accounting approach to be adopted to reduce the full impact of fair value accounting. However, there are many occasions where this hedge accounting approach either does not apply or provides incomplete "protection" against fair value accounting effects.

Empirical evidence regarding the impact of fair value accounting on managers' risk management decisions is limited. The only study we are aware of is Zhang [2009]. She identifies a sample of firms that initiated derivative programs during the four-year period between 1996 and 1999.[4]

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[3] Specifically, in Allen and Carletti [2008], bank regulators refer to accounting numbers to assess capital adequacy, and banks that hold on to and do not sell these securities face the prospect of recognition of unrealized losses that are other than temporary, which can reduce capital adequacy.

[4] Firms that have a prior history of engaging in derivative transactions (comprising 77% of the total sample), and arguably the more representative of the population, are eliminated.

She classifies 125 firms as effective hedgers if their risk exposure reduces after initiation of the programs, and 87 firms as joint ineffective hedgers or speculators (because it is not possible to empirically separate these groups) if their risk exposure increases. She finds that the volatility of cash flows for the speculators/ineffective hedgers reduces after the introduction of SFAS No. 133, but there is no change in risk exposures for effective hedgers. She concludes that SFAS No. 133 is beneficial for the speculative/ineffective hedgers. However, Zhang [2009] also documents that a significant percentage (16%) of speculative/ineffective hedgers stopped using derivative instruments post-SFAS No. 133, while a smaller percentage (6%) of the effective hedgers did so. Because it is not possible to empirically separate out speculative from ineffective hedgers,[5] this result can be alternatively interpreted to mean that hedging activities may have been curtailed for ineffective hedgers who cannot apply hedge accounting, a cost associated with SFAS No. 133. We develop our hypotheses in the following sections.

2.1 REAL EFFECT OF FAIR VALUE ACCOUNTING ON MANAGERS' DECISIONS

Hedging with appropriate derivative instruments can reduce the firm's risk exposure, an economically desirable outcome. Suppose a manager expects to purchase oil in the future and forecasts that the oil price will increase. The manager wants to lock in an agreed-upon purchase price, especially when the oil price is highly volatile. In order to hedge the price risk, the manager should enter into a derivative contract so that he/she can fix the future purchase price, irrespective of the rise or decline of oil price. If the manager does not hedge the price risk, he/she has to purchase the oil at a future market value, and will be subjected to the volatility of the future oil price. Thus, employing a hedging instrument can create an economic benefit by protecting firms from volatile price. This benefit from hedging increases with increasing volatility of the hedged asset.

On the other hand, reporting derivatives using fair value accounting may result in additional earnings volatility on the financial statements. Volatile market prices of the hedged asset in the interim period from the inception of a derivative contract to its expiration date will result in fair value changes of the derivatives and reported earnings volatility.[6] The reported earnings

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[5] Prior research points out that a challenge with the use of archival data to examine this issue is that, although the change (or no change) in firms' ex post risk exposure is observable, the purposes for their decisions to hedge or not hedge are not observable (Geczy, Minton, and Schrand [2007]). The argument made by these researchers is that it is difficult to determine whether the change is due to managers' ex ante risk management decisions, speculation, accounting implications, or luck. In the context of Zhang's [2009] study, there are also likely differences in risk setting associated with each derivative usage pre- and post-implementation of SFAS No. 133, and effective versus ineffective hedgers/speculators also systematically differ in firm size, leverage, and inherent risk exposure.

[6] Since the transaction (e.g., oil purchase) is forecasted to happen in the future, no asset (e.g., oil) will be currently booked on the balance sheet. However, derivatives are booked at fair value when firms enter into derivative contracts, which is well before the forecasted

volatility purely arises from fair value accounting for derivatives rather than the company's real economic activities. Since the use of a hedging derivative fixes the future delivery price, the price volatility in the interim period will not result in any real monetary effect. The extent to which reported earnings volatility is induced depends on the hedging effectiveness and whether the derivative transaction qualifies for hedge accounting.

Given managers' aversion to reporting volatile earnings (Graham, Harvey, and Rajgopal [2005]), we expect that managers will be more likely to forego economically sound hedging opportunities if they factor in the fair value accounting impact of hedging (i.e., increased earnings volatility). In other words, managers will engage in derivative transactions to manage their risk exposures when only the economic impact of hedging is presented to managers (i.e., the *economic-only* condition in our experiment; henceforth, *E-only*). In contrast, when managers are also provided with information about the fair value accounting impact of hedging (i.e., the *economic-plus-accounting* condition; henceforth, *E-plus-A*), they are less likely to hedge the risk once the increased earnings volatility arising from fair value accounting for derivatives is highlighted.

Moreover, in a setting where higher price volatility induces higher reported earnings volatility, the possibility of a smooth earnings path is greatly reduced with the adoption of a hedge. Thus, the difference between managers in the *E-only* and *E-plus-A* conditions will be larger when price volatility of the hedged asset is higher than when it is lower. Specifically, with high price volatility, managers in the *E-plus-A* condition are more likely to forgo a beneficial hedge than those in the *E-only* condition in order to obtain a smooth earnings path. Paradoxically, this high price volatility situation is likely one where the company can benefit more from hedging. On the other hand, when the price is only slightly volatile and the induced earnings volatility is relatively low, managers can still expect a relatively smooth earnings path even with the adoption of a hedge. Thus, the accounting impact will not be a primary concern, and we expect that the difference in managers' decisions between the *E-only* condition and the *E-plus-A* condition is smaller when price volatility is lower. Our first hypothesis is formally stated as follows:

H1: Managers are more likely to hedge risk exposure with derivatives when only the economic impact information is presented than when both the economic impact and the fair value accounting impact information is presented; this effect is more likely when the price volatility of the hedged asset is higher but less likely when it is lower.

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transaction happens. Hence, from the inception of the derivative contract to the point when the forecasted transaction happens, the recognized fair value gains or losses on the derivatives cannot be offset by the fair value changes on the hedged asset (e.g., oil), resulting in greater earnings volatility.

2.2 MEDIATING EFFECT OF ACCOUNTING VERSUS ECONOMIC CONSIDERATIONS

The premise underlying our hypotheses is that, notwithstanding significant economic benefits from adopting the hedge, managers are concerned about the fair value accounting impact when they hedge. Such concerns are strengthened when the fair value accounting impact information is copresented with the economic impact information but reduced when only the economic impact information is presented. In other words, the consideration of economic factors (e.g., future expected cash outflow, firms' risk exposures) becomes diluted, and the consideration of accounting factors related to fair value measurements (e.g., the application of hedge accounting, reported earnings volatility, and balance sheet volatility) becomes salient in the presence of information about the fair value accounting impact of hedging. This relative emphasis on accounting factors over economic factors in managers' considerations, in turn, leads them to withhold hedging decisions. Our theory therefore predicts that the relative economic versus accounting considerations by managers mediate the joint effect of hedging impact (economic alone vs. both economic and accounting impact) and price volatility on managers' decisions to hedge. Our second hypothesis is formally stated as follows:

H2: The joint effect of hedging impact and price volatility on managers' hedging decisions is mediated by their relative considerations of economic versus accounting factors.

2.3 FAIR VALUE ACCOUNTING VERSUS HISTORICAL COST ACCOUNTING

Public dissent against fair value accounting generally pits fair value accounting against historical cost accounting. Analytical models also pit fair value accounting against historical cost accounting (Bleck and Liu [2007], Gigler, Kanodia, and Venugopalan [2007], Allen and Carletti [2008], Plantin, Sapra, and Shin [2008]). For example, Plantin, Sapra, and Shin [2008] present an analytical model that compares conditions (specifically, short-lived/long-lived assets, liquid/illiquid assets, and junior/senior assets) under which historical cost measurement systems result in lower inefficiencies than fair value accounting measurement systems. Similarly, archival studies also compare the value relevance of historical cost accounting versus fair value accounting (e.g., Danbolt and Rees [2008], Christensen and Nikolaev [2010]). However, prior research provides little empirical evidence on the effect of fair value versus historical cost accounting on managerial decisions.[7]

[7] There has been no empirical test of the model in Plantin, Sapra, and Shin [2008], which compares the trading decision of a manager operating under a fair value accounting regime versus a historical cost accounting regime. Note that the trading decision in their model is biased due to managers' overreaction to the fair value changes on the balance sheet, and not

As we discussed in H1, we expect managers' risk hedging decisions to be affected by fair value accounting information, as their concerns over earnings volatility can impede rational hedging decisions. In contrast, under historical cost accounting, no accounting entry (zero cost) is recorded for entering a derivative contract because derivatives only reflect a mutual exchange of promises at their inceptions. In addition, no value changes of derivatives are recorded on the balance sheet until the final settlement of the derivative contract. As a result, no derivative gain (or loss) is recorded and the use of derivatives will not affect the income statement. Hence, we expect that managers' risk hedging decisions will not be influenced by accounting information if historical cost accounting is applied. Thus, our hypothesis is stated as follows:

H3: Managers are more likely to hedge risk exposure with derivatives when historical cost accounting is applied than when fair value accounting is applied.

We test H1 to H3 in experiment 1, and discuss experiment 1 in section 3. In section 4, we identify and develop our expectations about the effect of two debiasing mechanisms, along with a discussion of experiment 2 that is designed to test the efficacies of these two debiasing mechanisms.

3. Experiment 1

3.1 PARTICIPANTS

We conduct an experiment with experienced accountants attending continuing professional education sessions conducted by the national accountancy academy in Singapore. A total of 126 accountants with a mean (median) working experience of 10.01 (8.50) years participate in our study. As shown in table 1, the participants indicate their highest positions in their career, such as CEOs or CFOs (8.7%), executives (10.3%), managers (41.3%), and other positions varying from accountants (12.7%), auditors (10.3%), controllers (6.3%), consultants or analysts (4.0%) to self-employed practitioners (1.6%). We ask participants to assess their knowledge in accounting for derivatives/familiarity with hedge accounting on a 15-point scale that varies from 0 (extremely low knowledge/unfamiliar) to 14 (extremely high knowledge/familiar). The results show that our participants are somewhat knowledgeable about accounting for derivatives (mean = 5.70) and somewhat familiar with hedge accounting (mean = 5.55). They also indicate some familiarity with risk-hedging strategies using financial derivatives (mean = 5.59 on the 15-point scale, as stated above).

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because of managers' concerns over volatile earnings associated with fair value accounting (as proposed in our study).

TABLE 1
Composition of Participants

	Number	Percentage
Managers (including finance/accounting/ tax/assistant/senior manager)	52	41.3%
Accountant	16	12.7%
Executives	13	10.3%
Auditors (including senior, manager, and partner)	13	10.3%
Top Executives (including CEO/CFO/VP/AVP)	11	8.7%
Controllers	8	6.3%
Consultant/Analysts	5	4.0%
Self-employed	2	1.6%
Unknown	6	4.8%
Total	126	100.0%

This table reports the components of participants. Participants are asked to indicate their highest positions in their career.

3.2 DESIGN

We use a $2\times2 + 1$ between-subjects design to test our hypotheses. The first manipulated factor, hedging impact, relates to whether participants are provided with information relating to only the economic impact, or both the economic impact and the accounting impact of hedging when they make their hedging decisions. In the *E-plus-A* condition, participants are shown both the economic impact and the accounting impact information, and then asked to make hedging decisions. In the *E-only* condition, participants are shown only the economic impact (without the accounting impact) information, and asked to make hedging decisions.[8]

The second factor we manipulate is the price volatility of the hedged asset (low vs. high). In our experiment, higher (lower) volatility in the oil prices is associated with higher (lower) reported earnings volatility during the period from the inception of the derivative contract to its expiration date. Changes in the oil prices in this interim period do not alter the firm's cash flows or the fact that it has locked in the future cash outlay. However, these oil price changes in the interim result in greater/lower changes in the fair value of the hedging derivative (i.e., West Texas Intermediate (WTI) Oil forward contract in our case) and the hedged item (i.e., forecasted purchase of Nigeria Oil in our case), leading to higher/lower volatility in reported earnings (see exhibit 1 of appendix A).[9] In our experiment, participants

[8] In the *E-only* condition, after participants have made their first hedging decisions, we also provide them with the accounting impact information and ask them to make a second/revised hedging decision. In addition, we have another between-subjects condition, in which participants first make their initial hedging choices after the accounting impact information is presented, and then make their updated hedging choices after the economic impact information is presented. The results for participants' revised hedging decisions in these two conditions are similar to those in experiment 2 (reported later).

[9] In our case where the hedge is not 100% effective, price volatility leads to earnings volatility when hedge accounting is applied. In cases where the hedging instrument perfectly

TABLE 2
Experimental Design of Experiment 1

	Fair Value Accounting		Historical Cost Accounting
Price Volatility	Economic (*E-only*)	Economic-plus-accounting (*E-plus-A*)	Economic-plus-accounting (*E-plus-A*)
Low	Condition 1	Condition 3	
High	Condition 2	Condition 4	Condition 5

This table shows the design of experiment 1. We use a 2×2 + 1 between-subjects design. In order to test our H1 and H2, we use a 2×2 between-subjects design (i.e., conditions 1/2/3/4); we manipulate whether participants are provided with only the economic impact information or both economic and accounting impact information when they make their hedging decisions. In the *E-only* condition, participants are shown the economic impact (without the accounting impact) information, and asked to make hedging decisions (conditions 1 and 2). In the *E-plus-A* condition, participants are shown both the economic impact and the accounting impact information, and then asked to make hedging decisions (conditions 3 and 4). The second factor we manipulate is the price volatility of the hedged asset (low versus high). In order to test our H3, we hold price volatility as high and participants are provided with both the economic impact and the accounting impact information (i.e., similar to the "E-plus-A/high volatility" condition). Participants are told that historical cost accounting is applied to account for the hedging instrument.

across all conditions are provided with information on the oil price volatility (either high or low), but information on reported earnings volatility (either high or low) is only presented to participants receiving the accounting impact information.

We include a control condition to examine managers' hedging decisions when the historical cost accounting approach is used. In the control condition, we hold the price volatility as high, and participants are provided with information relating to both the economic and accounting impact of the hedging decision (in other words, the same context as the "E-plus-A/high volatility" condition). In addition, participants are told that historical cost accounting is applied to account for the hedging instrument. The accounting impact indicates that, if the management chooses to hedge, the company's quarterly earnings will *not* change since historical cost accounting is used to account for the forward contract. The accounting treatment here is similar to that applied prior to the issuance of SFAS No. 133, where many derivative instruments were carried off-balance sheet. Table 2 summarizes our experimental design.

3.3 PROCEDURE

All participants are instructed to assume the role of a manager for a listed company. They are given the same background information and financial data about an oil company (ABC Company) that we develop from an actual company. Participants are told that the company forecasts a purchase of 2 billion barrels of Nigeria Oil in one year. Management of the company is concerned that the rise in the price of Nigeria Oil will result in additional cash payment in the future, and therefore is considering using a forward

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matches the hedged item, price volatility has no impact on earnings volatility, as the gains or losses of hedging instrument will exactly offset those of hedged item.

contract to hedge the risk.[10] Then, participants are provided with information indicating that the hedging derivatives may not be perfectly effective due to the limited supply of derivative contracts written on Nigeria Oil. The company can only enter into a one-year forward contract written on WTI Oil, the price of which is highly correlated with that of Nigeria Oil. For those participants in the low (high) price volatility condition, they are informed that the volatility of oil price is relatively low (high).[11]

Following the information about the hedged item and the hedging instrument, participants are given a short description about the accounting treatment for the forward contract if the company decides to hedge. In all conditions except for the control condition, participants are told that the forward contract is measured at its fair value and the derivative transaction is recorded using hedge accounting. If the management decides to hedge, it will be designated as a cash flow hedge.[12] They are also informed that, due to the mismatch between hedging instrument (WTI Oil forward contract) and hedged item (Nigeria Oil), the hedge may not be perfectly (100%) effective, and this ineffectiveness will be recognized immediately in the company's earnings. In the control condition, the participants are told to assume that the company applies historical cost accounting to recognize derivatives. Therefore, the hedging decision will not influence the company's reported quarterly earnings.

After the background information about the company and the hedging case, participants are shown information relating to the economic and/or accounting impact of undertaking a hedge. The economic (cash flow) impact indicates that, if the management does not hedge, it is estimated that the company will pay an additional 3.5 billion dollars next year for the same amount of Nigeria Oil. This is held constant across conditions. The accounting impact shows that, if the management chooses to hedge, the company's reported quarterly earnings are expected to become *slightly* (*highly*) volatile in the *low* (*high*) volatility condition. In the control (i.e., historical cost accounting) condition, managers' hedging decisions have no impact on the reported quarterly earnings. Exhibit 1 of appendix B summarizes the economic impact and the accounting impact information shown to the participants.

Participants' hedging decisions are captured using a binary option (A. Hedge commodity risk; B. Do not hedge commodity risk), and they also indicate the strength of preference for their hedging choices based on

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[10] Management's emphasis on reducing the risk exposure strengthens the case for the participants to use (rather than not use) derivatives to hedge the risk.

[11] The hedging effectiveness for the high price volatility condition is the same as that for the low price volatility condition. As illustrated in exhibit 2 of appendix A, the hedging effectiveness is measured as the ratio between the cumulative change in fair value of hedging instrument (column B) and the cumulative change in expected cash flow of hedged asset (column D).

[12] We employ a cash flow hedge as our setting because it is at the root of the dispute between the accounting regulators and the industry (Sapra and Shin [2004]).

this information on a 15-point scale that varies from −7 (definitely hedge) to +7 (definitely not hedge). We also ask all participants to provide the reasons for their hedging decisions. Following this, participants are asked to return all materials to Envelope A and start with Envelope B, which contains manipulation check questions and other debriefing questions. In addition, participants are asked to assess the validity of the company's accounting treatment for hedging activities, the extent that the case material is realistic, and the effort they put on analyzing the company's accounting treatments. They are also asked to evaluate their knowledge on accounting for derivatives and the extent to which they are familiar with risk hedging strategies. All these assessments use 15-point scales. Each participant is paid 20 Singapore dollars for participating in the experiment.

3.4 RESULTS

3.4.1. Manipulation Checks. To check our manipulation of price volatility, participants are asked to indicate the volatility of the Nigeria Oil price for the period of 2010–2011 on a 15-point scale ranging from 0 (extremely low volatility) to 14 (extremely high volatility). The mean assessment in the high price volatility condition (9.47) is significantly greater than that in the low price volatility condition (6.48, $F = 47.38$, $p < 0.01$).[13] As a check on our manipulation of the hedging impact information provided (i.e., whether the available information involves only economic or both economic and accounting impact), we ask participants to indicate the number of times they are asked to make hedging decisions and the information available for them to make hedging decisions.[14] About 79% of participants correctly answer at least one of these two questions, and there is no difference across conditions ($p = 0.83$). Participants perceive the accounting treatment for hedging activities to be moderately valid (mean = 7.48) and the case material to be fairly realistic (mean = 7.13).[15]

3.4.2. Test of H1. H1 predicts that participants are more likely to hedge the price risk when only the economic impact information is presented than when both the economic impact and the fair value accounting impact information is presented, and that this effect is larger when the price volatility is high. Table 3, panel B reports the two-way categorical ANOVA with hedging decisions as dependent variable, and hedging impact and price volatility as independent variables. We find a significant main effect of hedging impact ($\chi^2 = 7.86$, $p = 0.01$); an insignificant main effect of price volatility ($\chi^2 = 0.56$, $p = 0.46$); and, more importantly, a significant

[13] The *p*-value figures are all two-tailed, unless otherwise specified.

[14] We ask the first question because in the *E-only* condition, participants make two hedging decisions: first with economic impact information only, and then with both economic and accounting impact information.

[15] Our results are similar after we exclude those participants who fail one of the manipulation check questions or after we control for participants' working experience, investment experience, and their familiarity with accounting for derivatives and hedge accounting.

TABLE 3

Descriptive Statistics and Analysis of Managers' Hedging Decisions
(DV = Managers' Hedging Choice)

Panel A: Descriptive Statistics: Mean (Standard Deviation)

Price Volatility	Hedging Impact			
	E-only	E-plus-A	Row Mean	Control
Low	83% (0.38)	80% (0.41)	82% (0.39)	
	$n = 24$	$n = 25$	$n = 49$	
	(Condition 1)	(Condition 3)		
High	96% (0.20)	56% (0.51)	76% (0.43)	88% (0.33)
	$n = 24$	$n = 25$	$n = 49$	$n = 25$
	(Condition 2)	(Condition 4)		(Condition 5)
Column Mean	90% (0.31)	68% (0.47)		
	$n = 48$	$n = 50$		

Panel B: Categorical ANOVA Results for Managers' Hedging Choice

	df	Chi-Square	*p*-value
Intercept	1	418.99	<0.01
Hedging Impact	1	7.86	0.01
Price Volatility	1	0.56	0.46
Hedging Impact × Price Volatility	1	5.62	0.02

Panel C: Planned Comparisons

Hedging Choice: Contrast tests	Chi-Square	*p*-value
Low Volatility: E-only vs. E-plus-A (83% vs.80%)	0.09	0.76
High Volatility: E-only vs. E-plus-A (96% vs.56%)	13.77	<0.01
High Volatility: Control vs. E-plus-A (88% vs. 56%)	7.27	0.01
High Volatility: Control vs. E-only (88% vs. 96%)	1.04	0.31

Panel A contains the mean (standard deviation) of participants' hedging decisions. A 2×2 between-subjects design is used to test H1. First, we manipulate whether participants are provided with only the economic impact information or both economic and accounting impact information when they make their hedging decisions. In the *E-only* condition, participants are shown the economic impact (without the accounting impact) information, and asked to make hedging decisions. In the *E-plus-A* condition, participants are shown the economic impact and the accounting impact information, and then asked to make hedging decisions. The second factor we manipulate is the price volatility of the hedged asset (low versus high). The dependent variable is participants' hedging choice, that is, whether they choose to hedge or not hedge. We also include a control condition, in which we hold the price volatility as high, and participants are provided with both the economic and accounting impact information and are told that historical cost accounting is applied to account for the hedging instrument. Panel B reports ANOVA results for the effect of hedging impact and price volatility on participants' hedging decisions. Panel C reports the results of planned contrast tests.

hedging impact by price volatility interaction on participants' hedging decisions ($\chi^2 = 5.62$, $p = 0.02$). A planned comparison shows that there is no significant effect of hedging impact on the participants' hedging choice when price volatility is low ($\chi^2 = 0.09$, $p = 0.76$; table 3, panel C). On average, 83% (80%) of participants in the *E-only* (*E-plus-A*) condition choose to hedge. However, when the oil price is highly volatile, participants are more likely to hedge when only the economic impact information is presented (mean = 96%) than when both the economic impact and the fair value accounting impact information is presented (mean = 56%, $\chi^2 = 13.77$, $p < 0.01$; table 3, panel C). Therefore, H1 is supported. [16]

[16] We obtain similar results when we re-analyze the data using participants' preference to hedge as the dependent variable.

In addition, consistent with our premise that the economic need for hedging increases when volatility goes up, we find that, based on economic considerations alone (i.e., in the *E-only* condition), a marginally higher percentage of participants choose to hedge in the high volatility than in the low volatility condition (96% vs. 83%; $p = 0.08$, one-tailed). When both economic and accounting information are presented together (i.e., in the *E-plus-A* condition), the reverse is true. A lower percentage of participants choose to hedge in the high volatility than in the low volatility condition (56% vs. 80%; $p = 0.03$, one-tailed). This is consistent with the argument that participants' concerns about earnings volatility induce them to hedge less in the high volatility condition, when economic considerations suggest that they should hedge more.

3.4.3. Test of H2. To test H2, we analyze the rationales provided by participants after they have made their hedging decisions. We content code the participants' rationales to identify the considerations of the participants when they made their hedging decisions. We identify six different types of considerations from rationales provided by participants: (1) the price risk of Nigeria Oil; (2) the consequences of hedging on future cash flow; (3) other economic factors (the purchase is not committed, the accuracy of the forecast is unknown, etc.); (4) the consequences of hedging on reported earnings volatility; (5) the consequences of hedging on reported total earnings; (6) other accounting factors (whether hedge accounting can be applied, the volatility of other comprehensive income account, etc.). Two authors of the paper and one doctoral student independently code the rationales written by the participants. The doctoral student is unaware of our hypotheses and all coders are blind to the experimental conditions of the participants during the coding. Inter-rater agreement is 87%, and discrepancies are resolved by discussion. We classify the first three types of thoughts ((1) to (3)) as economic considerations and the remaining three types ((4) to (6)) as accounting considerations. We calculate the proportion of economic considerations as a percentage of total rationales provided ($Proportion_{Economic}$) as the dependent variable. The higher the proportion of economic considerations, the lower is the proportion of accounting considerations included in the rationales provided by the participants. Table 4, panel A, reports the proportion of economic considerations for our conditions.

We conduct an ANOVA test with hedging impact and price volatility as independent variables and the proportion of economic considerations as dependent variable. As shown in table 4, panel B, we find significant main effects of hedging impact ($p < 0.01$) and price volatility ($p < 0.01$) and a significant interaction ($p = 0.03$). Additional analysis (untabulated) indicates that $Proportion_{Economic}$ is significantly lower in the *E-plus-A* condition than in the *E-only* condition when price volatility is high (means = 47% and 90%, respectively; $\chi^2 = 17.76$, $p < 0.01$) and also when price volatility is low (means = 81% and 96%, respectively; $\chi^2 = 4.07$, $p = 0.04$); the interaction

TABLE 4

Descriptive Statistics and Analysis of Managers' Rationales for Their Hedging Decisions (DV = Proportion of Economic Considerations)

Panel A: Descriptive Statistics: Mean (Standard Deviation)

	Hedging Impact			
Price Volatility	E-only	E-plus-A	Row Mean	Control (historical cost accounting)
Low	96% (0.12) $n = 23$ (Condition 1)	81% (0.33) $n = 20$ (Condition 3)	89% (0.25) $n = 43$	
High	90% (0.25) $n = 25$ (Condition 2)	47% (0.39) $n = 19$ (Condition 4)	72% (0.38) $n = 44$	84% (0.36) $n = 23$ (Condition 5)
Column Mean	93% (0.20) $n = 48$	65% (0.40) $n = 39$		

Panel B: Categorical ANOVA Results for Proportion of Economic Considerations

	df	Chi-Square	*p*-value
Intercept	1	612.13	<0.01
Hedging Impact	1	20.93	<0.01
Price Volatility	1	9.83	<0.01
Hedging Impact × Price Volatility	1	4.54	0.03

Panel A contains the mean (standard deviation) of the proportion of economic considerations. We compute the proportion of economic considerations as a proportion of total rationales as the dependent variable. For those participants in the *E-only* condition, we use the rationales for their *initial* hedging decisions after they receive information about the economic impact of hedging. Panel B reports ANOVA results for the effect of hedging impact and price volatility on the proportion of economic considerations.

effect reflects the higher difference in the high-volatility condition than in the low-volatility condition.

Kenny, Kashy, and Bolger [1998] outline two steps to establish mediation: first, the independent variables are associated with the mediator; second, the mediator is associated with the outcome variables after controlling for the independent variables. As reported above, we establish the first step in the mediation test in that we find that the proportion of economic considerations is jointly influenced by hedging impact and price volatility. To test the second step, we run a logistic regression with the proportion of economic considerations, hedging impact, and price volatility as independent variables (untabulated). We find that the proportion of economic considerations is significantly associated with the percentage of managers who hedge ($p = 0.02$), which satisfies the second step for mediation. Furthermore, neither the main effects nor the interaction effect of our manipulated variables is statistically significant after controlling for the proportion of economic considerations (smallest $p = 0.14$), which suggests that a full mediation model is established. These results are consistent with H2.

3.4.4. Test of H3. H3 predicts that managers are more likely to hedge when historical cost accounting is applied than when fair value accounting is applied. We include the results for the control condition in the last

column of panel A, table 3. Recall that the control condition is similar to the "E-plus-A/high volatility" condition except that historical cost accounting is used and, therefore, there is no impact on reported earnings from the hedging decision. Planned contrasts (panel C, table 3) show that the mean percentage of managers deciding to hedge in the control condition (mean = 88%) is significantly higher than that in the "E-plus-A/high volatility" condition (mean = 56%, $p = 0.01$). In addition, the percentage of managers who hedge (mean = 88%) in the control condition is not significantly different from that in the "E-only/high volatility" condition (mean = 96%, $p = 0.31$). Hence, our results indicate that the accounting impact information adversely influences managers' risk hedging decisions only when fair value accounting is applied, but not when historical cost accounting is applied.[17]

4. Experiment 2: Mitigating the Negative Effect of Fair Value Accounting

4.1 HYPOTHESES

Our first experiment centers on documenting the negative effect of fair value accounting on managers' hedging decisions. In this section, we explore two mechanisms that can potentially mitigate this effect. We first examine whether, given information on both economic and accounting impact of hedging (as in practice), managers' hedging decisions are affected by the salience of each piece of information. Next, we examine whether separately presenting fair value changes from non–fair value changes on the income statement can reduce managers' concerns about earnings volatility arising from the use of fair value accounting.

Research on recency effects or sequential updating beliefs in psychology (e.g., Einhorn and Hogarth [1985]) and accounting (e.g. Ashton and Ashton [1988, 1990]) indicates that, when information cues are provided sequentially, the most recent information cue has the greatest impact on decision makers' judgments. Hogarth and Einhorn [1992] also suggest that recency rather than primacy effect dominates for short series of complex evidence items (as in our case). This suggests that, in our setting, consideration of the economic (as opposed to accounting) impact of the hedge will have a greater impact on managers if the economic impact information is presented after the accounting impact information (hereafter, the *A-plus-E* condition). Accordingly, we expect that managers in the *A-plus-E* condition are more likely to hedge than those in the *E-plus-A* condition where the accounting impact information is presented after the economic impact information. We consider the *E-plus-A* condition to correspond more closely

[17] As shown in panel A of table 4, the proportion of economic considerations in the control condition (mean = 84%) is significantly higher than that in the "E-plus-A/high volatility" condition (mean = 47%, $p < 0.01$), but it is not significantly different from that in the "E-only/high volatility" condition (mean = 90%, $p = 0.50$).

to the sequence by which managers generally make decisions, as they likely think about the economic impact of a hedge first and then the accounting impact before making a final hedging decision.[18] Following our theoretical predictions, we anticipate that our suggested remedy of processing the economic impact information after the accounting impact information would lead to a higher propensity for managers to take up the economically beneficial hedge. We state our hypothesis as following:

H4: Managers are more likely to hedge risk exposure with derivatives in the *A-plus-E* condition than those in the *E-plus-A* condition.

The Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB) are currently conducting a joint project on Financial Statement Presentation. It is proposed that changes in assets/liabilities due to remeasurements should be presented separately from the ones that are not due to remeasurements (e.g., cash flow or accrual). Furthermore, the remeasurements due to fair value changes should also be separately presented from all the other changes (FASB/IASB Discussion Paper [2008], Staff Draft [2010]). This proposed presentation format aims to help investors better analyze the reasons for asset/liability changes on the balance sheet as well as net income/comprehensive income changes on the income statement. In addition to the stated benefits for investors, we propose that the separate presentations of fair value changes can also reduce managers' concerns over earnings volatility resulting from fair value remeasurements. This proposed presentation format likely reminds managers that the earnings/cash flow volatility arising from real economic activities is unaffected by the use of fair value accounting. For this reason, fair value accounting is less likely to induce suboptimal decisions. Applying this argument to our setting, we expect managers who receive accounting impact information in a separate presentation format (where net income *not* from fair value remeasurements is presented in a separate column; hereafter, the *E-plus-A Separate Presentation* condition) to be more likely to hedge than those in the *E-plus-A* condition (where fair value remeasurements are *not* separately presented). We state our hypothesis below:

H5: Managers are more likely to hedge risk exposure with derivatives in the *E-plus-A Separate Presentation* condition than those in the *E-plus-A* condition.

4.2 METHOD

As with experiment 1, our participants are experienced accountants attending professional update sessions at the national accountancy academy

[18] As suggested in the practical guide published by the New York Mercantile Exchange, with respect to typical hedge transactions, managers should first consider their economic implication and then their financial statement effect.

in Singapore. Participants are 66 accountants with mean (median) working experience of 11.24 (10.00) years, similar to that in experiment 1 ($p = 0.27$). Our participants in experiment 2 are also moderately familiar with derivative accounting (mean = 5.48) and hedge accounting (mean = 5.45), again similar to that in experiment 1 ($p = 0.79$ and 0.80, respectively). We use a 3×1 between-subjects design to test whether the two proposed mechanisms mitigate the negative effect of fair value accounting on managers' hedging decisions. Specifically, we hold constant the price volatility as high and provide the information on both the economic and accounting impact before asking for their hedging decisions. We have three between-subjects conditions: the *E-plus-A* condition (used to replicate our results in experiment 1 and establish a benchmark of managers' propensity not to hedge with the use of fair value accounting), the *A-plus-E* condition (used to test H4), and the *E-plus-A Separate Presentation* condition (used to test H5). In the *E-plus-A* condition, the economic impact information is presented first, followed by the accounting impact information, while in the *A-plus-E* condition, the accounting impact information is presented first, followed by the economic impact information. In the *E-plus-A Separate Presentation* condition, we present "Net Income" and "Net Income *Not* From Fair Value Remeasurement" separately when we show the accounting impact information (see exhibit 2 of appendix B), consistent with the suggestion in the FASB/IASB discussion paper on financial statement presentation (see example in appendix C).

4.3 RESULTS

4.3.1. Hypothesis Tests. As shown in table 5, ANOVA results suggest a significant effect of presentation format ($\chi^2 = 6.61$, $p = 0.04$). H4 predicts that managers are less likely to hedge in the *E-plus-A* condition than those in the *A-plus-E* condition. Consistent with this prediction, we find that the percentage of managers who choose to hedge is significantly lower in the *E-plus-A* condition than that in the *A-plus-E* condition (mean = 68%/95%, $\chi^2 = 6.58$, $p = 0.01$). H5 predicts that managers are more likely to hedge risk exposure with derivatives in the *E-plus-A Separate Presentation* condition than those in the *E-plus-A* condition. Consistent with H5, we find that managers' tendency to hedge is significantly higher in the *E-plus-A Separate Presentation* condition (mean = 90%) than that in the *E-plus-A* condition (mean = 68%, $\chi^2 = 3.94$, $p = 0.05$). This result suggests that separate presentation of net income *not* from fair value remeasurements helps alleviate the negative effect of fair value accounting on managers' hedging decisions. In addition, we find that the percentage of managers who hedge in the *A-plus-E* condition and the *E-plus-A Separate Presentation* condition are not significantly different (mean = 95%/90%, $\chi^2 = 0.32$, $p = 0.57$). In sum, our results suggest that both of our proposed mechanisms effectively mitigate the negative effect of fair value accounting on managers' hedging decisions.

We content code the participants' rationales for their hedging decisions and calculate the proportion of economic considerations using a similar

TABLE 5

Experiment 2: Effect of Presentation Format on Managers' Hedging Decisions (DV = Managers' Hedging Choice)

Panel A: Descriptive Statistics: Mean (Standard Deviation)

	Presentation Format			
Price Volatility	E-plus-A	A-plus-E	E-plus-A Separate Presentation	Row Mean
High	68% (0.48) $n = 25$	95% (0.22) $n = 20$	90% (0.30) $n = 21$	83% (0.38) $n = 66$

Panel B: Categorical ANOVA Results

	df	Chi-Square	*p*-value
Intercept	1	423.18	<0.01
Presentation Format	1	6.61	0.04

Panel C: Planned Comparisons

	df	Chi-Square	*p*-value
E-plus-A *versus* A-plus-E (68% vs. 95%)	1	6.58	0.01
E-plus-A *versus* E-plus-A Separate Presentation (68% vs. 90%)	1	3.94	0.05
A-plus-E *versus* E-plus-A Separate Presentation (95% vs. 90%)	1	0.32	0.57

Table 5 reports results for experiment 2. We hold constant the information content participants receive when they make their hedging decisions and examine the situation when price volatility is high. We manipulate the presentation format of the economic impact and the accounting impact information. In the *E-plus-A* condition, similar to the condition in experiment 1, participants receive the economic impact information first followed by the accounting impact information. In the *A-plus-E* condition, accounting impact information is presented first and followed by the economic impact information. We also add the third presentation format—the *E-plus-A Separate Presentation* condition, in which economic impact information is presented first, followed by the accounting impact information. In the accounting impact, we present "Net Income" and "Net Income *Not* From Fair Value Remeasurement" separately as suggested by the FASB/IASB discussion paper on financial statement presentation.

classification scheme to the one in experiment 1.[19] We find that the proportion of economic considerations in the *E-plus-A* condition (mean = 61%) is significantly lower than that in the *A-plus-E* condition (mean = 82%, $p = 0.02$, one-tailed) or the *E-plus-A Separate Presentation* condition (mean = 80%, $p = 0.05$, one-tailed). The mean proportion of economic considerations is not significantly different between the *A-plus-E* condition and the *E-plus-A Separate Presentation* condition ($p = 0.85$). In other words, participants' concerns about the accounting implications are lower when the economic impact is made salient right before their decision making, or with the new presentation format. We also perform a mediation test using the method outlined by Kenny, Kashy, and Bolger [2008]. Untabulated results suggest that our manipulated factor is significantly associated with the proportion of economic considerations ($p = 0.10$), which in turn significantly

[19] As in experiment 1, two authors of the paper and one doctoral student code the data independently without awareness of the experimental conditions of the participants. The doctoral student is unaware of our hypotheses. Inter-rater agreement is 91%, and all discrepancies are resolved by discussion.

influences participants' hedging decisions ($p < 0.01$). We also find that a full mediation model is supported in that our manipulated factor is no longer significant after controlling for the proportion of economic considerations ($p = 0.22$).

4.3.2. Debriefing. We ask some debriefing questions to better understand managers' hedging decisions in practice and their considerations of the impact of accounting when they make such decisions. We ask participants to indicate, based on their own experience or observations of others, the party who makes hedging decisions in a company. About half of the participants (52.2%) indicate that it is the CFO who makes hedging decisions in the company. Others indicate that risk hedging managers (26.1%) and CEOs (18.5%) also make hedging decisions. Using a 5-point frequency scale (1:never, 2:on some occasions, 3:quite a few occasions, 4:quite frequently, 5:all the time), participants indicate that on some occasions, accountants do make hedging decisions (mean = 2.32) or provide inputs needed for hedging decisions (mean = 2.67). We also ask participants to indicate, based on their own experience and observations of others, the extent to which decision makers consider the impact of accounting when they make hedging decisions. We use the same frequency scale as above and obtain a mean of 3.17, implying that decision makers do consider accounting impact of such decisions when making hedging decisions in practice.

5. Conclusion

In this study, we conduct two experiments with experienced accountants as participants to investigate how fair value accounting affects hedging decisions. In experiment 1, we show that participants are more likely to forgo an economically desirable hedging opportunity when both the economic impact and the fair value accounting impact information is presented than when only the economic impact information is presented. Moreover, the impact of fair value accounting for derivatives on participants' risk hedging decisions is much greater when the price volatility of the hedged asset is higher than when it is lower. Furthermore, we find that the above effect is mediated by participants' relative considerations of economic factors versus accounting factors. Finally, we show that the above effect only exists when fair value accounting is applied, but not when historical cost accounting is used. Given this adverse consequence of fair value accounting on managerial decisions, we also propose and demonstrate in experiment 2 the efficacies of two simple debiasing mechanisms. Specifically, we document that enhancing the salience of economic information—by processing the economic information just before making the hedging decision—is one potential remedy to limit the negative impact of fair value accounting on managers' hedging decisions. An alternative remedy is presenting net income *not* from fair value changes in a separate column. This proposed separate presentation can reduce managers' concerns over earnings

volatility and mitigate the negative impact of fair value accounting on managers' risk hedging decisions. This new presentation format is consistent with the proposal by the FASB/IASB on financial statement presentation. Our result in experiment 2 provides the first ex ante evidence regarding its benefits in terms of improving managerial decisions. It also supports the argument that separate presentation can lead to a better understanding of the sources of changes in balance sheet and net income, thus alleviating managers' concerns over financial statement volatility.

Archival studies have also examined the impact of fair value accounting on risk management practice by studying *firm-level* risk exposures (Singh [2004], Zhang [2009]). Our study directly examines managers' hedging decisions. Doing so allows us to better match the phenomenon of interest (hedging decisions) with the decision making level (individual level), and therefore better understand the process by which this occurs. We also examine the moderating role of price volatility of the hedged asset. In our setting, higher price volatility leads to higher earnings volatility. We provide causal evidence that a reduced use of derivatives is due to managers' concerns over earnings volatility induced by fair value reporting.

Our study also adds to a recent stream of accounting research examining the real effect of fair value accounting on managers' decisions. For example, Choudhary, Rajgopal, and Venkatachalam [2009] show that firms accelerate the vesting of employee stock options (ESO) in anticipation of FAS 123-R. The reason managers want to accelerate their ESO is to avoid reporting additional costs measured at fair value in the future. Our paper investigates a different type of managerial decision, namely, risk management decision. We show that managers forgo economically sound hedging opportunities to avoid reporting volatile earnings on the income statement only under the fair value accounting regime but not under the historical cost accounting regime. While we examine a context where hedge accounting can be applied, we anticipate the effects documented here to be even larger when hedge accounting is not applicable, since hedge accounting largely reduces volatility arising from fair value measurements for derivatives.

Our study provides a starting point for assessing the real effects of fair value accounting. Future studies can explore the effect of fair value accounting (vs. a non–fair value accounting regime) on other managerial decisions, such as financing, investing, and resource allocation decisions. Another interesting and practical research question is the real effect on managers' decisions when there is uncertainty over time with respect to the impact of fair value accounting. Finally, since the earnings volatility induced by fair value accounting may differ across industries or transactions, future research can empirically examine the cross-sectional difference in the adverse impact of fair value accounting on managers' real economic decisions.

Our paper has several limitations. First, the earnings volatility in our case arises from the hedging ineffectiveness in a cash flow hedge, and we do

not examine effects with fair value hedges or cases where hedge accounting cannot be applied. Second, in our experiment, we manipulate the price volatility of the hedged asset to induce the volatility in reported earnings. Price volatility is only one possible factor causing earnings volatility, while other factors (e.g., mismatches in nominal amounts or settlement dates between the hedging derivative and the hedged item) may also exist. Finally, we manipulate the salience of economic information relative to accounting information via presentation order. Our intention is to demonstrate that improved salience of economic information at the point of a hedging decision can bring about improved hedging decisions. Requiring an economic justification of risk exposure for hedging decisions can potentially achieve the same purpose, an area for future research.

APPENDIX A

Accounting Treatments of Derivatives and Hedging Activities

According to SFAS No. 133, all derivatives should be recognized as either assets or liabilities on the balance sheet and measured at their fair value. Changes in the fair value of derivatives should be recognized as gains or losses in the income statement. If certain conditions are met,[20] a derivative may be designated as a hedge against exposure to (a) changes in fair value of recognized assets/liabilities/firm commitments (referred to as a fair value hedge), or (b) variable cash flows of a forecasted transaction (referred to as a cash flow hedge). For a derivative designated as a fair value hedge, the gain or loss resulting from changes in the fair value of the hedging instrument is recognized in earnings together with the offsetting losses or gains on the hedged item. As a result, the effect on earnings reflects the extent to which the hedging instrument is not effective in offsetting the fair value changes in the hedged item. For a derivative designated as a cash flow hedge, the effective portion of the derivative's gain or loss is initially reported as a component of other comprehensive income (outside earnings) and subsequently reclassified into earnings when the forecasted transaction affects earnings.[21] All hedge ineffectiveness is recognized immediately in earnings.

In our experiment, the company intends to purchase Nigeria Oil in the future. However, due to the limited supply of forward contracts on Nigeria

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[20] In order to qualify for hedge accounting, companies must be able to formally document the existence of hedging relationship and achieve the hedging effectiveness tests, at inception of hedging, and throughout the life of the hedging relationship.

[21] SFAS No. 133 requires that the entity define the method it will use to assess the hedge's effectiveness in achieving offsetting cash flows attributable to the risk being hedged when it designates a hedge relationship. SFAS No. 133 (paragraph 62) also notes that "[i]t also requires that the entity use the defined method consistently throughout the hedging period (a) to assess at inception of the hedge and on an ongoing basis whether it expects the hedging relationship to be highly effective in achieving offset and (b) to measure the ineffective part of the hedge."

Oil, on 1 Nov. 2010, the company can only enter into one-year WTI Oil forward contract to purchase 2 billion barrels of WTI Oil and will designate the forward contract as a cash flow hedge of its forecasted purchase of Nigeria Oil.

Exhibit 1 shows an example of the effect of a change in the oil price on the fair value of the forward contract on WTI Oil (i.e., hedging derivative) and the expected cash flows of Nigeria Oil (i.e., hedged item).[22] As shown in exhibit 1, during the period of 1 Nov. 2010 to 31 Dec. 2010, due to the swing in the oil price, the fair value of the WTI Oil contract (i.e., hedging derivative) decreases by $60 ($6) billion in the high (low) price volatility condition.[23] Meanwhile, as a result of the oil price decreasing, the expected future cash flows savings on Nigeria Oil (i.e., the hedged item) are $48 ($4.8) billion in the high (low) price volatility condition.[24]

Exhibit 2 summarizes the changes in fair value of WTI forward contract and expected cash flows on Nigeria Oil over time and their impact on the company's other comprehensive income (OCI) and earnings. Taking the same period in exhibit 1 as an example, the company evaluates effectiveness of hedge by comparing the cumulative change on its WTI Oil forward contract ($60/$6 billion decrease in the high/low price volatility condition) with a change in the cash flows for its forecasted purchase ($48/$4.8 billion increase in the high/low price volatility condition). The effective portion of the gain or loss on a hedging derivative ($48/$4.8 billion loss in the high/ low price volatility condition, respectively) is reported in other comprehensive income.[25] The remaining gain or loss on the hedging derivative ($12/$1.2 billion loss in the high/low price volatility condition) is considered to be ineffective and recognized in earnings.[26] As a result, reported earnings are more volatile in the high price volatility condition than in the low price volatility condition, as shown in exhibit 2.[27]

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[22] Estimates of cash flows on the forecasted purchase of Nigeria Oil are based on forward prices of Nigeria Oil.

[23] As shown in exhibit 1, the difference between the high and low earnings volatility condition is due to the difference in the price volatility of oil.

[24] As shown in exhibit 1, the expected cash flow on Nigeria Oil at inception (1 Nov 2010) is $49.8/barrel×2 = $99.6 billion, and the expected cash flow on Nigeria Oil at the financial year end (31 Dec 2010) is $25.8/barrel×2 = $51.6 billion. Thus, the expected cash flow has been saved by $48 billion = (−$51.6) − (−$99.6).

[25] According to SFAS No. 133, at the reporting date, accumulated other comprehensive income associated with hedged transaction shall be adjusted to a balance (column E) that reflects the lesser (in absolute amounts) of (a) the cumulative gain or loss on the derivative (column B) or (b) the cumulative change in expected future cash flows on the hedged transaction (column D).

[26] This ineffective portion of hedging (column G) equals the fair value change of hedging derivative (column A) minus adjustment to OCI (column F).

[27] When the hedging instrument perfectly matches the hedged item (for example, in terms of nominal amount, the underlying asset, and settlement date), the gain or loss on hedging instrument will exactly offset the loss or gain on the hedged item. In this case, price volatility may not induce volatility on reported earnings.

EXHIBIT 1

An Example of the Effect of a Change in the Price of Oil on the Expected Cash Flows

	Estimate of Change in Cash Flows	
	Hedging Instrument	Estimate of Forecasted Transaction:
	Forward Contract on WTI Oil	Present Value of Expected Future Cash Flows on Nigeria Oil
	High Price Volatility Condition	
At hedge inception (1 Nov. 2010)	$ 50.0 per barrel	−$ 49.8 per barrel
Financial year end (31 Dec. 2010)	$ 20.0 per barrel	−$ 25.8 per barrel
Cumulative change × 2 billion barrels	−$ 30.0 per barrel × 2 billion	$ 24.0 per barrel × 2 billion
Estimate of change in cash flows	−$ 60 billion	$48 billion
	Low Price Volatility Condition	
At hedge inception (1 Nov. 2010)	$ 50.0 per barrel	−$ 49.8 per barrel
Financial year end (31 Dec. 2010)	$ 47.0 per barrel	−$ 47.4 per barrel
Cumulative change × 2 billion barrels	−$ 3.0 per barrel × 2 billion	$ 2.4 per barrel × 2 billion
Estimate of change in cash flows	−$ 6.0 billion	$ 4.8 billion

EXHIBIT 2

Case Materials in Our Experiment

	Fair Value of Forward Contract on WTI Oil		Present Value of Expected Future Cash Flows on Nigeria Oil					
Date	Change during the period (A)	Cumulative change (B)	Change during the period (C)	Cumulative change (D)	Lesser of the two cumulative changes (E)	Adjustment to OCI (F)	Adjustment to earnings (G)	Effectiveness test (H)
High Price Volatility Condition								
1 Nov 2010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31 Dec 2010	−60.00	−60.00	48.00	48.00	−48.00	−48.00	−12.00	125%
31 Mar 2011	95.00	35.00	−80.00	−32.00	32.00	80.00	15.00	109%
30 Jun 2011	−57.00	−22.00	50.50	18.50	−18.50	−50.50	−6.50	119%
30 Sep 2011	39.50	17.50	−37.50	−19.00	17.50	36.00	3.50	92%
1 Nov 2011	−14.00	3.50	15.50	−3.50	3.50	−14.00	0.00	100%
Low Price Volatility Condition								
1 Nov 2010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31 Dec 2010	−6.00	−6.00	4.80	4.80	−4.80	−4.80	−1.20	125%
31 Mar 2011	9.50	3.50	−8.00	−3.20	3.20	8.00	1.50	109%
30 Jun 2011	−5.70	−2.20	5.05	1.85	−1.85	−5.05	−0.65	119%
30 Sep 2011	3.95	1.75	−3.75	−1.90	1.75	3.60	0.35	92%
1 Nov 2011	1.75	3.50	−1.60	−3.50	3.50	1.75	0.00	100%

Note: All the figures are in billion dollars. To make our case easy to read, we only provide the key columns (columns A, F, and G) in the materials to our participants.

APPENDIX B

Experimental Manipulations

EXHIBIT 1

Experimental Manipulations of Experiment 1

Low Price Volatility Condition

Based on analysis of historical data, the volatility of Nigeria Oil price is relatively **LOW**.

Economic Impact

If management's forecasts are realistic, Nigeria Oil's price will increase during the coming year. As a result, if the management does *NOT* hedge, the company will pay an additional USD 3.5 billion (on *1 Nov 2011*) for the same amount of Nigeria Oil, as shown in the table below.

	HEDGE: Purchase WTI Oil forward contract to hedge commodity risk	**NOT HEDGE:** Do NOT Purchase WTI Oil forward contract
Net Cash Outflow on 1 Nov 2011	**99.60 billion**	**103.10 billion**
Value of Nigeria Oil purchased on 1 Nov 2011	103.10 billion	103.10 billion

Accounting Impact

The table and figure below demonstrate the predicted effects of hedging on ABC's financial statements over the one-year period. Specifically, if the management chooses to hedge commodity risk, the company's quarterly earnings will become **slightly volatile** (see column **"Net Income"**), due to **fair value changes** of the forward contract. However, if the management does not hedge commodity risk, there will be no impact on the company's profit and loss statement (P&L) and balance sheet. In addition, annual earnings do not differ with respect to the hedging decisions.

HEDGE: Purchase WTI Oil forward contract to hedge commodity risk (in billion dollars)

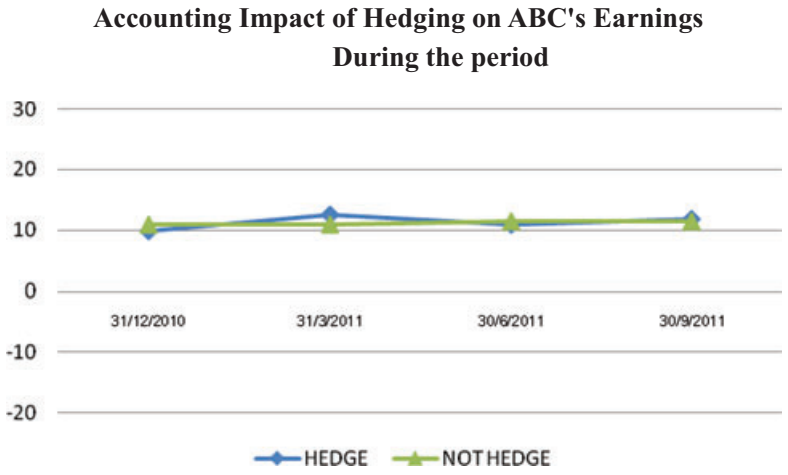
Date	Fair Value of Forward Contract	Other Comprehensive Income (Equity)	Derivative Gain/Loss (P&L)	**Net Income**
31 Dec 2010	−6.00	−4.80	−1.20	**9.80**
31 Mar 2011	9.50	8.00	1.50	**12.50**
30 Jun 2011	−5.70	−5.05	−0.65	**10.85**

HEDGE: Purchase WTI Oil forward contract to hedge commodity risk (in billion dollars)

Date	Fair Value of Forward Contract	Other Comprehensive Income (Equity)	Derivative Gain/Loss (P&L)	**Net Income**
30 Sep 2011	3.95	3.60	0.35	**11.85**
1 Nov 2011	−1.75	1.75	0.00	
TOTAL	**0.00**	**3.50**	**0.00**	**45.00**

NOT HEDGE: Do NOT Purchase WTI Oil forward contract (in billion dollars)

Date	Fair Value of Forward Contract	Other Comprehensive Income (Equity)	Derivative Gain/Loss (P&L)	**Net Income**
31 Dec 2010	–	–	–	**11.00**
31 Mar 2011	–	–	–	**11.00**
30 Jun 2011	–	–	–	**11.50**
30 Sep 2011	–	–	–	**11.50**
1 Nov 2011	–	–	–	
TOTAL	–	–	–	**45.00**



High Price Volatility Condition

Based on analysis of historical data, the volatility of Nigeria Oil's price is relatively **HIGH**.

Economic Impact

If management's forecasts are realistic, Nigeria Oil price will increase during the coming year. As a result, if the management does *NOT* hedge, the company will pay an additional USD 3.5 billion (on *1 Nov 2011*) for the same amount of Nigeria Oil, as shown in the table below.

	HEDGE: Purchase WTI Oil forward contract to hedge commodity risk	**NOT HEDGE:** Do NOT Purchase WTI Oil forward contract
Net Cash Outflow on 1 Nov 2011	**99.60 billion**	**103.10 billion**
Value of Nigeria Oil purchased on 1 Nov 2011	103.10 billion	103.10 billion

Accounting Impact

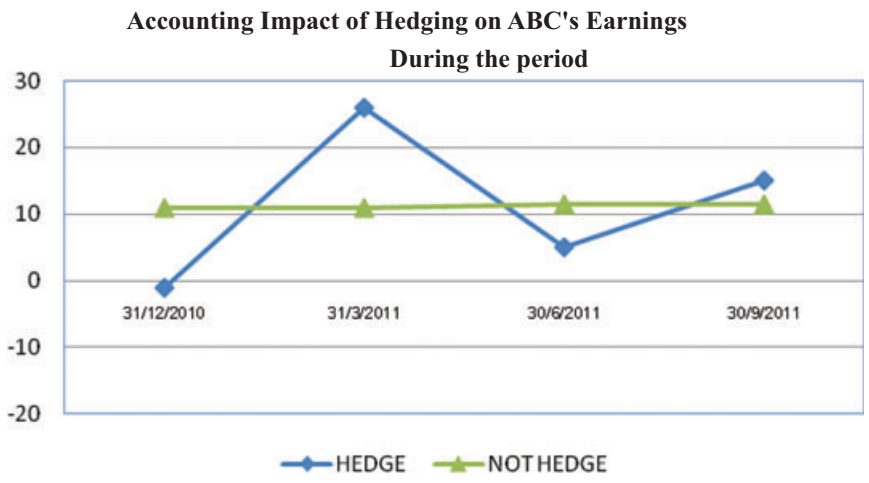
The table and figure below demonstrate the predicted effects of hedging on ABC's financial statements over the one-year period. Specifically, if the management chooses to hedge commodity risk, the company's quarterly earnings will become **highly volatile** (see column **"Net Income"**), due to **fair value changes** of the forward contract. However, if the management does not hedge commodity risk, there will be no impact on the company's P&L and balance sheet. In addition, annual earnings do not differ with respect to the hedging decisions.

HEDGE: Purchase WTI Oil forward contract to hedge commodity risk (in billion dollars)

Date	Fair Value of Forward Contract	Other Comprehensive Income (Equity)	Derivative Gain/Loss (P&L)	**Net Income**
31 Dec 2010	−60.00	−48.00	−12.00	**-1.00**
31 Mar 2011	95.00	80.00	15.00	**26.00**
30 Jun 2011	−57.00	−50.50	−6.50	**5.00**
30 Sep 2011	39.50	36.00	3.50	**15.00**
1 Nov 2011	−17.50	−14.00	0.00	
TOTAL	**0.00**	**3.50**	**0.00**	**45.00**

NOT HEDGE: Do NOT Purchase WTI Oil forward contract (in billion dollars)

Date	Fair Value of Forward Contract	Other Comprehensive Income (Equity)	Derivative Gain/Loss (P&L)	**Net Income**
31 Dec 2010	–	–	–	**11.00**
31 Mar 2011	–	–	–	**11.00**
30 Jun 2011	–	–	–	**11.50**
30 Sep 2011	–	–	–	**11.50**
1 Nov 2011	–	–	–	
TOTAL	–	–	–	**45.00**



Control Condition

Based on analysis of historical data, the volatility of Nigeria Oil's price is relatively **HIGH**.

Economic Impact

If management's forecasts are realistic, Nigeria Oil's price will increase during the coming year. As a result, if the management does *NOT* hedge, the company will pay an additional USD 3.5 billion (on *1 Nov 2011*) for the same amount of Nigeria Oil, as shown in the table below.

	HEDGE: Purchase WTI Oil forward contract to hedge commodity risk	**NOT HEDGE:** Do NOT Purchase WTI Oil forward contract
Net Cash Outflow on 1 Nov 2011	**99.60 billion**	**103.10 billion**
Value of Nigeria Oil purchased on 1 Nov 2011	103.10 billion	103.10 billion

Accounting Impact (Historical Cost Accounting)

The table and figure below demonstrate the predicted effects of hedging on ABC's financial statements over the one-year period. Specifically, if the management chooses to hedge commodity risk, the company's quarterly earnings **will not change** (see column **"Net Income"**), since **historical cost accounting** is used for the forward contract. If the management does not hedge commodity risk, there will be no impact on the company's P&L and balance sheet. In addition, annual earnings do not differ with respect to the hedging decisions.

HEDGE: Purchase WTI Oil forward contract to hedge commodity risk (in billion dollars)

Date	Fair Value of Forward Contract	Other Comprehensive Income (Equity)	Derivative Gain/Loss (P&L)	Net Income
31 Dec 2010	–	–	–	**11.00**
31 Mar 2011	–	–	–	**11.00**
30 Jun 2011	–	–	–	**11.50**
30 Sep 2011	–	–	–	**11.50**
1 Nov 2011	–	–	–	
TOTAL	-	-	–	**45.00**

NOT HEDGE: Do NOT Purchase WTI Oil forward contract (in billion dollars)

Date	Fair Value of Forward Contract	Other Comprehensive Income (Equity)	Derivative Gain/Loss (P&L)	Net Income
31 Dec 2010	–	–	–	**11.00**
31 Mar 2011	–	–	–	**11.00**
30 Jun 2011	–	–	–	**11.50**
30 Sep 2011	–	–	–	**11.50**
1 Nov 2011	–	–	–	
TOTAL	–	–	–	**45.00**

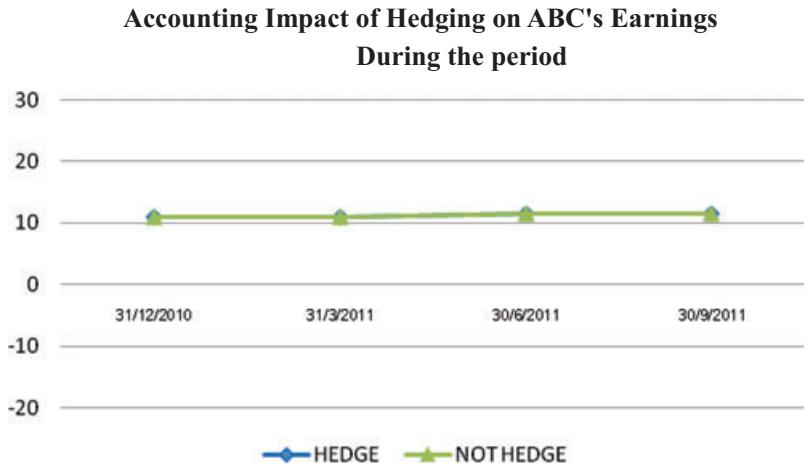


EXHIBIT 2

Experimental Manipulations of Experiment 2

E-plus-A Separate Presentation Condition

Based on analysis of historical data, the volatility of Nigeria Oil's price is relatively **HIGH**.

Economic Impact

If management's forecasts are realistic, Nigeria Oil's price will increase during the coming year. As a result, **if the management does *NOT* hedge**, the company will **pay an additional USD 3.5 billion** (on *1 Feb 2013*) for same amount of Nigeria Oil, as shown in the table below.

	HEDGE: Purchase WTI Oil forward contract to hedge commodity risk	**NOT HEDGE:** Do NOT Purchase WTI Oil forward contract
Net Cash Outflow on 1 Feb 2013	**99.60 billion**	**103.10 billion**
Value of Nigeria Oil purchased on 1 Feb 2013	103.10 billion	103.10 billion

Accounting Impact

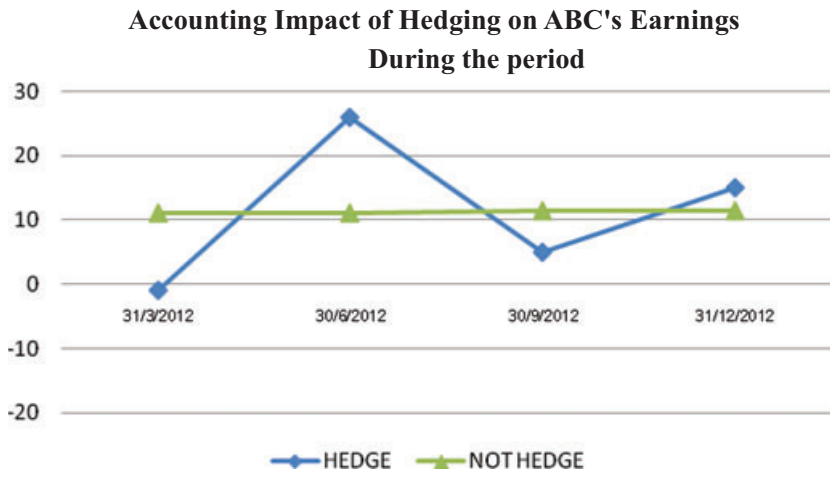
The table and figure below demonstrate the predicted effects of hedging on ABC's financial statements over the one-year period. Specifically, if the management chooses to hedge commodity risk, the company's quarterly earnings will become **highly volatile** (see column **"Net Income"**), due to **fair value changes** of the forward contract. However, if the management does not hedge commodity risk, there will be no impact on company's P&L and balance sheet. In addition, annual earnings do not differ with respect to the hedging decisions.

HEDGE: Purchase WTI Oil forward contract to hedge commodity risk (in billion dollars)

Date	Fair Value of Forward Contract	Other Comprehensive Income (Equity)	Derivative Gain/Loss (P&L) **(A)**	**Net Income (B)**	**Net Income Not From Fair Value Remeasurement (C = B−A)**
31 Mar 2012	−60.00	−48.00	−12.00	**−1.00**	**11.00**
30 Jun 2012	95.00	80.00	15.00	**26.00**	**11.00**
30 Sep 2012	−57.00	−50.50	−6.50	**5.00**	**11.50**
31 Dec 2012	39.50	36.00	3.50	**15.00**	**11.50**
1 Feb 2013	−17.50	−14.00	0.00		
TOTAL	**0.00**	**3.50**	**0.00**	**45.00**	**45.00**

NOT HEDGE: Do NOT Purchase WTI Oil forward contract (in billion dollars)

Date	Fair Value of Forward Contract	Other Comprehensive Income (Equity)	Derivative Gain/Loss (P&L) **(A)**	**Net Income (B)**	**Net Income Not From Fair Value Remeasurement (C = B−A)**
31 Mar 2012	–	–	–	**11.00**	**11.00**
30 Jun 2012	–	–	–	**11.00**	**11.00**
30 Sep 2012	–	–	–	**11.50**	**11.50**
31 Dec 2012	–	–	–	**11.50**	**11.50**
1 Feb 2013	–	–	–		
TOTAL	–	–	–	**45.00**	**45.00**



APPENDIX C

Proposed Financial Statement Presentation by FASB/IASB: An Example

ABC Financial Co. (year ended Dec 31 2011)					
A	**B**	**C**	**D**	**E**	**F**
	Changes in Assets and Liabilities				
	Not from Remeasurements		**From Remeasurements**		
Caption	**Cash Flows**	**Accruals, Allocations, and Other**	**Recurring Fair Value Changes**	**All Other**	**Comprehensive Income (B+C+D+E)**
Cash received from deposits, net savings deposit	40,000	−40,000			
Cash received from loans					
Interest	125,000	79,000			204,000
Principal	80,000	−80,000			
Cash received from trading security	2,500	−1,205			1,295
Total cash from lending and deposits	247,500	−42,205			205,295
Cash received from (paid for) noninterest operating activities					
Purchase of available-for-sale securities	−79,000	80,000	1,000		2,000
Sale of loans	10,000	−10,000		−2,000	−2,000
Settlement of derivatives	31,500	−5,500	11,000		37,000
Wages, salaries, and benefits	−30,000	−5,000			−35,000
Investment in affiliate A	−12,000	12,000		3,500	3,500
Total cash from noninterest operating activities	−79,500	71,500	12,000	1,500	5,500
Net cash from operating activities	168,000	29,295	12,000	1,500	210,795

Note: This table illustrates how remeasurements from fair value changes are presented separately from other non–fair value changes.

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