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MANAGEMENT'S AGGRESSIVENESS AND FAIR VALUE ACCOUNTING: AN
EXAMINATION OF REALIZED AND UNREALIZED GAINS AND LOSSES ON ASC 820
LEVEL 3 ASSETS

A Dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of
Philosophy in Business at Virginia Commonwealth University

by

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Abstract

MANAGEMENT'S AGGRESSIVENESS AND FAIR VALUE ACCOUNTING: AN EXAMINATION OF REALIZED AND UNREALIZED GAINS AND LOSSES ON ASC 820 LEVEL 3 ASSETS

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Director: Myung Seok Park, Robert L. Hintz Professor of Accounting

Prior research has shown that even the most subjective fair value estimates are value-relevant (Song et al. 2010, Kolev 2009, Goh et al. 2009) and that managers appear to use Level 3 valuations opportunistically (Valencia 2011, Fiechter and Meyer 2009). However, the association between “traditional” measures of aggressiveness in financial reporting and biased estimates of fair value has not been previously studied. I test whether aggressiveness, as measured by discretionary accruals, real activities manipulation, and meeting-or-beating analysts’ consensus estimates, is positively associated with realized and unrealized gains and losses on Level instruments. Overall, I find limited support that aggressive firms opportunistically use fair value measurements to overstate earnings. Inferences remain the same whether only the unrealized component of gains/losses are examined and whether firms are classified into “suspect” or “non-suspect” groups.

I. Introduction

On May 12, 2011, the Financial Accounting Standards Board (FASB) issued a press release stating that the FASB and the International Accounting Standards Board (IASB) completed a significant milestone in the process of moving towards a single, global set of high-quality financial accounting standards. Specifically, the boards issued common standards regarding techniques and disclosures related to fair value accounting. The promulgation of common standards is known as “convergence”, and the boards have been actively working to align US Generally Accepted Accounting Principles (GAAP) and International Financial Accounting Standards (IFRS) since 2002. Due to convergence, understanding the risk and benefits of reporting assets and liabilities at fair value literally has global implications. Leslie Seidman, Chairman of the FASB, said, “This Update represents another positive step toward the shared goal of globally converged accounting standards. Having a consistent meaning of the term ‘fair value’ will improve the consistency of financial reporting around the world” (FASB 2011).

Despite the world-wide importance of fair value accounting, relatively little empirical evidence exists regarding the current fair value standards. This sentiment is expressed by DeFond (2010), “Going forward, I think there are accounting developments on the horizon about which we know relatively little, and hence are logical prospects for future research. One example is fair value accounting, which represents a potentially sea-changing development in the accounting environment” (DeFond 2010, 11). Further, the additional disclosures required by modern fair value standards may be able to provide further insights into issues that have been debated in prior research. Barth and Taylor (2010) are critical of the conclusions made by Dechow, Myers, and Shakespeare (2010) regarding the manipulation of fair value estimates

during asset securitizations stating that, “Recent changes in accounting standards might provide a greater opportunity to investigate the discretion in fair value estimates. For example, SFAS 157 defines fair value, provides guidance on how to determine it, and requires more extensive disclosures about fair value than required previously. Perhaps these new disclosures can be used to construct more direct tests” (Barth and Taylor 2010, 33).

Laux and Leuz (2009) discuss the major arguments for and against fair value accounting subsequent to the financial crisis. The authors frame the discussion within the tradeoff between relevance and reliability and state that accounting standards setters have debated this tradeoff for decades. Laux and Leuz (2009) write, “Few dispute that transparency is important. But the controversy rests on whether fair value accounting is indeed helpful in providing transparency and whether it leads to undesirable actions on the parts of banks and firms” (Laux and Leuz 2009, 827-828). This study provides direct evidence regarding one such undesirable action (e.g., firms intentionally manipulating fair value estimates to manage earnings).

Prior to the passage of Statement of Financial Accounting Standards No. 157 (FAS 157), existing guidance related to fair value accounting remained dispersed through the pre-codification hierarchy of Generally Accepted Accounting Principles (GAAP) in the United States. The definitions of fair value varied across standards, and specific implementation guidance was limited. The FASB recognized that these problems “... created inconsistencies that added to the complexity of applying U.S. GAAP” (FASB 2006, FAS 157-2). FAS 157 did not increase the scope of which account balances or classes of transactions were to be reported at fair value. Rather, FAS 157 was written to be a single authoritative implementation standard for other areas of US GAAP requiring fair value accounting.

The FASB implemented the Accounting Standards Codification (ASC) for financial reporting periods subsequent to September 15, 2009. The ASC technically supersedes all prior US GAAP, but many of the existing Statements of Financial Accounting Standards were incorporated into the Codification. For instance, the provisions of FAS 157 are incorporated into the Codification as Accounting Standards Codification 820. Hereafter, this paper references the Accounting Standards Codification rather than the Statement of Financial Accounting Standards (ASC 820 instead of FAS 157).

Inputs to the three valuation techniques permitted by ASC 820 (i.e., market approach, income approach, or cost approach) are either deemed to be observable or unobservable. Observable inputs are defined as, "... inputs that reflect the assumptions market participants would use in pricing the asset or liability developed based on market data obtained from sources independent of the reporting entity" (FASB ASC 820-10-20). Unobservable inputs are defined as inputs which "... reflect the entity's own assumptions about the assumptions market participants would use in pricing the asset or liability developed based on the best information available in the circumstances" (FASB ASC 820-10-20).

ASC 820 also created a hierarchy of three levels for fair value measurement and expanded the disclosures required for fair value measurements. Per ASC 820, Level 1 assets or liabilities use quoted market prices for identical assets or liabilities in active markets. Level 2 assets or liabilities use observable prices which are not included in the Level 1 classification. Examples of Level 2 observable prices are quoted prices for similar, not identical, assets or liabilities in active markets and quoted prices for identical or similar assets or liabilities in markets that are not deemed to be "active." Level 3 items are commonly referred to as "mark-to-model" assets or liabilities. These assets/liabilities use the entity's own assumptions as valuation

inputs and, accordingly, management has the most discretion over the valuation of Level 3 assets or liabilities. It is this category which uses inputs deemed to be “unobservable” per ASC 820 and, accordingly, additional disclosures are required.

Using ASC 820 disclosures, this study examines whether aggressive firms use their considerable discretion over the valuation inputs used in the Level 3 category to report biased (overstated) gains/losses for Level 3 assets. Specific examples of these assets include auction rate securities, investments in hedge funds, investments in private equity firms, collateralized debt obligations, credit default swaps, and derivatives relating to commodity basis differentials. Biased gains/losses may be either unrealized or realized. The unrealized gains/losses used in this study are attributable to Level 3 assets which are not designated as available-for-sale. These unrealized gains/losses are booked to income statement accounts and alter the current period’s earnings. The realized gains/losses attributable to Level 3 assets include assets which were designated as available-for-sale in a prior period but have been sold in the current period and sales of assets which were designated as trading securities. These realized gains/losses are booked to income statement accounts, alter the current period’s earnings, and provide management with a second way to use Level 3 assets to manage earnings.

In this study, I define a firm’s aggressiveness in its financial reporting using three different measures. Each measure has been used extensively in the accounting and finance literature. Aggressiveness is measured using the absolute value of lagged discretionary accruals, composite real activities manipulation, and “Street” earnings that are greater than or equal to analysts’ consensus estimates.

Findings from prior research are consistent with firms being rewarded for reporting earnings consistent with the market's expectations (Skinner and Sloan 2002; Bartov, Givoly, and Hayn 2002). These findings provide aggressive firms with incentives to report overstated realized gains/losses on Level 3 assets. It is also known that the Level 3 items are value relevant (Song, Thomas, and Yi 2010; Kolev 2009; Goh, Ng, and Yong 2009). The fact that the market discounts, but still values, Level 3 items provides incentives to aggressive firms to willfully overstate Level 3 assets via the concurrent overstatement of unrealized gains/losses. It remains an open empirical question whether aggressive firms engage in these behaviors to a greater extent than nonaggressive firms. In this study, I predict that management's aggressiveness (i.e., discretionary accruals, real activities manipulation, and propensity to meet or beat analysts' consensus estimates) is positively associated with realized and unrealized gains/losses on Level 3 assets.

I find that realized and unrealized gains/losses on Level 3 assets are significantly associated with discretionary accruals in a variety of specifications. The relationship is significant at conventional levels regardless of the test. There is moderate support for the conjecture that realized and unrealized gains/losses on Level 3 assets and management's aggressiveness are related when real activities manipulation is used as a proxy for aggressiveness. However, I find little evidence of an between aggressiveness and realized and unrealized gains/losses on Level 3 assets when meeting-or-beating is used as the operationalization of aggressiveness.

This study contributes to the post-FAS 157/ASC 820 fair value accounting literature in several ways. First, Valencia (2011) and Fiechter and Meyer (2009) provide evidence that fair value accounting is used as an earnings management tool conditional upon the properties of the

firm's earnings. However, the relationship between fair value accounting and established measures of firm aggressiveness (e.g., discretionary accruals, real activities manipulation, and propensity to meet-or-beat analysts' consensus estimates) has not been previously investigated. Both Valencia (2011) and Fiechter and Meyer (2009) conduct analyses where the primary explanatory variables are related to earnings, changes in earnings, or net income. Discretionary accruals, meeting-or-beating, and real activities manipulation are not considered by either study. Second, understanding whether aggressive firms intentionally report biased fair value estimates is important because both Valencia (2011) and Fiechter and Meyer (2009) report that higher-quality auditors and stronger corporate governance do little to constrain managers from using Level 3 fair value estimates opportunistically. Third, all of the modern (i.e., post FAS 157) fair value studies have examined fair value accounting using samples consisting solely of financial services firms. Financial services firms have unique operating and accounting environments, and findings supporting the notion that managers willfully overstate fair value estimates may not be generalizable to nonfinancial services firms. However, this study provides evidence that nonfinancial services firms also use fair value accounting as an earnings management tool. Fourth, Barth and Taylor (2010) are optimistic that the ASC 820 disclosures may be used to construct more direct tests of whether managers opportunistically abuse the discretion inherent in fair value estimates. This study includes several direct tests of the relationship between management aggressiveness and fair value.

The remainder of this paper is organized as follows. Section II discusses prior literature and develops the hypothesis of this paper. Section III details the sample selection, variables, and empirical research design of the study. Section IV presents the results, and Section V discusses the conclusion.

II. Literature Review and Hypothesis Development

Literature on Fair Value

FAS 157 has two implementation dates depending upon the type of assets/liabilities the firm has (financial vs. nonfinancial) and the frequency with which the firm reports the fair values of the assets/liabilities. For firms with financial assets/liabilities, or nonfinancial assets/liabilities that are reported at fair value with at least an annual frequency, FAS 157 became effective for financial statements filed with fiscal years beginning after November 15, 2007. For firms with nonfinancial assets/liabilities that are not reported at fair value on at least an annual basis, FAS 157 became effective for fiscal years beginning after November 15, 2008 (FSP FAS 157-2).

Much of the existing FAS 157 research focuses on financial services institutions. For example, working papers from Valencia, Fiechter and Meyer, Goh et al., and Kolev all study FAS 157 within the context of financial services firms. The concentration of fair value reporting within the banking industry is not limited to working papers. Recently published studies from Badertscher et al. (2012), Riedl and Serafeim (2011), and Song et al. (2010) also use samples consisting solely of financial services firms. The papers fall into two broad research categories. One group examines the value-relevance of fair value estimates and disclosures while the second attempts to determine if managers use their discretion over fair value in an opportunistic manner.

The value-relevance studies include Song et al. (2010), Kolev (2009), and Goh et al. (2009). Song et al. (2010) employ a modified version of the Ohlson (1995) model. Ohlson's original model expresses share price as a function of book value and the present value of cumulative expected abnormal earnings. Song et al. (2010) decompose the book value of the firm into assets/liabilities carried at historical cost and the ASC 820 framework for assets/liabilities carried at fair value (Level 1, Level 2, and Level 3). They then estimate the

relationship between each asset/liability level and share price. Song et al. (2010) note that, theoretically, the regression coefficients for assets equal positive one and the regression coefficients for liabilities equal negative one, but find that the estimated parameters decrease in absolute value as the fair value levels increase. This finding is consistent with investors placing less reliance on fair value adjustments that are subject to higher amounts of managerial discretion. Kolev (2009) and Goh et al. (2009) use similar research designs and report findings¹ consistent with Song et al. (2010).

Each of the value-relevance studies concludes that fair value estimates with less discretion are more value-relevant to investors, but all three fair value levels are significantly associated with share price. These findings are interesting because they show that even fair value disclosures with the most discretion (Level 3 assets/liabilities) are priced by capital markets. These findings give overly aggressive managers an incentive to report biased (overstated) fair value estimates for Level 3 assets. Whether or not aggressive managers abuse the considerable leeway they have in determining the fair value of Level 3 assets remains an open empirical question.

Valencia (2011) and Fiechter and Meyer (2009) explore whether financial services institutions use Level 3 fair value estimates opportunistically. Valencia (2009) studies the amount of unrealized gains that banks recognized in earnings around the financial crisis of 2008.² These unrealized gains are the result of changes in the valuations of Level 3 instruments between reporting periods. Valencia (2009) subtracts the unrealized gains from the actual earnings reported by the financial institutions. He shows that banks which would have reported

¹ Goh et al. and Kolev both study the fair value of net assets which are defined as the total fair value assets for a given level minus the total fair value liabilities for the same level.

² Valencia's sample runs from 2007 through the third quarter of 2009.

losses had they not been able to recognize the Level 3 valuation changes report unrealized gains that are higher than banks which would have reported positive earnings had they not been able to recognize the Level 3 valuation changes. These results also hold for banks which would have reported negative changes in earnings had they not been able to recognize Level 3 valuation changes. Taken together, these findings suggest that managers of financial services institutions use their discretion over Level 3 fair value estimates to report earnings that are positive and higher than prior reporting periods. Interestingly, Valencia (2009) finds no evidence that stronger corporate governance or more prestigious auditors constrains such behavior.

Fiechter and Meyer (2009) examine whether banks use the discretionary nature of Level 3 fair value estimates to smooth earnings. Unlike Valencia (2011), their sample consists of observations limited to the financial crisis of 2008. Fiechter and Meyer (2009) find a negative and statistically significant association between unrealized gains/losses on Level 3 instruments and net income before unrealized gains/losses on Level 3 instruments. They conclude that this is evidence consistent with firms using the subjectivity inherent in fair value estimation of opaque assets to smooth earnings (firms with higher earnings report lower unrealized gains/losses and vice versa). Similar to Valencia (2011), the findings of the authors do not indicate that stronger corporate governance mitigates the ability of managers to report biased fair value estimates.

Though Valencia (2011) and Fiechter and Meyer (2009) show that characteristics of both current earnings and current changes in earnings influence management's use of ASC 820 Level 3 fair value estimates, the relationship between management's aggressiveness and Level 3 reporting has yet to be studied. The research design used in the current study differs from both Valencia (2011) and Fiechter and Meyer (2009) in that management's use of ASC 820 Level 3

fair value estimates are examined conditional upon the characteristics of the firm itself and not upon the characteristics of the firm's reported earnings.

Literature on Aggressiveness

Teoh, Welch, and Wong (1998) attempt to explain the widely observed underperformance of initial public offerings (IPOs) by separating firms into "aggressive" or "conservative" categories and testing for differences in the three-year returns of each group. They define aggressive IPOs as firms in the highest quartile of discretionary accruals and conservative IPOs as firms in the lowest quartile of discretionary accruals. Teoh et al. (1998) show that aggressive IPO firms cumulative buy-and-hold returns are between 15 to 30 percent lower than conservative IPO firms.

Kim and Park (2005) study aggressive (i.e., opportunistic) accounting decisions within the context of seasoned equity offerings (SEO). These issuances give managers two incentives to issue shares at higher prices. First, a higher price per share allows the firm to collect more cash for a given number of shares. Second, the firm must sell fewer shares to raise a particular amount of capital. This allows managers to prevent excess dilution of their equity ownership stakes in the firm subsequent to the issuance. Kim and Park (2005) hypothesize that managers of SEO firms will use their financial reporting discretion aggressively and will manage earnings to issue shares at inflated prices. They refer to this as the "issuer's greed hypothesis" and operationalize aggressiveness using discretionary accruals from the cross-sectional Modified Jones Model (1991). The findings of Kim and Park (2005) are consistent with the issuer's greed hypothesis.

The use of discretionary accruals as a measure of firm aggressiveness is also accepted in the auditing literature. Francis and Yu (2009) examine the relationship between local office size and audit quality for clients audited by Big 4 auditors. They also use discretionary accruals as a proxy for aggressive financial reporting and conclude, “Clients audited by larger offices are also less likely to have aggressively managed earnings as evidenced by smaller abnormal accruals and a lower likelihood of meeting benchmark earnings targets... “ (Francis and Yu 2009, 1522). Further, Gunny and Zhang (2013) study the relationship between Public Company Accounting Oversight Board (PCAOB) inspections and audit quality. Gunny and Zhang (2013) state that an alternative explanation for their results is that the PCAOB may devote more time and resources inspecting auditors that allowed aggressive accounting choices in the past. Gunny and Zhang (2013) use a two-stage model to account for this and include accruals as a proxy for aggressiveness.

However, discretionary accruals are not the only measure to gauge managers’ aggressiveness toward financial reporting. Management aggressiveness may also appear in operating decisions. Roychowdhury³ (2006) defines real activities manipulation as, “departures from normal operating practices, motivated by managers’ desire to mislead at least some stakeholders into believing certain financial reporting goals have been met in the normal course of operations” (p. 337).

Roychowdhury (2006) defines suspect firm-years as observations where net income divided by total assets is greater than 0 and lower than .005. This definition is partially based

³ Roychowdhury cites a survey from Graham et al. (2005) in which executives stated that it was important to meet various earnings targets (i.e., prior period earnings, analyst forecasts, etc.). The executives surveyed also admitted that they were willing to manipulate day-to-day operating procedures to meet these targets.

upon Burgstahler and Dichev (1997) who document discontinuities in the distributions of both earnings and changes in earnings. Specifically, Burgstahler and Dichev (1997) find lower-than-expected frequency of observations immediately to the left of zero and higher-than-expected frequency of observations immediately to the right of zero. They conclude that the discontinuities in the distributions are attributable to earnings management. Other studies (Cohen, Dey, and Lys 2008; Kim, Park, and Wier 2012) also find that in suspect firm-years, firms report lower abnormal cash flow from operations, lower discretionary expenses, and higher abnormal production costs. Each of these findings is consistent with managers' aggressiveness toward financial reporting.

Cohen et al. (2008) examine the relationship between accruals-based earnings management and real activities manipulation. They find that passage of the *Sarbanes-Oxley Act of 2002* (SOX) significantly reduced the prevalence of accruals-based earnings management as compared to real activities manipulation. These findings are not surprising given the requirements of Section 404 of SOX. Section 404 requires management and the auditors to opine on the adequacy of both the design and operating effectiveness of the company's internal controls. A stronger internal control environment likely constrains accruals-based earnings management but may not necessarily reduce real activities manipulation. Cohen et al. (2008) conclude that accruals-based earnings management and real activities manipulation are substitutes for one another and that real activities manipulation became more prevalent subsequent to SOX. This suggests that RAM could be a trait of aggressive financial reporting.

Cohen and Zarowin (2010) study the substitution effect between accruals-based manipulation and RAM within the context of seasoned equity offerings. They find that while SEO firms use both accruals-based earnings management and RAM, these two earnings

management mechanisms are substitutes for one another. These findings are similar to Cohen et al. (2008) but generalizable to a more specific subsection of firms (i.e., SEOs). Cohen and Zarowin (2010) conclude that the substitution choice manager make between these two types of earnings management partially depends upon auditor scrutiny and perceived litigation penalties.

The sample period of this study is constrained to the post-SOX period due to the effective date of ASC 820. The findings of Cohen, Dey, and Lys (2008) and Cohen and Zarowin (2010) suggest that an alternative measure of management aggressiveness may be warranted in the post-SOX period. Therefore, the composite real activities manipulation measure from Cohen and Zarowin (2010) is used as an alternative proxy for management's aggressiveness.

Finally, meeting or beating analysts' forecasts (MBE) is used as the third proxy for management's aggressiveness in this study. Skinner and Sloan (2002) find that the return underperformance of growth stocks relative to value stocks is primarily explained by the asymmetric reactions of investors when growth stocks report negative earnings surprises. Negative earnings surprises are defined as fiscal quarters in which the firm's actual earnings per share is less than the analyst consensus forecast of earnings per share. The evidence reported by Skinner and Sloan (2002) gives growth firms strong incentives to avoid negative earnings surprises, and thus, also incentivizes MBE behavior.

However, incentives to avoid negative earnings surprises are not confined to growth stocks. Bartov, Givoly, and Hayn (2002) use an initial sample containing all firms for which I/B/E/S estimates are available and conclude that cumulative abnormal returns are positively associated with MBE. They also report asymmetric market reactions depending upon the type of discrepancy between the firm's reported numbers and analysts' consensus estimates. For

example, the premium for meeting analysts' forecasts is significantly different from the premium for beating analysts' forecasts, and the absolute value of the premium to beating analysts' forecasts differs from the penalty for failing to meet analysts' forecasts. Bartov et al. (2002) also present evidence that the market still rewards MBE behavior in cases in which the market's expectations were likely met via earnings management or analyst manipulation. These findings further incentivize aggressive firms to engage in MBE behavior.

Matsumoto (2002) finds that managers prefer pessimistic management earnings forecasts as a tool for MBE, Matsumoto's results show that discretionary accruals and MBE are positively and significantly related. Therefore, I employ MBE as a third measure of management aggressiveness in the current study.

The existing aggressiveness and fair value literature discussed above leads to several conclusions. The market often reacts positively in cases where it is likely that benchmarks are met via aggressive financial reporting practices by the firm, assets subject to the largest amounts of managerial discretion are still priced by capital markets participants, financial services institutions use fair value to report earnings and changes in earnings that are positive, financial services institutions also use fair value to smooth earnings, and both auditors and stronger corporate governance by the board of directors are unable to constrain such behavior. Therefore, aggressive nonfinancial services firms are also likely to opportunistically report biased (overstated) fair value estimates in an attempt to obtain the same positive reaction from the market. This provides support for the following hypothesis stated in alternate form:

H1: Management's aggressiveness in financial reporting is positively associated with realized and unrealized gains/losses on Level 3 assets.

III. Research Design

Sample Selection

The United States Securities and Exchange Commission (SEC) requires that large accelerated filers (i.e., firms with common equity market capitalization of at least \$700 million) prepare their financial statements in an interactive data format using eXtensible Business Markup Language (XBRL) for reports filed on or after June 15, 2009. The SEC intended the XBRL format to be more useful to investors because XBRL “tagged” documents enable investors to quickly and easily download data directly into spreadsheets. The SEC stated that this should help investors analyze the data in a variety of ways using commercially available software (SEC 2009).

Calcbench Inc. uses cloud-based computing to process and store data from all eXtensible Business Reporting Language (XBRL) tagged financial reports filed with the United States Securities and Exchange Commission. The population of publicly traded firms with realized or unrealized gains/losses on Level 3 assets was obtained from Calcbench Inc. XBRL prepared documents are mandated beginning the second calendar quarter of 2009, but interpolation based on data in the 10-Q’s is possible. Therefore, the sample period in this study runs from the first calendar quarter in 2009 to the second calendar quarter of 2012. After interpolation there are 175 firms in the sample and 902 firm-quarters. Financial services firms (i.e., SIC codes 6000-6799) are excluded due to the extant research on financial services firms and fair value accounting. The remaining XBRL sample includes 105 firms and 492 firm-quarters of which 410 firm-quarters report non-zero realized and unrealized gains/losses on Level 3 assets.

A recent white paper from Columbia University’s Center for Excellence in Accounting & Security Analysis outlines a series of problems in the current XBRL reporting environment.

Among the problems discussed by Harris and Morsfield (2012) are low-quality XBRL document tagging due to limited liability of filers for errors combined with the fact that XBRL tagging is unaudited, filers utilizing incorrect XBRL tags, and errors causing the tagged data to not reconcile with the EDGAR filing. In fact, the first recommendation made by Harris and Morsfield (2012) is that the error rates of XBRL data be significantly reduced. Based on the findings of Harris and Morsfield (2012) data is hand-collected from EDGAR filings (i.e., 10-Q's and 10-k's) for the 492 firm-quarters discussed above. The hand-collected data contains 86 firms and 378 firm-quarters of which 333 firm-quarters report non-zero realized and unrealized gains/losses on Level 3 assets. The XBRL data does not agree with the EDGAR filings in nearly one third of cases (30.88%), and the hand-collected data is used for all of the reported descriptive statistics and empirical analyses.

The XBRL data provided by Calcbench, Inc. contains 1,409 firm-quarters and 231 unique firms. This data theoretically consists of the entire population of firms that recognize changes in Level 3 assets in earnings. However, due to the XBRL implementation issues previously discussed it is likely that some firms with Level 3 gains/losses in earnings are absent. Excluding financial services firms (i.e., SIC codes 6000- 6799) eliminates 613 firm-quarters and 82 unique firms. It is worth noting that financial services institutions are the minority (35.50 %) of firms with Level 3 assets. XBRL tags exist for time periods beyond single quarters. For example, observations may contain cumulative figures for the first two or even three fiscal quarters. These cumulative periods are useful for interpolating⁴ values for missing time periods, but they are unsuitable for a research design using single-quarter financial data from COMPUSTAT.

⁴ Total realized and unrealized gains/losses included in earnings for two or more quarters is the sum of each single quarter. This may be seen in GE's 3/31/2009 and 6/30/2009 10-Qs and SWN's 3/31/2010 and 6/30/2010 10-Q's. However, this relationship does not usually hold for unrealized gains/losses.

Cumulative annual figures are also present in the XBRL data and pose the same problem. Interpolating when possible and removing these cumulative periods results in a net decrease of 302 firm-quarters. This brings the initial XBRL sample to 492 firm quarters and 105 unique firms. Hand-collecting data from the EDGAR filings (e.g., 10-Q's and 10-K's) results in 378 firm-quarters and 86 unique firms. Table 1 details specific reasons that each observation is removed. The most common reasons for removal are 10-Q's being prepared on a cumulative basis, lack of disclosure regarding whether total realized and unrealized gains/losses are booked to earnings or OCI, and missing observations in the panel which precludes interpolation.

Table 1
Initial Sample of XBRL and Hand-Collected Data

	<u>Observations</u>
XBRL Data Obtained from Calcbench, Inc.	1,409
Less: Missing Value for Realized and Unrealized Gain/Loss Tag	(1)
Duplicate Observation	(1)
Financial Services Firms	(613)
Cumulative 6-month and 9-month Data	(282)
Annual Realized and Unrealized Data	(212)
Add: Interpolated Observations	192
Initial XBRL Sample	<u>492</u>
Less: No Level 3 Rollforward Table in 10-Q/10-K	(6)
Only Cumulative 6- or 9-Month Reported	(33)
Total Realized and Unrealized Gains/Losses Not Reported	(8)
OCI vs. Earnings Not Disclosed	(11)
Foreign Filer Without Any 10-Q's/10-K's	(6)
No 10-Q or 10-K Filed	(5)
Interpolation Not Possible Due to Missing Observations in Panel	<u>(45)</u>
Initial Hand-Collected Sample	<u><u>378</u></u>

COMPUSTAT data is necessary to estimate discretionary accruals, real activities manipulation, and several control variables (e.g., LMVE, LEV, ROA, etc.). The XBRL data and

hand-collected data were accumulated in one file which was merged with COMPUSTAT-Fundamentals Quarterly data using a one-to-one merge based on CIK, DATADATE, and FQTR. Fiscal period-end dates in COMPUSTAT (i.e., DATADATE) may be within several days from the actual period-end reported in EDGAR filings. The XBRL data contains the actual period-end reported in the EDGAR filing, and these dates are adjusted prior to the merge. Each observation in the XBRL data was successfully merged with COMPUSTAT.

One additional interpolation is necessary with Virginia Commonwealth University's COMPUSTAT-Fundamentals Quarterly subscription. Quarterly cash flow (i.e., OANCFQ) is necessary to estimate both real activities manipulation and discretionary accruals. However, the VCU subscription contains OANCFY which is the cumulative cash flow across all reported quarters. In the first quarter OANCFQ equals OANCFY, but in subsequent quarters OANCFY will report the cumulative six-, nine-, and twelve-month cash flows. Differencing OANCFY based on fiscal quarter for Q2, Q3, and Q4 provides the single-quarter operating cash flow⁵.

Missing values in the COMPUSTAT-Fundamentals Quarterly data further reduce the 378 firms in the hand-collected sample. Gross property plant and equipment (i.e., PPEGTQ) is missing in 55.02 percent of the 153,912 firm-quarters covered by COMPUSTAT between January 1, 2009 and June 30, 2012. PPEGTQ is missing in 13.49 percent of the hand-collected observations, and this precludes estimation of both normal and discretionary accruals for these observations. Missing PPEGTQ values are much less frequent in the hand-collected observations than in the population of firms covered by COMPUSTAT.

⁵ For example, MSFT's 9/30/2009 10-Q through the 6/30/2010 10-K may be used to illustrate this relationship.

The estimation sample used to test the relationship between real activities manipulation and realized and unrealized gains/losses on Level 3 instruments is also reduced due to missing values. Quarterly selling, general, and administrative expenses (i.e., XSGAQ) is missing in 36.22 percent of the 153,912 firm-quarters covered by COMPUSTAT between January 31, 2006 and December 31, 2012. XSGAQ is missing in 42.06 percent of the hand-collected observations. This pattern is the opposite of the relative proportion of missing values between the population of firms covered by COMPUSTAT and the hand-collected sample that was observed for PPEGTQ. While PPEGTQ is missing in a much higher percentage of the complete COMPUSTAT data than the hand-collected sample, the opposite holds for XSGAQ. This precludes estimation of normal expenses, abnormal discretionary expenses, and real activities manipulation for nearly half of the hand-collected observations. The RAM variable is the most impacted by missing values because composite RAM is the sum of residuals from three separate regressions. RAM also requires a larger number of lags than DA and, unlike DA, seasonal differences are used to estimate RAM.

Table 2 provides reconciliations of the initial hand-collected observations to the number of observations included in each model. The sample used to test the relationship between MBE and FVE is least affected by missing values, and the sample used to test the relationship between RAM and FVE is most affected by missing values.

Table 2
Reconciliation of Hand-Collected Sample to Total Observations in Each Model

	<u>DA</u>	<u>RAM</u>	<u>MBE</u>
Initial Hand-Collected Sample	378	378	378
Less: Missing Values- PPEGTQ	(51)	-	-
Missing Values- XSGAQ	-	(159)	-
Missing Values- Other	(25)	(15)	(27)
Total Observations	<u>302</u>	<u>204</u>	<u>351</u>

Variables: DA is the absolute value of discretionary accruals in period $t-1$ estimated as in Dechow et al. 1995. RAM is composite real activities manipulation which is the sum of abnormal production minus abnormal cash flows from operations minus abnormal production. Each individual RAM element was estimated as in Cohen and Zarowin (2010). DA and RAM are both Winsorized at the 1% level. PPEGTQ is gross property plant and equipment, quarterly. XSGAQ is selling, general, and administrative expenses, quarterly. MBE is an indicator variable equal to one if the firm's "Street" earnings are greater than or equal to the latest analyst consensus estimates.

Analyst forecast data to calculate MBE is obtained from IBES via the Thomson Reuters Spreadsheet Link (TRSL) interface. The TRSL queries are executed in MS Excel based on CUSIP and fiscal quarter. However, COMPUSTAT and IBES define fiscal periods differently and the format of the quarterly time variable differs between the two databases (e.g., DATAFQTR in COMPUSTAT appears as "2012Q1" while quarters in TRSL appear as "1FQ2012"). COMPUSTAT defines the fiscal year as one minus the current year for firms with fiscal year-ends in January through May. Both adding one to DATAFQTR for fiscal year-ends between January and May to remediate the temporal definition discrepancy between COMPUSTAT and IBES and reformatting the DATAFQTR is necessary for the query to properly run⁶. The analyst forecast data is merged back in using a one-to-one merge based on CUSIP and DATADATE. No observations are lost at this step due to merge failures.

⁶ The accuracy of adding one to the COMPUSTAT fiscal periods discussed above was tested via tracing actual net income for AIR, AEO, BBBY, XLNX, and MDT to the query. No exceptions were noted.

Annual auditor data is obtained from COMPUSTAT and auditor changes are obtained from Audit Analytics. Neither database has specific quarterly auditor data because 10-Q's are reviewed and not audited. Nonetheless, if the same auditor audits the 2009 and 2010 10-K's then this auditor also reviewed each of the 10-Q's between the annual reports. Using information about who the auditor was at any given year-end, combined with dates of auditor changes in the Audit Analytics Auditor Changes table, allows the quarterly auditor to be solved for. Ten observations are lost at this step due to missing auditor values, and the data is merged using a one-to-one merge based on GVKEY and DATADATE. No additional observations are lost due to merge failures.

The closing price of the Volatility Index (VIX) for the S&P 500 is downloaded from the Chicago Board Options Exchange (CBOE) via WRDS. VIX data is only available on trading days, and firms in the sample may have fiscal period-ends that occur on non-trading days. This precludes merging all firms at one time based on DATADATE. For example, a firm with a DATADATE that occurs on a weekend or holiday will not have VIX data for that day. In these cases the price of the VIX on the next trading day is used. A series of three one-to-many merges based on DATADATE or DATADATE adjusted for the next trading day are performed. These three datasets are appended together and comprise the most current estimation dataset at this point. No observations are lost due to missing values for the VIX or merge failures.

The price of the S&P 500 Composite Index is obtained from CRSP's Daily Stock file. The quarterly standard deviation of index price is calculated and merged back into the estimation dataset using a one-to-many merge based on DATADATE. Similar to the VIX, the quarterly standard deviation is non-missing only on trading days. A series of three one-to-many merges

based on DATADATE or adjusted DATADATE are performed and the files are appended together. No observations are lost at this step due to merge failures.

The three-month treasury yield is downloaded using the Federal Reserve Economic Data MS Excel add-in. Similar to VIX and S&P Composite Index prices, the treasury yield is only available on trading days and three merges and one append must be conducted to import the data. No observations are lost at this step due to missing data or merge failures.

Table 3 presents the sample by industry. Specifically, it details the number of unique firms and firm-quarters within each two-digit SIC code. The most frequent Level 3 instrument type within each industry is also shown in Table 3. The industries with the heaviest representation are Electric, Gas, and Sanitary, Oil and Gas Extraction, and Chemicals. Electric, Gas, and Sanitary firms consist of 38.62% of total firm-quarters. The least represented industries are Apparel and Accessory Stores and Fabricated Metals Excluding Machinery. The sample contains 23 different two-digit SIC groups.

Descriptions of Level 3 instruments were obtained from the hand-collection process and used to judgmentally assign the assets to the categories previously shown in Table 3. Auction rate securities and non-specific derivatives are the most frequently occurring assets in the hand-collected sample. The majority of the auction rate securities are described as being associated with collateralized student loan debt. It is unclear why auction rate securities tied to bundled student loan debt are so prevalent in the sample. Perhaps an investment bank recommended these as good investments to a variety of publicly traded firms or perhaps firms invested in the securities knowing of the valuation difficulties in advance and believing that the instruments

would provide a convenient earnings management tool. However, both conjectures are speculative.

As discussed in the “Control Variables” section, firms typically provide only a few sentences describing their Level 3 holdings. High-level descriptions of Level 3’s and a valuation reconciliation is disclosed, but specific information (e.g., term structures, counterparties, credit risk, use of valuation specialists, maturities, etc.) is not currently required to be disclosed by ASC 820. Prior studies (e.g., Fiechter and Meyer 2009; Valencia 2009) have included industry indicator variables based on two-digit SIC codes as aggregate measures of Level 3 instrument type. The rationale is that firms within the same industry will likely hold the same Level 3 instruments. This is a strong assumption given the variety of firms that are collapsed into each two-digit SIC code. Specifically, collapsing firms into groups based on the first two SIC digits assigns chocolate producers, chewing gum manufacturers, rice millers, and meat packing plants into one group. It is reasonable to believe that meat packing plants may need very different derivative financial instruments than chocolate producers or chewing gum manufacturers. Indicator variables at the industry level also assume that every firm within the same industry will have the same investment risk tolerance and financial sophistication. It may be the case that two firms in the same two-digit SIC code will invest in different Level 3 assets. Accordingly, indicator variables based on hand-collected descriptions of Level 3 instruments are used in the current study.

Table 3
Sample Industry Membership and Level 3 Instrument Types

<u>SIC</u>	<u>Description</u>	<u>Firms</u>	<u>Obs</u>	<u>Most Common Instrument</u>
10	Metal Mining	1	2	Non-Specific Derivatives
12	Coal Mining	2	14	Collars, Power, and Physical Commodity Derivatives
13	Oil and Gas Extraction	9	36	Collars, Power, and Physical Commodity Derivatives
20	Food	1	3	Other Investments, Contingent Consideration
26	Paper	1	4	Auction Rate Securities
28	Chemicals	9	33	Mortgage-Backed Instruments
29	Petroleum Refining	2	3	Other Investments, Contingent Consideration
34	Fabricated Metals Excluding Machinery	1	1	Auction Rate Securities
35	Industrial and Commercial Machinery	6	25	Private Equity, Corporate Debt, Venture Capital
36	Electric Excluding Computers	6	29	Auction Rate Securities
37	Transportation Equipment	1	4	Asset-Backed Securities
38	Measuring, Analyzing, and Controlling	3	17	Auction Rate Securities
39	Miscellaneous Manufacturing	2	3	Non-Specific Derivatives
42	Motor Freight Transportation	1	10	Auction Rate Securities
45	Transportation by Air	2	3	Energy Derivatives- Oil and Natural Gas
47	Transportation Services	1	2	Other Investments, Contingent Consideration
49	Electric, Gas, and Sanitary Services	24	146	Non-Specific Derivatives
50	Wholesale Trade- Durable Goods	1	2	Other Investments, Contingent Consideration
53	General Merchandise Stores	2	5	Auction Rate Securities
56	Apparel and Accessory Stores	1	1	Auction Rate Securities
58	Eating and Drinking Places	1	2	Auction Rate Securities
73	Business Services	8	25	Non-Specific Derivatives
99	Nonclassifiable Establishments	1	8	Private Equity, Corporate Debt, Venture Capital
		86	378	

Dependent Variable

The dependent variable⁷ for this study is obtained in a two-step process. First, firms with realized and unrealized gains/losses on Level 3 assets are identified via XBRL data provided by Calcbench, Inc. Second, the amounts in the shown in the XBRL data are vouched to the appropriate EDGAR filings. The XBRL tag used to identify firms in the sample is:

“FairValueMeasurementWithUnobservableInputsReconciliationRecurringBasisAssetGainLossIn

⁷ The XBRL data for this study was graciously provided by Pranav Ghai and Alex Rapp of Calcbench, Inc.

cludedInEarnings” which is defined by the XBRL taxonomy as, “This element represents total gains or losses for the period (realized and unrealized), arising from assets measured at fair value on a recurring basis using unobservable inputs (Level 3), which are included in earnings or resulted in a change in net asset value” (<http://www.xbrl.org/2003/role/link>).

This XBRL item contains both realized and unrealized gains/losses associated with Level 3 assets. However, management still has discretion over the realized gains/losses recorded for Level 3 assets in period t because management is able to use fair value accounting to determine the ending period $t-1$ value which is the beginning value in period t . The beginning value in period t is used to calculate the realized gain/loss on the sale of the Level 3 asset in period t . Thus, both the realized and unrealized gains/losses for Level 3 assets are subject to managerial discretion.

Independent Variables of Interest

The three proxies for management’s aggressiveness used in this study are the absolute value of discretionary accruals, composite real activities manipulation, and reported earnings that meet or beat analysts’ consensus forecasts.

Absolute Value of Discretionary Accruals

Jones (1991) investigates whether firms that petitioned the United States International Trade Commission (ITC) for import protection intentionally used accruals to report artificially lowered earnings during the relief petition period. This pioneering study noted that ITC regulators did not adjust the petitioner’s financial statements for the impact of accruals, and the author developed an expectations model for the nondiscretionary component of total accruals. The Jones Model expresses total accruals as a function of the reciprocal of total assets, gross

property plant and equipment, and changes in total revenues. The residuals from within-firm (i.e., time-series) Ordinary Least Squares (OLS) estimation of total accruals are deemed to be the discretionary component of accruals. Jones (1991) finds evidence that discretionary accruals are income-decreasing during the ITC investigations, but perhaps her most important contribution was the development of an expectation model of total accruals that is the basis for many earnings management studies.

Dechow et al. (1995) test several accrual-based earnings management models against one another and report on the relative frequencies to type I errors, type II errors, and whether any of the models consistently distinguishes extreme financial performance from earnings management. One model considered by the authors is a modified version of the Jones model which assumes that all changes in accounts receivable are purely the result of earnings management. This model, known as the Modified Jones Model, was found to be superior in detecting revenue-based earnings management and no different in its ability to detect expense-based earnings management compared to the Jones Model. Dechow et al. (1995) find that while none of the models tested could isolate extreme financial performance from earnings management, the Modified Jones Model generally outperforms the other models.

Both of the previously discussed studies used time-series versions of the Jones and Modified Jones Models. Originally developed by Defond and Jiambalvo (1994), the cross-sectional versions of the Jones Model and Modified Jones Model estimate discretionary accruals for cross-sections of firms grouped by two-digit SIC code and year. Subramanyam (1996) uses the cross-sectional Jones Model to examine whether discretionary accruals are priced by the stock market. He concludes that the discretionary components of accruals are priced by capital

markets and acknowledges that this finding provides another motivation for earnings management.

Bartov, Gul, and Tsui (2001) examine the relationship between discretionary accruals and audit opinion qualifications, but the authors do so within the context of testing the time-series Jones Model and Modified Jones Models against their cross-sectional counterparts. They conclude that only the cross-sectional variants consistently detect earnings management. These findings provide additional empirical support for the superiority of the cross-sectional versions of the discretionary accruals models over their time-series counterparts.

DeFond and Jiambalvo (1994) modified the existing time-series based models of discretionary accruals originally developed by Jones (1991) for cross-sectional estimation. The cross-sectional estimation groups firms by two-digit SIC code and year. One advantage of cross-sectional estimation is that the researcher does not need to determine an “estimation period” (i.e., periods without earnings management whereby parameter estimates are obtained) and an “event period” (i.e., periods where earnings management is hypothesized). The cross-sectional model provides parameter estimates used to calculate the average amount of accruals for each industry and year without the researcher partitioning the sample based upon prior beliefs about the likelihood of earnings management. Subramanyam (1996) states that a second advantage of the cross-sectional models are more precise parameter estimates. Bartov, Gul, and Tsui (2001) note that a third advantage of the cross-sectional models is that they are less subject to survivorship bias than their time-series counterparts. Based on the findings above, the cross-sectional Modified Jones Model is used to estimate discretionary accruals.

Discretionary accruals are deemed to be the absolute value of the residual from the following regression equation. Following prior studies, the regressions are run for each two-digit SIC code and year combination. Appendix 1 mathematically shows that discretionary accruals and unrealized gains/losses on Level 3 items are jointly determined. This induces simultaneity bias into OLS parameter estimates. Thus, lagged discretionary accruals is used in the empirical models in the current study:

$$TA_{it} / ATQ_{it-4} = \hat{\beta}_1(1/ATQ_{it-4}) + \hat{\beta}_2\left[\frac{\Delta REVTQ_{it} - \Delta RECTQ_{it}}{ATQ_{it-4}}\right] + \hat{\beta}_3(PPEGTQ_{it} / ATQ_{it-4}) + \epsilon_{it} \quad (1)$$

where

- TA= Total Accruals defined as IBQ-OANCFQ
- ATQ= Total Assets- Quarterly
- $\Delta REVTQ$ = Change in REVTQ between period t and period $t-4$, where
REVTQ= Total Revenue- Quarterly
- $\Delta RECTQ$ = Change in RECTQ between period t and period $t-4$, where
RECTQ= Net Receivables- Quarterly
- PPEGTQ= Gross Property, Plant, and Equipment- Quarterly

Composite Real Activities Manipulation

The second proxy, RAM, is obtained from the estimation employed in prior studies (e.g., Roychowdhury 2006; Cohen et al. 2008). Roychowdhury (2006) builds upon the analytical models of the financial accounting process developed by Dechow, Kothari, and Watts (1998) to estimate normal levels of cash flows from operations, production, and discretionary expenses. Roychowdhury (2006) classifies firms which are close to, but on the right-side of, a zero-earnings target as “suspect firm-years.” He writes that these firms may have willfully engaged in

various operating decisions to ensure positive net income was reported. Such operating decisions, referred to as real activities manipulation (RAM), would impact cash flow from operations, production, or discretionary expenses. Specifically, firms may increase current sales via offering steep discounts (resulting in lower than expected cash flow from operations), firms may increase current period production to lower cost of goods sold (resulting in higher than expected production), or firms may decrease current period discretionary expenses (resulting in lower than expected discretionary expenses). Each of these decisions allows firms to report higher current period net income and may result in the firm reporting earnings just to the right of the zero earnings benchmark.

Cohen, Dey, and Lys (2008) combine abnormal cash flows, abnormal production, and abnormal discretionary expenses into a single, composite measure of RAM which is the sum of each individual RAM component. Kim and Park (2014) also use a composite RAM measure with a positive expected value in the event that firms are engaging in RAM. In order to get abnormal CFO, abnormal production, and abnormal discretionary expenses, I estimate the following models. Similar to the discretionary accruals models, each of the following regressions are run for each two-digit SIC code and year combination:

$$OANCFQ_{it} / ATQ_{it-4} = \hat{\beta}_1 \left(\frac{1}{ATQ_{it-4}} \right) + \hat{\beta}_2 (SALEQ_{it} / ATQ_{it-4}) + \hat{\beta}_3 (\Delta SALEQ_{it} / ATQ_{it-4}) + \epsilon_{it} \quad (2)$$

$$PROD_{it} / ATQ_{it-4} = \hat{\beta}_1 (1 / ATQ_{it-4}) + \hat{\beta}_2 (SALEQ_{it} / ATQ_{it-4}) + \hat{\beta}_3 (\Delta SALEQ_{it} / ATQ_{it-4}) + \hat{\beta}_4 (\Delta SALEQ_{it-4} / ATQ_{it-4}) + \epsilon_{it} \quad (3)$$

$$DISEXP_{it} / ATQ_{it-4} = \hat{\beta}_1 (1 / ATQ_{it-4}) + \hat{\beta}_2 (SALEQ_{it-4} / ATQ_{it-4}) + \epsilon_{it} \quad (4)$$

where

OANCFQ=	Cash Flow from Operations- Quarterly
ATQ=	Total Assets- Quarterly
SALEQ=	Sales- Quarterly
Δ SALEQ=	Change in SALEQ between period t and period $t-4$
PROD=	COGSQ + Δ INVTQ, where COGSQ= Cost of Goods Sold- Quarterly Δ INVTQ= change in INVTQ between period t and period $t-4$
INVTQ=	Inventory- Quarterly
DISEXP=	XRDQ + XADQ + XSGAQ, where XRDQ= Research and Development Expense- Quarterly XADQ= Advertising Expense- Quarterly XSGAQ= Selling, General, and Administrative Expense- Quarterly

Abnormal Cash Flow from Operations, AB_CFO, is defined as the residual from model (2), abnormal production, AB_PROD, is defined as the residual from model (3), and abnormal discretionary expenses, AB_DISEXP, is defined as the residual from model (4), respectively. The composite measure, RAM is measured as $AB_PROD - AB_CFO - AB_DISEXP$.

Meet-or-Beat Analysts' Consensus Forecasts

Bartov et al. (2002) find that cumulative abnormal returns are associated with firms reporting earnings that are consistent with market expectations. This result continues to hold in cases where reported earnings were likely manipulated via discretionary accruals or analysts themselves were influenced by the company to issue beatable earnings forecasts. These findings provide direct economic incentives for managers to engage in aggressive financial reporting. Analyst forecast data is obtained from the I/B/E/S dataset. I define MBE as the third proxy for aggressiveness, which is an indicator variable equal to one if the firm reports "Street" earnings that are greater than or equal to the most recent analyst consensus estimates.

Control Variables

Empirical application of finance theory to control for changes in the carrying values of Level 3 assets is problematic. As previously stated, ASC 820 does not alter the scope of which items are reported at fair value. The objective of ASC 820 is to provide guidance over the proper valuation methods and disclosures associated with items that are required to be carried at fair value in accordance with other FASB Codification standards. Firms typically disclose only high-level descriptions of what the Level 3 assets are. For example, in 3M's (3M) 2009 10-K, the firm describes in Notes 9 and 13 that the Level 3 assets are "auction rate securities that represent investments in investment grade credit default swaps..." (Note 9) and "As discussed in Note 9, auction rate securities held by 3M failed to auction since the second half of 2007. As a result, investments in auction rate securities are valued using broker-dealer valuation models and third-party indicative bid levels in markets that are not active. 3M classifies these securities as Level 3."

American Electric Power (AEP) is a second example of a firm with Level 3 assets. In AEP's June 30, 2012 10-Q the firm defines Financial Transmission Rights (FTRs) as, "A financial instrument that entitles the holder to receive compensation for certain congestion-related transmission charges that arise when the power grid is congested resulting in differences in locational prices." In Note 8, the company describes the FTRs as, "Certain OTC and bilaterally executed derivative instruments are executed in less active markets with a lower availability of pricing information. Long-dated and illiquid complex or structured transactions and FTRs can introduce the need for internally developed modeling inputs based upon extrapolations and assumptions of observable market data to estimate fair value. When such

inputs have a significant impact on the measurement of fair value, the instrument is categorized as Level 3.”

These two examples illustrate both the heterogeneity of Level 3 assets held by firms and the inability to use inputs included in traditional derivatives pricing models in this research design. Neither 3M nor AEP provide further details of the specifics in Level 3 assets. In the case of 3M, the probability of default is not able to be controlled for with respect to valuation changes in the Level 3 assets because the contractual details of the credit default swap (e.g., counterparty identity, time to expiration of the swap, specifics of the payoff should the swap be exercised, etc.) are not disclosed in the 10-K. AEP’s disclosures are not detailed enough to use the Black-Scholes formula to control for valuation changes relating to the derivative FTRs based upon characteristics of the underlying (e.g., price, volatility, time, etc.). Therefore, the empirical model used in this study uses macroeconomic variables to control for valuation changes in the Level 3 assets. Specifically, I follow Hutchinson, Lo, and Poggio (2012) for the market-wide variables applicable to changes in the values of Level 3 assets.

Hutchinson et al. (2012) include the three-month treasury yield as a proxy for the risk-free rate. They also calculate the standard deviation of continuously compounded daily returns over the preceding 60 day period as a proxy for volatility. This measure of volatility is not possible in the current study due to the nature of the disclosures firms provide about Level 3 assets. Instead, the Chicago Board Options Exchange (CBOE) Volatility Index (VIX) is used as a measure of volatility relating to options and the quarterly standard deviation of the S&P 500 (SP) is used as a measure of volatility relating to equities. Prior studies (e.g., Valencia 2011; Fiechter and Meyer 2009) control for firm size and leverage when estimating unrealized gains/losses for Level 3 assets. I include the natural log of the firm’s market capitalization

(LMVE) and the debt-to-assets ratio (LEV) at the beginning of the quarter to respectively control for size and leverage. Indicator variables based on asset type (e.g., auction rate securities, asset-backed securities, collars, power, and physical commodity derivatives, mortgage-backed instruments, etc.) are included due to the diverse nature of the Level 3 assets. Fiechter and Meyer (2009) demonstrate that financial services firms use fair value estimates to smooth earnings, and I include return on assets (ROA) as a measure of profitability in the current study. Lastly, despite recent papers from Lawrence et al. (2011), Chang et al. (2011), and Boone et al. (2010) showing an erosion of audit quality across auditors in different “tiers,” the audit quality debate is far from settled. Accordingly, an indicator is included if the firm has a Big-4 auditor, else 0.

Empirical Model

To test H1, I estimate the following empirical model:

$$FVE_{it} = \hat{\beta}_0 + \hat{\beta}_1 AGGR_{it} + \hat{\beta}_2 TREAS_t + \hat{\beta}_3 VIX_t + \hat{\beta}_4 SP_t + \hat{\beta}_5 LMVE_{it} + \hat{\beta}_6 LEV_{it} + \hat{\beta}_7 ROA_{it} + \hat{\beta}_8 BIG4_{it} + \sum_{i=9}^{15} \hat{\beta}_i TYPE + \epsilon_{it} \quad (5)$$

where

FVE=	Total gains/losses included in earnings related to Level 3 assets per ASC 820 scaled by Level 3 assets at the beginning of the quarter
AGGR=	DA, RAM, or MBE, where DA= Lagged absolute value of discretionary accruals from the Cross-sectional Modified Jones Model RAM= Composite RAM measure calculated as abnormal production minus abnormal cash flow from operations minus abnormal discretionary expenses MBE= Indicator variable equal to one if the firm’s “Street” earnings per share is greater than or equal to the most recent analysts’ consensus estimate, else 0. Definition based on SURPAMNT from I/B/E/S.
TREAS=	Three-month U.S. Treasury yield
VIX=	Closing price of the VIX on the date of the 10-K/10-Q issuance
SP=	Quarterly standard deviation of the S&P 500 Index
LMVE =	Natural log of the firm’s market capitalization (e.g., Ln(MKVALTQ)), where

	MKVALTQ=	Sum of all issue-level market values, including trading and non-trading issues
LEV=		debt-to-assets ratio defined as LTQ/ATQ in period $t-1$, where
	LTQ=	Total liabilities- Quarterly
	ATQ=	Total assets- Quarterly
ROA=		Return-on-assets defined as NIQ/Average ATQ, where
	NIQ=	Net Income- Quarterly
BIG4=		Indicator variable equal to one if the firm is audited by a Big 4 auditor, else 0
TYPE=		Indicator variable for Level 3 asset type

In model (5) positive and statistically significant coefficients for $\hat{\beta}_1$ provide support for H1.

IV. Results

Descriptive Statistics

Panel A of Table 4 reports descriptive statistics. Unscaled realized and unrealized gains/losses on Level 3 instruments (UNSCALED FVE) is typically positive for non-financial services firms that hold Level 3 items. The mean of realized and unrealized gains/losses is a gain of approximately \$4.8 million. Prior literature (e.g., Fiechter and Meyer 2009, Kolev 2009, Valencia 2011) does not directly report summary statistics of unscaled realized and unrealized gains/losses that are included in earnings. The dependent variable (FVE) used in the current study is realized and unrealized gains/losses on Level 3 instruments that are included in earnings, scaled by lagged total assets. Once scaled by lagged total assets, the mean of FVE is -.0003 and the median is 0.00 even though the mean of the unscaled variable is positive. This is due to COMPUSTAT reporting most financial statement data, including total assets, in millions. Firms with less than 1 million in total assets will have a decimal included in the denominator used for scaling.

The mean of level 3 holding gains and sales, scaled by market value of equity, reported by Kolev (2009) is -.039 and the median is 0.000. Valencia (2011) primarily focuses on

unrealized gains, but one model includes realized gains. While Valencia (2011) provides summary statistics for unrealized gains, scaled by lagged total assets, he does not report the mean or median of realized gains. Thus, I am not able to directly compare my dependent variable to Valencia's, but the scaled unrealized gains used by Valencia (2011) have both a mean and median equal to 0.00. Fiechter and Meyer (2009) only provide descriptive statistics for level 3 unrealized gains and losses, scaled by lagged equity. Since my dependent variable includes both realized and unrealized gains/losses my dependent variable is not directly comparable to Fiechter and Meyer's, but the reported mean of the scaled variable used in their study is also negative (-.012). In summary, two prior fair value accounting studies have reported scaled dependent variables with medians that are equal to 0 and two prior fair value accounting studies have also reported negative means of scaled dependent variables. The mean of FVE reported here is closer to zero than either of the other papers that reported negative means, but this is likely due to two reasons. First, the sample I use does not contain any financial services firms while the sample used by authors consists of only financial services firms. Level 3 assets held by financial services firms may be systematically different than those held by non-financial services firms. Second, those authors scaled by lagged equity while I scale by lagged total assets.

Cohen, Dey, and Lys (2008) report descriptive statistics for discretionary accruals that are in accordance with the absolute value of discretionary accruals reported in Table 4. Using a full sample with 82,217 observations, the mean of the absolute value of discretionary accruals from Cohen, Dey, and Lys (2008) is .11. In the current study, the mean of the absolute value of lagged discretionary accruals is .107. Estimates of signed discretionary accruals (untabulated) in the current study are also nearly identical to those of Cohen, Dey, and Lys (2008). Specifically, the mean of signed discretionary accruals in both papers rounds to 0.00.

Kim, Park, and Wier (2012) define composite real activities manipulation as abnormal cash flow minus abnormal production plus abnormal production. They report that the median of composite real activities manipulation is .072 for a full sample which consists of 18,160 observations. Composite real activities manipulation is defined differently in the current study, but when measured in accordance with Kim, Park, and Wier (2012) the median of composite real activities manipulation (untabulated) is .075. These results are nearly identical to those of Kim, Park, and Wier (2012).

Two of the three components of real activities manipulation have negative expected values for firms that engage in real earnings manipulation. Specifically, actual cash flows from operations and actual discretionary expenses will be lower on average than their respective estimates from OLS regressions when firms engage in real activities manipulation. This causes the residual from the regression, which is also the estimate of abnormal cash flows or expenses, to be negative. The RAM construction in this paper accounts for this by defining RAM to become positive and relatively larger for firms that engage in real activities manipulation (e.g., RAM is defined as abnormal production minus abnormal cash flow from operations minus abnormal discretionary expenses). The mean value of RAM for the full sample is -.096 indicating that the firms in the sample may not use real activities manipulation as an earnings management tool. However, descriptive statistics regarding the prevalence of RAM do not by themselves provide any evidence about opportunistic firms using Level 3 instruments to manage earnings. The mean value of RAM within the estimation sample only shows whether the firms tend to engage in real earnings management or not.

Matsumoto (2002) reports MBE frequencies derived from Zacks earnings surprise file. She shows that the percent of firm-quarters where actual earnings are greater than or equal to

analysts' consensus estimates clearly increases in the mid-1990's. The highest percentage of MBE activity occurs in 1997 with 70.1% of the firm-quarters in her sample met or beat analyst forecasts. The percentage of firm-quarters which have met or exceeded Wall Street's expectations in the current study are only one percent higher than the peak frequencies reported by Matsumoto (2002). The mean and median of MBE reported in Table 4 are .714 and 1, respectively. Firms in the sample meet or beat analysts' consensus estimates more often than not.

The mean of the three-month treasury yield, TREAS, is approximately 10 basis points. This relatively small yield is due to the rounds of quantitative easing and near-zero interest rates initiated by the Federal Reserve subsequent to the subprime financial crisis. The debt-to-asset ratio, LEV, is smaller in this sample compared to the financial services firms studied by Valencia (2009). The debt-to-asset ratio reported by Valencia (2009) is .909 while the same measure in the current sample is .57. Non-financial services firms that hold Level 3 investments tend to be less highly levered than financial services institutions with the same types of instruments.

The mean of the Big 4 indicator variable is .976, indicating that only two of the 82 firms in the sample are audited by non-Big 4 firms. Thus, the marginal effect of a Big 4 auditor on FVE will be imprecisely estimated in the empirical models that follow.

Panel B of Table 4 reports average levels of discretionary accruals after grouping firms based on whether FVE is greater than zero, less than zero, or equal to zero. A total of 44 firms in the sample have FVE equal 0. These firms reported no realized gains/losses (i.e., no sales of Level 3 instruments) and no unrealized gains/losses (i.e., no market to market adjustments to Level 3 instruments held at the reporting period date). The average value of DA for these firms is .137 which is larger than the unconditional mean of .107 for DA. As shown in Table 4, 148

firms report positive values of FVE. The mean of DA for this subset of firms is .124 which is also higher than the unconditional mean of .107 for DA. Lastly, in the 135 firms with negative values of FVE, the mean of DA is .078 which is smaller than the unconditional mean of DA. Average DA in the positive and breakeven FVE groups is higher than in the firms that reported negative FVE. DA is slightly higher in the breakeven group than in the positive FVE group, but the means are numerically close and simply looking at means is not conclusive evidence of a difference. A statistical test which would take into account the variance of the means is necessary for conclusive support of a difference in discretionary accruals between the positive FVE firms and the breakeven FVE firms.

T-tests of differences in mean discretionary accruals across the FVE conditions are reported at the bottom of Table 4. The reported p-values are for the alternate hypothesis that the mean in the first condition is greater than the mean in the second condition (i.e., the difference in means is greater than zero). The t-test compare 1) the mean DA for firms that reported positive FVE vs. the mean of DA for firms that reported zero FVE 2) the mean of DA for firms that reported positive FVE vs. the mean of DA for firms that reported negative FVE 3) the mean of DA for firms that reported zero FVE vs. the mean of DA for firms that reported negative FVE. Statistically significant differences in average discretionary accruals at the one-tailed, 10% level are detected for the positive FVE firms vs. the negative FVE firms ($p = .076$) and for the breakeven FVE firms vs. the negative FVE firms ($p = .064$). No significant difference is found between the positive FVE firms and the breakeven FVE firms. The results in Table 4, while not conclusive by themselves, provide a rich description of management's use of discretionary accruals across the various conditions of realized and unrealized gains/losses on Level 3 instruments.

Panel B of Table 4 also reports the mean values of RAM after grouping firms based on whether they report positive values of FVE, negative values of FVE, or FVE equal to zero for the applicable financial reporting period. The mean of RAM is negative in each group, but firms that report positive values for FVE engage in more RAM than the other two groups. The expected value of composite RAM is constructed in such a manner that RAM becomes larger as firms engage in larger amounts of real activities manipulation. The mean of RAM is largest in the positive FVE group since this number is closest to zero (e.g., $-.079$ is a larger number than $-.139$ and $-.096$). However, while the values of RAM across the groups range from $-.079$ to $-.139$ there are no statistically significant differences in average RAM across the FVE conditions.

As shown in Panel B of Table 4, the average of MBE is higher in the positive and breakeven FVE conditions than in the negative FVE condition. This is consistent with firms reporting larger realized and unrealized gains on Level 3 instruments also meeting or beating analysts' forecasts more frequently. The only statistically significant difference in MBE activity is between the breakeven FVE group and the negative FVE group ($p = .023$).

Table 4
Descriptive Statistics

<i>Panel A:</i>					
<u>Variable</u>	<u>Mean</u>	<u>Median</u>	<u>Sd</u>	<u>P25</u>	<u>P75</u>
FVE	-0.0003	0.00	0.01	0.00	0.00
UNSCALED FVE	4.82	0.00	51.16	-2.00	2.10
DA	0.107	0.02	0.26	0.01	0.07
RAM	-0.096	-0.08	0.29	-0.16	0.00
MBE	0.714	1.00	0.45	0.00	1.00
TREAS	0.10	0.09	0.06	0.06	0.16
VIX	23.48	17.75	8.79	17.59	25.61
SP	36.91	33.48	14.58	27.91	40.33
LMVE	9.23	9.32	1.38	8.19	9.97
LEV	0.57	0.60	0.17	0.47	0.71
ROA	0.02	0.01	0.02	0.01	0.03
BIG4	0.976	1.00	0.15	1.00	1.00
<i>Panel B:</i>					
<u>Variable</u>	<u>DA</u>	<u>RAM</u>	<u>MBE</u>		
<i>Variable Mean When:</i>					
FVE >0	0.124	-0.079	0.728		
FVE=0	0.137	-0.139	0.822		
FVE <0	0.078	-0.096	0.668		
<i>T-Tests:</i>					
	<u>p-value</u>	<u>p-value</u>	<u>p-value</u>		
<i>Difference in Means FVE >0 vs. FVE=0</i>	0.383	0.133	.900		
<i>Difference in Means FVE >0 vs. FVE<0</i>	0.076	0.355	0.118		
<i>Difference in Means FVE=0 vs. FVE <0</i>	0.064	0.753	0.023		

Variables: FVE is realized and unrealized gains/losses in period t scaled by total assets in period $t-1$. UNSCALED FVE is realized and unrealized gains/losses without any scaling. DA is absolute value of discretionary accruals in period $t-1$ from Dechow et al. (1995). RAM is composite real activities manipulation defined as Abnormal Production minus Abnormal Cash Flows from Operations minus Abnormal Discretionary Expenditures. Each RAM component was estimated as in Cohen and Zarowin (2010). DA and RAM are both Winsorized at the 1% level. MBE is an indicator variable equal to one if the firm's "Street" earnings are greater than or equal to the most recent analysts' consensus estimates. TREAS is the three-month yield on US treasuries. VIX is the closing price of the CBOE Volatility Index. SP is the quarterly standard deviation of the S&P 500 Index. LMVE is the natural log of the market value of equity. LEV is the debt to assets ratio in period $t-1$. ROA is the return on assets ratio in period t . BIG4 is an indicator variable equal to one if the firm is audited by a Big 4 auditor. The reported p-values are based on one-tailed tests.

Correlations among the variables of interest are reported in Table 5. FVE is not significantly correlated DA, RAM, or MBE. There are also no significant correlations between FVE and the macroeconomic variables used as measure for overall market conditions (e.g., TREAS, VIX, and S&P). The macroeconomic variables reported in Table 5 are reported in levels. It is reasonable to suggest that differences in macroeconomic indicators, rather than the actual levels, drive valuation changes in Level 3 instruments. I repeat the correlation analysis using the first differences of TREAS, VIX, and SP and the (untabulated) results are nearly identical empirically. None of the differenced macroeconomic variables are significantly correlated with FVE.

The lack of correlation between TREAS, VIX, and SP is both troubling and difficult to explain. It is fairly common for firms to disclose that the Black-Scholes Model is used to price Level 3 holdings. The risk-free rate (TREAS), volatility in equities (SP), and volatility in options (VIX) are direct inputs into the Black-Scholes Model, yet none of these inputs are individually correlated with FVE. These results are surprising, but Level 3 instruments are complex, heterogeneous, and highly subject to managerial discretion. It may be that isolating valuation changes and gains/losses from sales is difficult in the current financial accounting reporting framework where firms typically only include a few broad sentences about their Level 3 holdings.

Noteworthy inferences from the correlation matrix include the lack of a negative and significant univariate correlation between DA and RAM. Some empirical evidence exists which suggests that RAM and DA are substitutes for each other in the post-Sarbanes-Oxley financial reporting environment (e.g., Cohen et al. 2008). However, firms in this sample do not appear to trade between RAM and DA. This is perhaps because, on average, firms in the sample are not heavy users of RAM. This is indicated by the negative value of composite RAM discussed previously. However, both DA and RAM are negatively and significantly correlated with BIG4. This result indicates that Big4 auditors constrain both real and accruals based earnings management and is consistent with the literature (e.g., Cohen, Dey, and Lys 2008). Cohen, Dey, and Lys (2008) also find that there is a significant and negative association between firm size and accruals-based earnings management. This finding is present in my sample, as shown via

the negative and significant correlation between DA and LMVE in Table 5. Lastly, while LEV is positively and significantly correlated with RAM, ROA and RAM and are negatively and significantly associated with each other. These results suggest that as firms take on more debt, they are more likely to engage in real earnings management while firms that are more profitable are less likely to manage earnings via RAM.

Table 5
Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11
	FVE	DA	RAM	MBE	TREAS	VIX	SP	LMVE	LEV	ROA	BIG4
1 FVE	1										
2 DA	0.06	1									
	0.31										
3 RAM	0.02	0.04	1								
	0.75	0.62									
4 MBE	0.05	0.08	-0.01	1							
	0.35	0.17	0.89								
5 TREAS	0.08	0.12**	0.07	0.14***	1						
	0.13	0.03	0.33	0.01							
6 VIX	-0.01	-0.07	0.08	0.02	0.18***	1					
	0.82	0.19	0.22	0.70	0.00						
7 SP	0.01	-0.06	0.10	-0.03	0.08*	0.85***	1				
	0.85	0.29	0.17	0.51	0.09	0.00					
8 LMVE	0.09*	0.04	-0.07	0.28***	0.11**	0.00	-0.05	1			
	0.09	0.53	0.34	0.00	0.03	0.96	0.34				
9 LEV	-0.06	-0.11**	0.18***	-0.08	0.01	0.00	0.01	0.18***	1		
	0.24	0.05	0.01	0.12	0.82	0.98	0.89	0.00			
10 ROA	0.26***	0.00	-0.18***	0.19***	0.04	0.00	-0.07	0.32***	-0.31***	1	
	0.00	0.97	0.01	0.00	0.44	0.92	0.15	0.00	0.00		
11 BIG4	0.05	-0.11**	-0.12*	0.0944*	-0.02	-0.03	-0.02	0.12**	0.13***	-0.03	1
	0.36	0.05	0.10	0.07	0.66	0.55	0.75	0.03	0.01	0.58	

Variables: FVE is realized and unrealized gains and losses in period t scaled by total assets in period $t-1$. DA is absolute value of discretionary accruals in period $t-1$ from Dechow et al. (1995). RAM is composite real activities manipulation defined as Abnormal Production minus Abnormal Cash Flows from Operations minus Abnormal Discretionary Expenditures. Each RAM component was estimated as in Cohen and Zarowin (2010). DA and RAM are both Winsorized at the 1% level. MBE is an indicator variable equal to one if the firm's "Street" earnings are greater than or equal to the most recent analysts' consensus estimates. TREAS is the three-month yield on US treasuries. VIX is the closing price of the CBOE Volatility Index. SP is the quarterly standard deviation of the S&P 500 Index. LMVE is the natural log of the market value of equity. LEV is the debt to assets ratio in period $t-1$. ROA is the return on assets ratio in period t . BIG4 is an indicator variable equal to one if the firm is audited by a Big 4 auditor.

*, **, and *** indicate two-tailed significance at the .10, .05, and .01 levels, respectively.

Multivariate Results

The three models to test H1 are reported adjacent to one another in Table 6. As is the standard in most statistical software packages, the results in Table 6 are for two-tailed tests of the null hypotheses that each coefficient is individually equal to zero. However, accounting and finance theory both support the notion that DA, RAM, and MBE are positively related to FVE. A one-tailed test that the coefficients of DA, RAM, and MBE are greater than zero is appropriate in this case. Prior literature gives no theoretical or empirical reasons to believe or suspect that these parameters are less than zero. Mathematically, tests of H1 under the null hypothesis and alternate hypotheses are:

$$H_0: \beta_i \leq 0$$

$$H_1: \beta_i > 0$$

while the results from regressions provided by statistical software packages, and shown in Table 6, assume the following null and alternate hypotheses:

$$H_0: \beta_i = 0$$

$$H_1: \beta_i \neq 0$$

Hogg, Craig, and McKean (2013) provide excellent exposition on the differences between one-tailed and two-tailed tests of hypotheses. They compare large sample two-sided tests for the mean against large sample one-sided tests for the mean. The example used pertains to a new teaching method. Exam scores of students who were taught under the new method are compared to exam scores of students taught under the old method. If there is reason to believe that the new method is better, then a one-sided test is used. The average exam score of students

taught under the new method, \bar{X} , is compared to the average exam score of students under the old method, μ_0 . The intuition behind a one-tailed test is that if \bar{X} is much larger than μ_0 the null hypothesis that \bar{X} is less than or equal to zero is rejected. Assuming that the exam scores, X , are normally distributed, then for a given α level $\frac{\bar{X}-\mu_0}{S/\sqrt{n}}$ is distributed $t_{\alpha,n-1}$. The decision to reject a one-sided test is expressed formally as, “Reject H_0 in favor of H_1 if $\frac{\bar{X}-\mu_0}{S/\sqrt{n}} \geq t_{\alpha,n-1}$ ” (Hogg, Craig, McKean 2013, 245). Conversely, a two-sided test is formally expressed as, “Reject H_0 in favor of H_1 if $|\frac{\bar{X}-\mu_0}{S/\sqrt{n}}| \geq t_{\alpha/2,n-1}$ ” (Hogg, Craig, McKean 2013, 249).

Two differences are readily apparent from the one-sided and two-sided formal expressions. First, the two-sided test is an absolute value inequality. Second, the alpha level in the two-sided test is divided by 2. The reason for the division by 2 in a two-sided test is related to the symmetry of the t distribution. Since the distribution is symmetric, the alpha level (e.g., .05 at traditional statistical significance thresholds) is equally allocated to each of the two tails. A relatively large positive or relatively large negative test statistic results in the rejection of the null since the hypothesis test “looks” in both tails of the distribution. In contrast, a directional hypothesis test only “looks” in one of the tails⁸. Wooldridge (2009) writes of one-tailed tests, “For some reason, perhaps on the basis of introspection or economic theory, we are ruling out population values of β_j less than zero.” For empirical tests of the directional H_1 contained in

⁸ Note that while the mechanics of one-sided and two-sided tests of means are identical to hypothesis tests of regression coefficients, there are several differences in the construction of the regression test statistics. The OLS first order conditions require that $\sum_{i=1}^n \hat{u}_i = 0$ and $\sum_{i=1}^n \hat{u}_i x_i = 0$. This requires sigma squared to be divided by $n-2$ to account for the two degrees of freedom lost by the first order conditions. The appropriate degrees of freedom for the t test are also based on the number of observations in the regression minus the number of parameters estimated. Some authors show this as $n-k-1$ degrees of freedom for the t test.

this study, only large and positive test statistics provide information to support the alternative hypothesis that management's aggressiveness in financial reporting is positively associated with realized and unrealized gains/losses on Level 3 assets (i.e., that the coefficients of DA, RAM, and MBE are greater than zero).

As stated previously, the regression output from various statistical software packages contains p-values that include the total area under both tails of the t distribution. This is not the appropriate p-value for a one-sided hypothesis test, but one may easily convert the two-sided p-value to see the p-value associated with a directional test by simply dividing the p-value reported in the regression output by 2. For example, stock regression output with a p-value of .10 for a two-tailed test is equal to a one-tailed test p-value of .05 which would be statistically significant at conventional levels for a one-sided test. The p-values associated with DA, RAM, and MBE in Table 6 must all be divided by 2 to obtain the corresponding one-sided tests of H1 assuming the reported coefficients are positive. Negative coefficients provide no support for H1.

Discretionary Accruals and FVE

The coefficient of DA is .0019 and is both positive and significant ($p = .041$) at conventional levels in a one-sided test. Therefore, H1 is supported using DA as a proxy for management's aggressiveness in financial reporting. The interpretation of the coefficient is that FVE increases by .0019 per a one-unit increase in DA holding other factors constant.

When regressors have different natural "scales" it is not possible to use the stock output from an OLS regression to determine which coefficient has the largest relative influence on the dependent variable. Wooldridge writes, "In a standard OLS equation, it is not possible to simply look at the size of different coefficients and conclude that the explanatory variable with the

largest coefficient is the ‘most important’” (Wooldridge 2009). This is because of the interpretation of OLS coefficients. Each coefficient in a multivariate regression equation may be interpreted as a partial derivative. Specifically, the marginal effect of an independent variable on the dependent variable may be expressed using partial derivatives as $\frac{\partial y}{\partial x_i} = \hat{\beta}_i$. This measures the change in the dependent variable per change in one unit of each independent variable and is, accordingly, sensitive to the measurement units of the independent variables. In order to directly compare the relative magnitudes of each regressor, the standard OLS equation must be transformed. Subtracting the mean and dividing by the standard deviation of each variable before running the regression changes the interpretation of each coefficient in the model. These transformed coefficients are often referred to as “standardized coefficients” or “beta coefficients.” The interpretation of the standardized coefficients is the change in standard deviations of the dependent variable per a one standard deviation change in each independent variable holding other factors constant. The standardized (untabulated) coefficient for DA is .1015. The interpretation of the standardized coefficient is a one standard deviation increase in DA increases FVE by .1015 standard deviations.

Since DA is defined as an absolute value, FVE is monotonically increasing in DA. Even when firms have lower than average values of DA, values of FVE will be higher than if the firm had no discretionary accruals. This evidence is consistent with aggressive firms, as defined by higher values of DA, minimizing realized and unrealized losses on Level 3 instruments. Opportunistic firms may even use financial reporting discretion to wholly avoid losses by reporting no change in Level 3 instruments (i.e., breaking even) or perhaps even reporting positive changes in earnings related to the unrealized portion of Level 3 valuation changes (i.e., mark to market adjustments). Additionally, opportunistic firms may use operational discretion to

“cherry pick” Level 3 assets to sell during the period to increase earnings via the realized portion of FVE. Support for this conjecture is provided in the following paragraph.

The F statistic for the first model is 3.20 which is significant at conventional levels (untabulated; $p < .0001$). The null hypothesis that all of the estimated parameters are jointly equal to zero is rejected. Other than DA, only one other variable is significant at conventional levels using two-tailed tests of significance. This variable is the BIG4 indicator variable which, interestingly, has a positive coefficient. Accounting theory has largely suggested, at least since the early 1980’s, that larger auditors provide higher-quality audits. However, recent evidence from Lawrence et al. (2011), Chang et al. (2011), and Boone et al. (2010) provides compelling evidence that this is no longer true in the post-SOX environment. The evidence in the first model shows that firms with larger auditors also have larger values of FVE. This may suggest an inability of larger auditors to constrain opportunistic reporting of realized and unrealized gains/losses on Level 3 instruments. If this is the case, then this result is consistent with PCAOB criticism of auditors not gathering sufficient appropriate audit evidence concerning fair values and several recent audit quality papers (e.g., Lawrence et al. 2011, Chang et al. 2011, and Boone et al. 2010).

The lack of significance of inputs from the Black-Sholes Model (e.g., TREAS, VIX) remains as does the lack of significance, both individually and jointly, for the indicator variables based on the specific types of the Level 3 instruments. These results are difficult to explain, but seem to be driven by the subjective nature of Level 3 asset valuations.

Real Activities Manipulation and FVE

The RAM coefficient of .0026 is statistically significant at the one-tailed, .10 level ($p = .0775$). Therefore, there is limited support of H1 using RAM as a measure of management's aggressiveness in financial reporting. The marginal effect on FVE of a one-unit increase in RAM is .0026, holding other factors constant. The standardized (untabulated) coefficient for RAM is .1013. Interestingly, this standardized coefficient is similar to the previously discussed standardized coefficient for DA. The interpretation the standardized coefficient is that a one standard deviation change in RAM increases FVE by .1013 standard deviations.

The F statistic for the second model is significant at conventional levels (untabulated; $p = .01$). The BIG4 indicator variable is no longer statistically significant, but ROA is highly significant ($t = 4.412$, $p < .000$). The coefficient of ROA is also large. As ROA is a measure of profitability, this may suggest that better-managed firms also have more success investing in Level 3 instruments. The inability of inputs from the Black-Sholes Model or indicator variables based on corporate disclosures of the Level 3 instruments to explain variation in FVE persist in the second model.

Meet-or-Beat and FVE

As evidenced by the lowest adjusted R-squared, the MBE model is the worst-performing of the three specifications reported in Table 6. In fact, the coefficient of MBE is negative. This is not cause for alarm and does not necessarily indicate the presence of omitted variables or misspecifications of functional form. The MBE coefficient is extremely imprecisely estimated. In fact, the standard error of the coefficient (untabulated) is seven times larger than the coefficient itself. The p-value of .822 also shows that there is almost no evidence inconsistent with the null hypothesis that the MBE coefficient is equal to zero.

The F statistic for the overall model is statistically significant at conventional levels ($p < .01$) and therefore the null hypothesis that each of the coefficients in the model are jointly equal to zero is rejected. ROA remains the strongest individual predictor of FVE, and the coefficient of .089 is still relatively large. The same conclusions regarding the explanatory power of inputs from the Black-Sholes Model and indicator variables based on Level 3 instrument type remain in the third model.

Table 6
Multivariate Regressions

VARIABLES	FVE			FVE			FVE		
	Coeff	t-stat	p-value	Coeff	t-stat	p-value	Coeff	t-stat	P-Value
DA	0.0019*	1.747	0.082						
RAM				0.0026	1.427	0.155			
MBE							-0.0002	-0.225	0.822
TREAS	0.0051	1.085	0.279	0.0083	0.914	0.362	0.0096*	1.791	0.074
VIX	-0.0000	-0.480	0.631	-0.0002*	-1.857	0.065	-0.0001	-1.439	0.151
SP	0.0001*	1.675	0.095	0.0001	1.634	0.104	0.0001	1.507	0.133
LMVE	-0.0000	-0.185	0.853	0.0001	0.329	0.743	-0.0000	-0.124	0.902
LEV	-0.0029	-1.464	0.144	-0.0013	-0.364	0.716	0.0005	0.216	0.829
ROA	0.0304*	1.837	0.067	0.1215***	4.412	0.000	0.0895***	4.861	0.000
BIG4	0.0102***	5.237	0.000	0.0009	0.345	0.730	0.0018	0.918	0.359
D1	-0.0011	-0.535	0.593	0.0003	0.098	0.922	0.0008	0.328	0.743
D2	-0.0002	-0.268	0.789	-0.0010	-0.639	0.523	-0.0002	-0.186	0.853
D3	0.0002	0.208	0.836	-0.0031	-1.190	0.236	0.0006	0.580	0.562
D4	-0.0009	-0.872	0.384	-0.0018	-0.940	0.349	0.0005	0.417	0.677
D5	0.0006	0.539	0.591	0.0006	0.204	0.839	0.0014	1.064	0.288
D6	-0.0007	-0.431	0.667	0.0011	0.455	0.650	0.0015	0.813	0.417
D7	-0.0004	-0.391	0.696	0.0000	0.028	0.978	0.0004	0.294	0.769
Constant	-0.0107***	-3.974	0.000	-0.0035	-0.819	0.414	-0.0047	-1.567	0.118
Observations	302			204			351		
Adj. R-squared	0.099			0.075			0.055		

Variables: FVE is realized and unrealized gains and losses in period t scaled by total assets in period $t-1$. DA is absolute value of discretionary accruals in period $t-1$ from DSS (1995). RAM is composite real activities manipulation defined as Abnormal Production minus Abnormal Cash Flows from Operations minus Abnormal Discretionary Expenses. Each individual RAM component was estimated as in CZ (2010). DA and RAM are both Winsorized at the 1% level. MBE is an indicator variable equal to one if the firm's "Street" earnings are greater than or equal to the most recent analyst consensus estimates. TREAS is the three-month yield on US treasuries. VIX is the closing price of the CBOE Volatility Index. SP is the quarterly standard deviation of the S&P 500 Index. LMVE is the natural log of the market value of equity. LEV is the debt-to-assets ratio in period $t-1$. ROA is the return-on-assets ratio in period t . BIG4 is an indicator variable equal to one if the firm is audited by a Big 4 auditor. D1 is an indicator variable equal to one if the Level 3 instrument is an asset-backed security. D2 is an indicator variable equal to one if the Level 3 instrument is an auction rate security. D3 is an indicator variable equal to one if the Level 3 instrument is a non-specific derivative. D4 is an indicator variable equal to one if the Level 3 instrument is physical commodity derivative. D5 is an indicator variable equal to one if the Level 3 instrument is an energy derivative. D6 is an indicator variable equal to one if the Level 3 instrument is a mortgage-backed security. D7 is an indicator variable equal to one if the Level 3 instrument is an investment in private equity.

*, *** Indicate statistical significance at the .10 and .01 levels, respectively, based on two-tailed tests.

In summary, H1 is supported when management's aggressiveness in financial reporting is measured using discretionary accruals. Measuring aggressiveness using RAM provides some support for H1, but not at the conventional 5% level. H1 is not supported when MBE is used as a proxy for aggressive financial reporting. This is interesting given that the MBE model has the most observations which, holding all else constant, econometrically reduces the standard error of parameter estimates. Big 4 auditors have a positive and statistically significant association with FVE in the first model (DA), but this variable is not significant in the other two models. ROA has an extremely large test statistic in two of the models (RAM and MBE) and also a relatively large coefficient. Surprisingly, the group of indicator variables for Level 3 investment type do not explain a significant amount of variation in FVE either individually or jointly. Despite common disclosures that the Black-Sholes Model is used to value Level 3 items most of the macroeconomic variables from the Black-Sholes Model are not significant at conventional levels in either levels or differences. At best, only one Black-Sholes input is significant at the two-tailed, 10% level in each model.

Additional Analyses- Suspect vs. Non-suspect firms

Classifying firms into "suspect" vs. "non-suspect" firms based on financial statement data has precedent in the accounting literature (e.g., Kim and Park 2014, Cohen et al. 2008, Roychowdhury 2006, Burgstahler and Dichev 1997). Small changes in scaled earnings between financial reporting periods, no change in scaled earnings between financial reporting periods, and "just" meeting or beating analysts' consensus earnings by one cent or less have all been used in prior research to classify firms into the "suspect" group. Following Kim and Park (2014), I classify suspect firms based on the following criteria:

$$\frac{IBQ_t}{ATQ_t} \in [0, .005] \quad (6)$$

$$\frac{IBQ_t - IBQ_{t-1}}{ATQ_t} \in [0, .005] \quad (7)$$

$$\frac{IBQ_t - IBQ_{t-4}}{ATQ_t} \in [0, .005] \quad (8)$$

$$Surpamnt_t \in [0 .01] \quad (9)$$

where IBQ, and ATQ are defined previously and Surpamnt is the difference between the most recent analysts' consensus estimates and the firm's "Street" earnings. Many firms exhibit an element of seasonality in earnings. For example, retailers often have their busiest quarter of the year followed by one of their slowest quarters of the year. Defining suspect firms based only on changes in scaled earnings between adjacent quarters ignores this. The business cycle alone may influence the construction of the variable in equation 7. Therefore, prior definitions of suspect firms are augmented to include a seasonal difference which is shown in equation 8.

Once firms are classified as suspect or non-suspect two tests are conducted. First, I test for differences in means between suspect and non-suspect firms for total realized and unrealized gains/losses on Level 3 instruments. Second, the suspect firm analysis is constrained to only examining the unrealized component of valuation changes in Level 3 items (i.e., mark to market adjustments for assets still held at the reporting period date).

Suspect Firm Analyses- FVE

As shown in Table 7, the mean of FVE is larger for suspect firms than non-suspect firms in each of the four classifications except for one. FVE is larger when classifying firms based on

changes in earnings, seasonal changes in earnings, and meeting-or-beating by one cent or less.

The only classification where the mean of FVE is smaller for suspect firms is when suspect firms are classified based only on return on assets (i.e., IBQ/ATQ).

Statistical tests of differences in means reveal that two of the averages are statistically significant at the one-tailed, 10% level. Specifically, the p-value of the difference in FVE mean between suspect firms and non-suspect firms based on differenced earnings is .096, and the p-value of the difference in FVE mean between suspect and non-suspect firms based on meeting-or-beating by once cent or less is .09. It is reasonable to question whether a statistical test based upon equal variances between the groups is appropriate. For instance, suspect firms may have larger variances in FVE due to using Level 3 instruments as active earnings management tools. It is also plausible to argue that suspect firms have smaller variances in FVE due to ignoring fundamental valuation changes in the Level 3 items to reduce volatility in earnings based upon holding or selling Level 3 instruments. Regardless of which case is true, t tests allowing for unequal variances are performed (untabulated) and the results are quantitatively similar. Taken together, the suspect firm analysis based upon FVE provides limited additional evidence that aggressive firms use financial reporting discretion to report overstated FVE.

Table 7
FVE Suspect Firm Analyses

	Eq. 6	Eq. 7	Eq. 8	Eq. 9
Suspect Firm Criteria	$IBQ_t/ATQ_t \in [0, .005]$	$(IBQ_t - IBQ_{t-1})/ATQ_t \in [0, .005]$	$(IBQ_t - IBQ_{t-4})/ATQ_t \in [0, .005]$	$MBE \leq \$.01$
Mean FVE for Suspect Firms	-0.003	0.0003	.0000	0.0008
Mean FVE for Non-Suspect Firms	-0.002	-0.0004	-0.0003	-0.0003
Difference	-0.001	0.0007	0.0003	0.0011
P-Value of the Difference	0.552	0.096	0.286	.090

Variables: FVE is realized and unrealized gains/losses in period t scaled by total assets in period $t-1$. IBQ is quarterly income before extraordinary items. ATQ is quarterly total assets. MBE is the difference between the firm's "Street" earnings and most recent analyst consensus estimates. Only firms that met or exceeded analyst consensus estimates by one cent or less are considered suspect.

Reported p-values are based on one-tailed tests.

Suspect firm analysis- Unrealized gains/losses

The results of the second suspect firm analysis are reported in Table 8. The classification of suspect firms remains unchanged. The only difference modification is that only unrealized gains/losses (i.e., mark to market) adjustments are tested rather than FVE. The unrealized gains/losses are solely based on management's estimates of the value of instruments still held at the reporting period date. These mark to market adjustments account for 38.9% of total realized and unrealized gains/losses on Level 3 instruments. Previously it was shown that managers are able to use discretion in both the realized and unrealized components of total realized and unrealized gains/losses on Level 3 assets (e.g., realized gains are the difference between last period's internal estimate of a Level 3 investment's value and the execution price of a sale to a counterparty in the next period. Management has complete autonomy over the former). While management decides when to sell Level 3 investments and also has the ability to influence realized gains, it is reasonable to suggest that management has more discretion over the unrealized portion of gains/losses attributable to Level 3 assets. Therefore, the second suspect firm analysis is limited to only unrealized gains/losses.

The results of the second analysis are similar to the first. However, the mean of unrealized gains/losses is larger in all four suspect firm classifications instead of three of the classifications. The second major difference is that there is only one out of the four suspect firm classifications where a one-tailed, 10% level statistical difference is detected. This difference is for classifying suspect firms based on changes in earnings. This result is interesting because it may indicate the extent to which managers have influence over realized gains and losses through timing of sales and initial valuations. Two of the suspect firm groups have statistically significant (one-tailed, 10%) differences for FVE, which includes realized gains/losses, while

only one suspect firm group has a statistically significant (one-tailed, 10%) for unrealized gains/losses. The second suspect firm analysis provides less additional support for the hypothesis tests of H1 than the first suspect firm analysis.

Table 8
Unrealized Gain/Loss Suspect Firm Analyses

	Eq. 6	Eq. 7	Eq. 8	Eq. 9
Suspect Firm Criteria	$IBQ_t/ATQ_t \in [0, .005]$	$(IBQ_t - IBQ_{t-1})/ATQ_t \in [0, .005]$	$(IBQ_t - IBQ_{t-4})/ATQ_t \in [0, .005]$	$MBE \leq \$0.01$
Mean FVE for Suspect Firms	-0.0001	0.0004	0.0001	0.0003
Mean FVE for Non-Suspect Firms	-0.0002	-0.0004	-0.0003	-0.0002
Difference	0.0001	0.0008	0.0003	0.0005
P-Value of the Difference	0.462	0.078	0.215	0.289

Variables: Unrealized Gain/Loss is unrealized gains/losses (i.e., mark to market adjustments) in period t scaled by total assets in period $t-1$. IBQ is quarterly income before extraordinary items. ATQ is quarterly total assets. MBE is the difference between the firm's "Street" earnings and most recent analyst consensus estimates. Only firms that met or exceeded analyst consensus estimates by one cent or less are considered suspect. Reported p-values are based on one-tailed tests.

Additional Analyses- Unrealized Gains/Losses

The last additional analysis builds upon the second suspect firm analysis which tested for differences in means in unrealized gains/losses between suspect firms and non-suspect firms. The primary models used to test H1 are re-estimated using unrealized gains/losses as the dependent variable instead of FVE. The results of the analysis are provided in Table 9.

There are some similarities to the initial results reported in Table 6. DA remains positive and significant at conventional levels, and the explanatory power of several control variables when using DA as the dependent variable (e.g., SP, ROA, BIG4) are nearly identical between the two models. However, there are also important differences between these results and the initial results reported in Table 6. The conclusions drawn regarding RAM and MBE reverse between the models. Previously, RAM was significant at conventional levels for a one-tailed test and MBE was not. Table 9 shows that RAM is no longer significant ($p = .521$) and MBE is significant at the .10 level for a one-tailed test ($p = .062$). The coefficients of DA and MBE are both positive which is expected given prior literature and the previously reported findings in the current study. Interestingly, the coefficient of DA is almost twice as large (.0033) when examining unrealized gains/losses and the p-value is much smaller ($p = .005$, two-tailed). Although these are unnested models, this may be indicative of mark to market adjustments having a stronger association with management's aggressiveness in financial reporting than total realized and unrealized gains/losses. I explore whether this is true using seemingly unrelated regression (SUR) developed by Zellner (1962). SUR regression allows multiple nonnested models to be estimated simultaneously and provides an estimate of the contemporaneous correlation of the error terms from the different models. The models take the following form:

$$Realized\ Gains/Losses_{it} = \widehat{\beta}_0 + \widehat{\beta}_1 DA_{it} + \varepsilon_{it}$$

$$\text{Unrealized Gains/Losses}_{it} = \widehat{\alpha}_0 + \widehat{\alpha}_1 DA_{it} + \gamma_{it}$$

the null hypothesis that $\widehat{\alpha}_1 = \widehat{\beta}_1$ is unable to be rejected at conventional levels (untabulated, $p = .365$, two-tailed). Thus, one cannot conclude that managerial aggressiveness in financial reporting, as measured via discretionary accruals, has a stronger association with unrealized gains/losses than realized gains/losses⁹.

The significance of MBE and RAM switch when comparing results using FVE vs. only unrealized gain/losses. However, when each of these proxies for aggressiveness is significant, it is only significant at the one-tailed, 10% level. One result is perhaps even more troubling in the unrealized gain/loss specifications than the FVE specifications. Curiously, inputs from the Black-Sholes Model remain both individually and jointly insignificant. The same remains true of the indicator variables based upon Level 3 instrument type. The Big 4 indicator variable is also positive and significant in all three models. This indicates that firms with Big 4 auditors report larger mark-to-market entries than firms with smaller auditors. This result is counterintuitive, but may be consistent with recent empirical auditing literature (e.g., Lawrence et al. 2011, Chang et al. 2011, and Boone et al. 2010).

⁹ However, only 97 firms out of the 492 hand-collected observations report realized gains/losses by themselves. The inability to reject the null hypothesis may be driven by the small sample size. More precise tests of this supplementary research question are left to future research. Univariate regressions are used due to the small sample size, as well.

Table 9
Unrealized Gain/Loss Multivariate Regressions

VARIABLES	UGL			UGL			UGL		
	Coeff	T-Stat	P-Value	Coeff	T-Stat	P-Value	Coeff	T-Stat	P-Value
DA	0.0033***	2.809	0.005						
RAM				0.0012	0.644	0.521			
MBE							0.0011	1.544	0.124
TREAS	0.0079	1.494	0.137	0.0108	1.112	0.268	0.0094*	1.792	0.074
VIX	-0.0001	-1.288	0.199	-0.0001	-0.795	0.428	-0.0001	-1.218	0.224
SP	0.0001**	2.014	0.045	0.0001	1.532	0.128	0.0001**	2.054	0.041
LMVE	-0.0000	-0.167	0.867	-0.0001	-0.236	0.814	-0.0002	-0.783	0.434
LEV	-0.0007	-0.311	0.756	-0.0022	-0.658	0.512	-0.0006	-0.269	0.788
ROA	0.0305*	1.867	0.063	0.0509**	1.993	0.048	0.0375**	2.303	0.022
BIG4	0.0297***	9.397	0.000	0.0078**	2.558	0.012	0.0093***	4.282	0.000
D1	-0.0005	-0.119	0.905	-0.0013	-0.217	0.829	-0.0009	-0.195	0.846
D2	-0.0000	-0.011	0.991	-0.0005	-0.312	0.756	-0.0004	-0.386	0.700
D3	0.0008	0.789	0.431	-0.0004	-0.180	0.858	0.0005	0.496	0.621
D4	-0.0003	-0.251	0.802	-0.0028	-1.507	0.134	-0.0006	-0.619	0.536
D5	0.0007	0.573	0.567	0.0000	0.002	0.999	0.0005	0.420	0.675
D6	-0.0005	-0.253	0.800	0.0003	0.115	0.909	0.0002	0.077	0.938
D7	-0.0003	-0.269	0.788	-0.0005	-0.277	0.782	-0.0005	-0.474	0.636
Constant	-0.0317***	-7.852	0.000	-0.0089*	-1.831	0.069	-0.0105***	-3.148	0.002
Observations	226			149			254		
Adj. R-squared	0.309			0.087			0.101		

Variables: FVE is realized and unrealized gains and losses in period t scaled by total assets in period $t-1$. DA is absolute value of discretionary accruals in period $t-1$ from DSS (1995). RAM is composite real activities manipulation defined as Abnormal Production minus Abnormal Cash Flows from Operations minus Abnormal Discretionary Expenses. Each individual RAM component was estimated as in CZ (2010). DA and RAM are both Winsorized at the 1% level. MBE is an indicator variable equal to one if the firm's "Street" earnings are greater than or equal to the most recent analyst consensus estimates. TREAS is the three-month yield on US treasuries. VIX is the closing price of the CBOE Volatility Index. SP is the quarterly standard deviation of the S&P 500 Index. LMVE is the natural log of the market value of equity. LEV is the debt-to-assets ratio in period $t-1$. ROA is the return-on-assets ratio in period t . BIG4 is an indicator variable equal to one if the firm is audited by a Big 4 auditor. D1 is an indicator variable equal to one if the Level 3 instrument is an asset-backed security. D2 is an indicator variable equal to one if the Level 3 instrument is an auction rate security. D3 is an indicator variable equal to one if the Level 3 instrument is a non-specific derivative. D4 is an indicator variable equal to one if the Level 3 instrument is physical commodity derivative. D5 is an indicator variable equal to one if the Level 3 instrument is an energy derivative. D6 is an indicator variable equal to one if the Level 3 instrument is a mortgage-backed security. D7 is an indicator variable equal to one if the Level 3 instrument is an investment in private equity.

*, **, *** Indicate statistical significance at the .10, .05, and .01 levels, respectively, based on a two-tailed test.

V. Conclusion

This study examines whether a firm's aggressiveness in financial reporting is related to realized and unrealized gains/losses on Level 3 assets. Aggressiveness is operationalized using discretionary accruals, real activities manipulation, and "Street" earnings that are greater than or equal to analysts' consensus estimates. Existing studies regarding the value relevance and earnings management ease of Level 3 fair value accounting has focused solely on financial services firms. Surprisingly, financial services firms make up only around 36% of the population of firms that hold Level 3 items. The industry with the largest number of firms holding Level 3 investments is the Electric, Gas, and Sanitary line of business. Firms that hold Level 3 investments are typically larger and more profitable than the average firm that is covered by COMPUSTAT. Due to the sophistication of these items this is not surprising.

The research question herein is whether aggressive firms will intentionally reported biased (i.e., overstated) realized and unrealized gains and losses on Level 3 instruments. Supplementary analyses examine only the unrealized (i.e., mark to market) valuation changes in Level 3's. The results of the primary, supplementary, and suspect firm analysis suggest that there is a positive relationship between aggressiveness in financial reporting and Level 3 gains/losses on sales and Level 3 valuations. However, discretionary accruals is the only proxy for aggressiveness that is consistently significant. When RAM or MBE are significant, they are only significant at the one-sided, 10% level rather than the conventional 5% level.

The primary limitations of this study relate to the time period covered in the sample and using XBRL data in an archival analysis. Due to the implementation dates of FAS 157/ASC 820 and XBRL tagging, my sample includes the financial crisis. It may be the case that this distorts

the true relationship between FVE and the three measures of aggressiveness used (e.g., DA, RAM, and MBE). This consideration is left to future research.

Using XBRL data in archival accounting research is a relatively recent phenomenon. Some prior studies have found significant XBRL implementation issues (e.g., Harris and Morsfield 2012). These problems are primarily associated with XBRL documents being incorrectly “tagged” due to the current lack of auditor assurance over the XBRL data. Consistent with Harris and Morsfield (2012), I find an error rate of approximately 31% between the XBRL tagged data and the hand-collected data from EDGAR filings. This calls into question the suitability of using XBRL data for accounting researchers. The largest number of errors is firms reporting only cumulative 6- or 9-month figures, but tagging these as single-quarter figures.

There are also a number of idiosyncrasies getting XBRL data ready to be used with other major archival databases (e.g., COMPUSTAT). Interpolation for cumulative periods and adjusting the actual filling date, which XBRL has, with the approximate period-end date contained in COMPUSTAT are two such examples.

Appendix A: Simultaneity Between FVE and DA

In certain circumstances the dependent variable in this study is necessarily correlated with total accruals due to the equation used to derive total accruals. This is problematic econometrically because in these situations the dependent variable used in this study will be included as a part of discretionary accruals to the extent that the regressors in the discretionary accruals model shown in Eq. 1 do not explain variation in FVE. The inclusion of FVE into the DA measure induces simultaneity bias in OLS and leads to biased and inconsistent parameter estimates (Wooldridge 2002). The following series of equations illustrate the simultaneity problem:

$$\text{Total Accruals} = \text{Net Income Before Extraordinary Items} - \text{Operating Activities Net Cash Flow} \quad (6)$$

$$\text{Operating Activities Net Cash Flow} = \text{Net Income} + \text{Total Adjustments} \quad (7)$$

where Total Adjustments are all the reconciling items contained in the operating section of the statement of cash flows.

By substituting Eq. 7 into Eq. 6

$$\text{Total Accruals} = \text{Net Income Before Extraordinary Items} - (\text{Net Income} + \text{Total Adjustments})$$

and assuming firms do not have extraordinary items, Net Income Before Extraordinary Items = Net Income

$$\text{Total Accruals} = \text{Net Income Before Extraordinary Items} - \text{Net Income Before Extraordinary Items} - \text{Total Adjustments}$$

$$\text{Total Accruals} = (-1) \times (\text{Total Adjustments}) \quad (8)$$

Therefore, total accruals equals the negative of total reconciling items on the operating statement of cash flows. Any realized or unrealized gain/loss that is included in FVE and is also included as a reconciling item in the operating section of the statement of cash flows induces simultaneity bias in the OLS parameter estimates.

The FASB Codification defines operating activities as residual category for any items which are not classified specially as investing or financing activities (FASB ASC 230-10-20). Generally, the reconciliation included in the operating section of the statement of cash flows provides detail about transactions that impact net income and operating cash flows in different periods (FASB ASC 230-10-45-2). In the event that a firm has a Level 3 asset designated as a trading security, the unrealized gain/loss would be an item which is included in net income but without an associated current period cash flow. Therefore, the unrealized gain/loss will be included as a reconciling item in the operating section of the statement of cash flows and will be included in Eq. 8 (i.e., the dependent variable is on both the left-hand and right-hand side of the regression equation). In this case, one appropriate way to eliminate the simultaneity bias is to simply subtract the unrealized gain/loss directly from the calculation of total accruals prior to estimating discretionary accruals.

For example, assume Firm A holds a Level 3 trading security which has not changed in value during the period. Net income is 50 and net cash provided from operating activities is -25. This firm has total accruals of $50 - (-25) = 75$. Now assume that the security increased in value by 5 and this gain was unrealized. Net income is now 55, but net cash provided from operating activities remains unchanged. Total accruals is now $55 - (-25) = 80$ which is overstated by the amount of the unrealized gain. Subtracting the unrealized gain yields total accruals equal to 75 which equals total accruals disregarding the unrealized gain. A similar example for unrealized

losses shows that total accruals are understated via the unrealized loss (i.e., 70) and subtracting the unrealized loss brings total accruals back to 75.

Subtracting FVE from total accruals is also appropriate when Level 3 securities designated as available-for-sale have been sold. The purchase of available-for-sale securities is classified as an investing activity (FASB ASC 230-10-45-11). However, the realized gain on subsequent sales of available-for-sale securities is included as a reconciling item in the operating section of the statement of cash flows (FASB ASC 230-10-45-28). The dependent variable for this study includes firms that have sold Level 3 available-for-sale securities, and the subtraction of FVE eliminates the simultaneity in these cases.

However, manually subtracting FVE from total accruals is not appropriate to the extent that FVE includes realized gains/losses on trading securities. It can be shown that subtracting FVE from gains that are realized overstates total accruals. This is only one example where the subtraction of FVE from total accruals is unwarranted. Derivatives which are classified as Level 3 assets and whether or not the firm uses financial instruments that qualify for fair value hedge accounting are other situations which may influence the propriety of subtracting FVE from total accruals.

It is problematic to use the FASB Codification to identify every single economic circumstance when manual subtraction is warranted and when it is not. Accordingly, the lag of discretionary accruals is used to avoid simultaneity bias. Using lags to avoid simultaneity is both econometrically sound and accepted in the accounting literature (i.e., Matsumoto 2002).

Appendix B: Comparison of Firms with Level 3 Instruments to COMPUSTAT

Table 10 contains six different measures taken from the financial statements of the firms in the hand-collected sample vs. the entire population of firms covered by COMPUSTAT- Fundamentals Quarterly from January 1, 2009 to June 30, 2012. As noted previously, COMPUSTAT covers 153,912 firm-quarters during this time period. The entire COMPUSTAT- Fundamentals Quarterly database was downloaded and all variables were Winsorized at the 1% level prior to comparing the data to the hand-collected sample.

Firms in the hand-collected sample are, on average, larger than the population of firms covered by COMPUSTAT. Both total assets and the log of the market value of equity are larger in the hand-collected sample. The sample in the current study also contains firms that are more profitable than the COMPUSTAT- Fundamentals Quarterly database. Return on assets (ROA) and quarterly earnings per share (EPSPIQ) are higher for the hand-collected sample. While ROA is negative for the full COMPUSTAT data this does not mean that most firms covered by COMPUSTAT have negative net income. This is simply an artifact of the scaling of the denominator used to calculate return on assets (i.e., average total assets). COMPUSTAT reports total assets in millions. Accordingly, smaller firms will have decimals in the denominator of the ROA calculation. ROA is -.09 for the COMPUSTAT population, but earnings per share is .14. Therefore, the average firm covered by COMPUSTAT is profitable but not as profitable as firms in the hand-collected sample. Level 3 assets in the hand-collected sample are 355.60 compared to 63.48 in the aggregate COMPUSTAT data. Taken together, firms in the hand-collected sample are larger, more profitable, less levered, and hold more Level 3 assets than the average firm covered by COMPUSTAT.

Table 10
Financial Statements Measures
Hand-Collected Sample vs. Full COMPUSTAT

<u>Variable</u>	<u>Hand-Collected Sample</u>	<u>COMPUSTAT Total</u>
ATQ	38,803.13	5,625.72
LEV	0.55	1.07
ROA	0.02	(0.09)
LMVE	9.23	4.97
AUL3Q	355.60	63.48
EPSPIQ	0.59	0.14

Variables: ATQ is total assets, quarterly. LEV is the debt to assets ratio. ROA is the return on assets ratio. LMVE is the natural log of the market value of equity at the end of the quarter. AUL3Q is total Level 3 assets at the end of the quarter. EPSPIQ is quarterly earnings per share.

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Vita

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