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Research Article

Level 3 Reporting Quality: Trend Analysis of Derivative Instruments' Restatements

Joel M Dicicco[1]*, Richard S[2], Uliana[2], Teodora Minkova[1]

[1]Buisness Law Faculty & Coordinator, Florida Atlantic University College of Business, School of Accounting, Florida; [2]Filatova- Doctoral student in Finance at Florida Atlantic University, Florida

ABSTRACT

This paper addresses the area of financial restatements in the field of derivatives and hedging. First, the concept of the fair value hierarchy is discussed to set the stage for the analysis conducted. We explained what Level 3 derivatives are and their lack of transparency. Afterwards, we described the differences between the financial usage of the term derivatives versus the accounting definition per Accounting Standard Codification (ASC) 815. This distinction will have an impact on the analysis as our research will be limited to the accounting definition. Afterwards, a literature review was conducted to gain the latest research in fair value accounting and Level 3 financial reporting. The authors then proceeded to conduct research governing trends in financial restatements and to ascertain the particular areas of weaknesses in derivative methodologies. There were several findings noted:1) The small market capitalization companies had more restatements than the larger capitalization companies, 2) As expected, financial services led the way with most restatements in the derivatives/hedging area, and 3) There is a decreasing trend with restatements with regards to derivatives/hedging. With the information gathered from this research, we will direct our research into interest rate derivatives and attempt to ascertain the flaws noted in this particular arena.

Keywords: Level 3; Fair value hierarchy; Restatements; Derivatives

INTRODUCTION

HISTORY OF THE FAIR VALUE HIERARCHY

Accounting is no longer what it used to be. We all learned initially about the historical cost principle, which suggested that companies must record their assets and liabilities at the acquisition price. Further, in today's colleges and universities, we still elaborate in introductory accounting courses that the historical cost principle is one of the bedrock principles of accounting. However, upon further explanation, this principle is on shaky grounds as accounting is in effect implemented a "mixed-attribute system" whereby balance sheet figures are "valued" with varying methodologies. Some of these techniques would be net realizable value, lower cost or net realizable value, fair value, etc. [1].

The fair value methodology and its subjectivity is the focus of this paper.

In terms of fair value, in 2006, the FASB established a fair value hierarchy through the issuance of FASB Statement 157, now codified under the Accounting Standards Codification 820 [1,2]. As part of this new standard, a fair value hierarchy was established in order to promote reporting consistency and transparency of fair value measurements. In so doing, the FASB created three levels of input data for determining the fair value of an asset or a liability. In general, the gist of the standard regarding hierarchy is presented as follows:

- Level 1 input are quoted prices in active markets for identical assets or liabilities that the entity can access at the measurement date. In general, this quoted market price in an active market illustrates the most reliable evidence of fair value [1-4].
- Level 2 inputs are inputs other than quoted market prices included within Level 1 but are observable, with some effort, for the asset or liability [1-4]. Examples would be interest rate swaps and rental rates for office buildings.
- Level 3 inputs are unobservable inputs for the asset or liability. Unobservable inputs are used to measure fair value to the extent that relevant observable inputs are not available. Usually, a firm would use its own data to determine the appropriate valuation whole, keeping in mind that under the fair value regime, the firm still needs to consider all information about market participant assumptions reasonably available [1-4]. An example of Level 3 is the valuation of private businesses and exotic options.

***Correspondence to:** Joel M DiCicco, Buisness Law Faculty & Coordinator, Florida Atlantic University College of Business, School of Accounting, Florida, Tel: (954) 547-2908; E-mail: jdicicco@fau.edu

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The key to this understanding is that the hierarchy focuses on inputs rather than valuation techniques. Under ASC 820-10-35-38, however, it is understood that the actual availability of inputs and their relative subjectivity might dictate the valuation technique used. For instance, in valuing a private business, the only inputs available are predominately unobservable inputs as there are no actual markets for trading privately held companies. In a perfect world, FASB and for this matter, IASB would seek all valuations using Level 1 quoted prices for all valuations, but as we know, that is quite unrealistic. In the world of complex derivatives, Levels 2 and 3 are the most dominant. With this in mind, how accurate are Level 3 valuations? The paper will explore this answer by reviewing the financial statement "reissuance restatements" by the firms. While recognizing this would be limiting the population to publicly traded corporations, it is a useful gauge of the performance. Lastly, the focus is on financial derivatives, which many are Level 3 inputs and where many anecdotal commentaries have been suggested regarding the lack of proper valuations for these instruments. Before gathering these anecdotal commentaries, let us first address a unique situation in the definition of financial derivatives. Under GAAP, there are particular "loops" a financial instrument must go through before being considered a financial derivative under ASC 815.

GAAP/ IFRS definition of derivatives versus financial usage of terminology

It is not surprising that many professionals and finance students are perplexed by the fact that financial instruments, which we define as derivatives in everyday usage, might not be deemed a derivative under GAAP. This is quite important when determining the magnitude of improper valuation techniques used for valuing derivatives, as many of them would not be included under Level 3. Lastly, let us not forget the scope exceptions embedded in Section 815 as well.

The definition of a financial derivative under GAAP is ASC 815-10-15-83 [5]. According to the definition, a derivative product has these three elements: 1) Underlying, notional amount, payment provision, 2) Initial net investment, and 3) Net Settlement [5]. Let us discuss what each component represents. Once again, the following definitions are from the ASC 815-10-15 sections.

An Underlying is defined as a variable that, along with either a notional amount or a payment provision, determines the settlement amount of a derivative instrument [5]. Examples of such would include a security price or index, an interest rate or interest rate index, and so forth. With this in mind, a notional amount is a number of currency units, shares, bushels, pounds, or other units specified in the contract, which determines the settlement amount under a derivative [5]. The critical point to understand is that a notional amount is not the same thing as a principal as in bond principal since the notional amount is simply used to determine the payment. The notional amount does not get repaid. In terms of the payment provisions clause per ASC 815, an amount is paid when the underlying behave in a certain fashion. As an example, a contract might specify that a $1 million payment will be made if interest rates decrease by 300 basis points.

With regards to Initial Net Investment, according to ASC 815-10-15, derivatives do not require an initial cash outlay or, if so, might require only a minimal amount that technically covers payment as compensation for time value considerations [5]. You can view this similarly as paying a premium for an option. Unfortunately, the FASB and IASB did not provide any specific tests to determine what constitutes a minimal amount. This factor is critical in determining and eliminating many financial instruments that would constitute derivatives under everyday term usage. More on the particular instruments a bit further down in this section.

The last element constituting a derivative under accounting is the Net Settlement criteria. Again, under the ASC, a derivative must have the feature of a cash settlement, which means that a contract can be settled at its maturity through an exchange of cash instead of through physical delivery of the referenced asset [5]. In particular, Net Settlement can take place based: a) under contract terms, b) via a market mechanism, or c) delivery of the derivative instrument or asset readily convertible to cash. That is one of the reasons why derivatives such as futures, forwards, swaps, and options meet the accounting definition because either: (1) their contract terms call for a net cash settlement or (2) a mechanism exists in the marketplace that makes it possible to enter into closing contracts with a net cash settlement.

While certain financial instruments such as plain vanilla bonds and marketable securities would obviously not meet the definitions of derivatives under accounting and even in ordinary finance vernacular, certain other instruments would be surprising. For example, mortgage-backed securities which most finance professionals would deem a derivative instrument, does not meet the definition under accounting as it fails the initial net investment requirement. To meet the definition under accounting, the initial investment must be nominal, if at all. To purchase mortgage-backed security, one needs to pay the full fair value of the instrument.

Lastly, there will be financial instruments that would normally be considered derivative instruments except for the scope exceptions. These would include loan commitments and interest-only strips. As a result, deciphering the quality of financial reporting in this light must be considered. The number of reissuance restatements under the derivatives category might actually be understating the true nature of the problem due to both definitional issues and scope exceptions.

LITERATURE REVIEW ON LEVEL 3 REPORTING OF DERIVATIVE PRODUCTS

To reiterate, Level 3 inputs are unobservable inputs used in valuing assets and/or liabilities. These unobservable inputs are used to determine a fair value to the extent that relevant observable inputs are not available. An entity develops unobservable inputs using their professional judgment while keeping in mind that fair value measurement requires considering market participant assumptions that are reasonably available. As this demonstrates, since we are dealing with minimal transparency of data, it would not be unusual to see flaws in both the reporting and valuing of these financial instruments.

Due to this lack of transparency in Level 3 inputs, the SEC, along with FASB, requires certain detailed reporting requirements governing these inputs. The SEC, as the guardians for investor protections, is quite concerned about the quality in reporting governing liquidity and financial risk. For financial instruments, in particular, disclosures are even more demanding due to their significant impact on financials. For example, under FASB ASU 2018-13 (Topic 820), firms are required to (non-exhaustive list):

- provide relevant information to existing and potential users of the financial statements;

- apply a cost-benefit approach in justifying the costs associated with granular details;
- determine whether financial instruments are affected by the lack of market liquidity;
- factor the liquidity risk into the fair value determination of those financial instruments such as the discount rate in the discounted cash flow approach; and
- Ascertain how the firm's credit risk affected the valuation of derivative assets and liabilities.

With all this said, how accurate are Level 3 reporting and disclosures? In 2008, the SEC issued the "Report and Recommendations Pursuant to Section 133 of the Emergency Economic Stabilization Act of 2008: Study on Mark-To-Market Accounting" [3]. This report was issued via a Congressional mandate as a result of the financial crisis back in 2007/ 2008, which looked at fair value accounting and whether this accounting regime possibly led to the crisis. There were several pertinent points reached in their conclusions and, as part of their eight recommendations, suggested that fair value be continued but improved via best practices for determining fair value in illiquid or inactive markets.

While this was the year 2008, have we improved since then in terms of financial reporting of these Level 3 inputs. Let us take a look at some commentary. The article by Sherman and Young [6] cites the subjectivity and difficulty in apply fair value accounting and provided an example of where differing values were applied to the same transaction. In another article by Chung, Lee and Mitra [7], among their conclusions about fair value, they suggested "… that Level 3 assets, whose fair values are subjectively determined by management, hurt companies' market values in the form of larger share price discounts. These discounts seem to be driven by investors' skepticism about the reliability of management's estimates. Anecdotal evidence further supports such skepticism." According to Dr. Reid, the "mandatory disclosure requirement of ASC 820-10 does increase financial reporting quality and provides useful information to investors" [4]. This assumes, however, accurate disclosure information.

Another academic paper by Lin, Lin, Fornaro and Huang suggested that Level 3 fair value assets are positively associated with the likelihood of financial statement restatements within two years following reporting these assets… "In a supplemental analysis, we investigate and find evidence suggesting that stronger corporate governance mechanisms somewhat help mitigate the positive association between Level 3 fair value assets and subsequent financial statement restatements [2]. Overall, our results indicate that the use of less reliable fair values, such as Level 3 fair value assets, may result in lower accounting quality." In a paper by Bens, Cheng and Neamtiu, the authors stated that based on their cross-sectional analyses, "reduction in [investor] uncertainty is greater when (1) registrants explicitly acknowledge that they will improve fair value disclosure in response to the SEC comment letter, and (2) the fair value issue plays a more prominent role in the comment letter" [8]. Lastly, authors Magnan, Menini and Parbonetti suggested that in their review of analyst reports on bank holding companies, Level 3 does increase the opacity, which leads to confusion among analysts [9]. "Further analyses reveal that underlying the results for Level 3 FV are deteriorations in analysts' information environment, as reflected in the precision of public and private information" [9].

With this background established, how has the reporting of Level 3 derivative instruments been over the years via an analysis of financial restatements?

From an international perspective, a report titled, "Review of Fair Value Measurement in the IFRS financial statements: July 12, 2017 ESMA32-67-284" by the European Securities and Markets Authority (ESMA) [10] provided an analysis of the application of the fair value measurement and disclosure requirements required by IFRS 13 Fair Value Measurement as applied by European issuers. Their study reviewed 78 annual reports from the years between 2013 and 2015. ESMA's expectation was twofold in that they were exploring whether companies emphasized relevant, non-boilerplate information particular to the financial instruments and whether disclosures were reasonably confined to particular sections of the annual report and not scattered throughout. With this stated, some of the findings worth noting are as follows:

- From the firms having Level 3 measurements, which represented over three-quarters of the sample, only 5% offered disclosures on valuation approaches that we deemed boilerplate [10].
- The majority of companies reporting information on Level 3 measurements provided pertinent disclosures on how the entity decides its valuation policies [10].
- Slightly more than half of the companies provided the required narrative description of the sensitivity of fair values to changes in unobservable inputs if a change in those inputs potentially results in significantly different value outcomes. From this group that reported, it was deemed that one-quarter of those narratives were boilerplates [10].

An academic paper, "Fair Value Accounting and Reliability: The Problem with Level 3 Estimates" by Chung, Lee and Mitra [7], examined 431 financial statements from 2008. The authors discussed how stock market participants priced Level 1, 2, and 3 assets. Their analysis strongly suggested that the stock market values each dollar of Level 1, 2, and 3 assets at $0.98, $0.97, and $0.68, respectively [7]. The drop in valuation of Level 3 assets indicated that investors were concerned about the reliability of management's estimates of these fair value instruments.

In another study, "Information Risk and Fair Values: An Examination of Equity Betas and Bid-Ask Spreads," [11] while analyzing financial data from 467 financial institutions, Riedl and Serafeim, examined the effect of Level 3 assets on a company's cost of equity capital. They hypothesized that, given management's discretion to estimate the value of Level 3 assets along with the incentives to overstate earnings, market participants might suspect management of overestimating future cash flows to value those assets. The study found evidence supporting this notion that higher exposure to Level 3 assets will result in a higher cost of equity capital [11]. Lastly, a study by Magnan, Menini and Parbonetti "Fair value accounting: information or confusion for financial markets?" [9] Argued that greater dollar amounts of Level 3 assets would also lead to more dispersed analyst forecasts due to confusion.

A panel data analysis of Level 3 restatements regarding financial derivatives

The number of restatements has been significantly increasing every year from 2002 until 2006, averaging a 25.90% increase year over year. The reasons for these increases include the advent of Sarbanes Oxley's Section 404 requirements put into law in July 2002, the

involvement of the Public Company Accounting Oversight Board (PCAOB) in advancing quality in financial reporting, and an increase in SEC comment letter and advisory activity (GAO-Restatement Dashboard Full Report, 2006) [12]. The largest number of the total restatements, both reissuance and revisions, of 1869 was recorded in 2006. Starting 2007, the number of total restatements dropped almost every year, with the average year over year decline of 9.27%, to a 19-year low of 484 [12].

Now, in terms of implementing a complex valuation of these accounting instruments requires high levels of accuracy and consistency in reporting, which mandates a strong internal control mechanism. As a result, it can be presumed that these issues are detected and fixed at early stages reducing the possible number of errors in the financial statements and, as a result, a lower number of restatements. As we see from the numbers, the total number of restatements in financial derivatives declined from the highest 70 restatements in 2005 to three restatements in 2019. One assumption is that the low number of restatements in such a complex area is due to additional firm controls.

During the year 2019, according to Audit Analytics [13], the top seven issues in restatements were:

- Revenue Recognition Issues
- Cash Flow Statement (SFAS 95) Classification Errors
- Debt, Quasi-Debt, Warrants and Equity (BCF) Security Issues
- Tax Expense, Benefit, Deferral, and Other (FAS 109) Issues
- Liabilities, Payables, Reserves and Accrual Estimate Failures
- Accounts/Loans Receivable, Investments and Cash Issues
- Expense (Payroll, SGA, Other) Recording Issues

The topic of our paper includes the financial derivatives/hedging (FAS 133, now ASC 815) accounting issues. This type of issues consists of errors or irregularities in approach, theory, or calculation of derivative instruments. For example, these issues may include errors in the valuation of financial instruments, such as hedges on currency swings, interest rate swaps, purchases of foreign goods, and guarantees on future sales. For the last nineteen years, financial derivatives/hedging accounting issues decreased with the compounding annual growth rate of 8.88%, from the highest number of 70 in 2005 to the lowest 3 in 2019. However, does the drastic decrease of the financial derivatives issues in the restatements mean a better understanding of the valuation of Level 3 inputs among the companies?

There were 463 restatements under the financial derivatives/hedging accounting area from 423 distinct registrants. Of these, 347 had negative financial statement impact, and 116 had positive. (NOTE: If we considered the topics of quasi-debt, warrants, which are not deemed derivatives under GAAP, we would have added 3,460 restatements). Most of the issues were from companies with market capitalizations of less than $300 million. Surprisingly, based on the information from Audit Analytics [13], only one restatement was filed by a mega-cap company (those who have a market capitalization greater than $200 billion) which was Bank of America Corp. during the period 2001-2019 timeframe. To the authors of this paper, it was quite interesting noting that only one mage-cap Company filed a restatement under the financial derivatives/hedging accounting area during the period 2001-2019.

By filtering the data according to the companies' market capitalization, as stated earlier, we found that most of the restatements are filed by firms with a market capitalization of less than $300 million. Furthermore, firms with unknown market capitalizations filed around 8.5% of restatements containing the financial derivatives/hedging accounting issues (Figure 1).

Using the Audit Analytics database, we also considered the industries with most of the restatements issued. As we expected, most restatements are applied by the firms in the Finance and Insurance (NAICS 52) and Mining (NAICS 21) industries (Table 1).

In terms of the nature of restatements, we found that the most commonly flagged issue by far related to interest rate derivatives and particularly interest rate swaps. Unfortunately, most restatements contain only general phrases, such as "certain derivative class," "interest rate derivative," etc. The particularities governing the

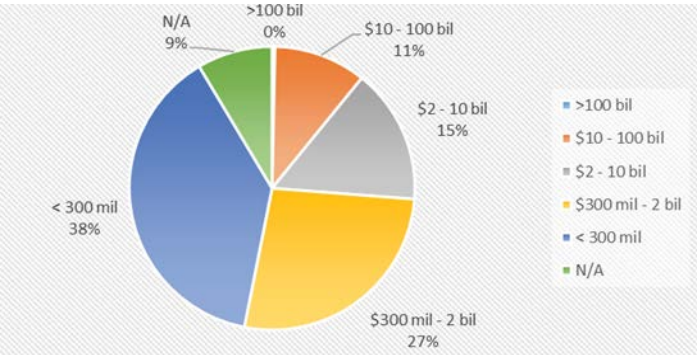

Figure 1: Restatements based on Mrk Cap.

Table 1: Firms in the Finance and Insurance (NAICS 52) and Mining (NAICS 21) industries.

NAICS	Description	# of restatements	distinct firms
72	Accommodation and food services Administrative and Support and Waste	6	6
56	Management and Remediation Services	4	4
71	Arts, entertainment, recreation	2	2
23	Construction	4	4
52	Finance and Insurance	160	142
62	Healthcare and Social Assistance	4	4
51	Information	22	21
55	Management of Companies and Enterprises	1	1
31	Manufacturing	10	10
32	Manufacturing	30	28
33	Manufacturing	43	42
21	Mining	79	72
81	Other Services (except Public Administration)	2	2
54	Professional, Scientific, and Technical Services	8	8
53	Real Estate and Rental and Leasing	10	7
44	Retail Trade	3	3
45	Retail Trade	2	2
48	Transportation and Warehousing	23	22
22	Utilities	36	32
42	Wholesale Trade	9	8
	Unassigned	4	2
	Total	462	422

need for the revisions were notably absent and therefore prevented the authors to determine the methodological flaws.

Lastly, from the period of our study, after analyzing the Audit companies during the period of restatements, we found that most restatements were made by the firms working with PricewaterhouseCoopers LLP (116 restatements from 104 firms) and KPMG LLP (109 restatements from 104 distinct firms) (Table 2).

Table 2: Firms working with PricewaterhouseCoopers LLP (116 restatements from 104 firms) and KPMG LLP (109 restatements from 104 distinct firms).

Auditors at Discloser period	Restatements	Distinct firms
Price water house Coopers LLP	116	104
KPMG LLP	109	104
Deloitte & Touche LLP	78	76
Ernst & Young LLP	64	60
Arthur Andersen LLP	9	9
Grant Thornton LLP	13	13
BOO Seidman LLP	8	8
Crowe Chizek & Company LLP	3	3

CONCLUSION

During the period from 2001-2019, there has been a noticeable decrease in the number of restatements overall and in particular, the areas of derivatives and hedging techniques. The authors also noted that the smaller companies (under $300 million market capitalization) had the most restatements in the area under study. As expected, the industries of finance and insurance led the way with most restatements. Further, the lack of granular details in the restatements prohibited further analysis of the methodological flaws in derivatives and hedging. For instance, interest rate swaps were the most cited area of the restatements, yet; we were unable to determine the cause for the restatement, such as faulty valuation techniques, lack of transparency, etc. With the information gathered from this research, the authors will direct their research into interest rate derivatives and attempt to ascertain the flaws noted in this particular arena. Lastly, another area for research governs whether the downtrend in restatements is due to increased accuracy by the firms or lack of enforcement by regulatory agencies.

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